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CONTENTS

SURFACE DATA Page

General Summary of Weather Conditions---------------------- 1

Condensed Climatological Data - States-------------------- 3

Climatological Data - Stations---------------------------- 4

Heating Degree Days--------------------------------------- 8

Storm Data and Unusual Weather Phenomena------------------ 9

General Summary of River and Flood Conditions------------- 18

Flood Stage Data-- 31

UPPER AIR DATA

Rawinsonde Data--- 32

SOLAR RADIATION DATA

Solar Radiation Intensities------------------------------- 38

Blue Hill Data-- 39

Net Radiation--- 39

Daily Totals and Average Daily Totals by Weeks------------ 40

CHARTS I-XVII

NOTE.--This publication contains all of the climatic data formerly printed in the MONTHLY WEATHER REVIEW.

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CLIMATOLOGICAL DATA

NATIONAL SUMMARY

Volume 8 No. 1

JANUARY 1957

GENERAL SUMMARY OF WEATHER CONDITIONS

January precipitation was featured by drought-relieving rains in the Far Southwest and heavy rains in the East which replenished soil moisture in most of the South and produced disastrous floods in the Appalachian region. In contrast deficient precipitation continued the drought in large areas of the central and lower Great Plains and prolonged the dry spell in Florida and southern Georgia.

Severe cold in northern regions, record-breaking locally, causing some damage to both crops and property was the main temperature feature of the month. The month, however, was abnormally mild in extreme southern areas, particularly in eastern Arizona and western New Mexico.

Other features of the month's weather included heavy snowfall in the central Rockies and the Northeast, a pronounced "January Thaw" in the Northeast on the 23d, an outbreak of tornadoes and severe thunderstorms from eastern Oklahoma to southern Kentucky on the 22d, damaging glaze in Oklahoma, Missouri, and Arkansas on the 26th to the 28th, extreme cloudiness in many southern areas, and an unusual frequency of heavy fog in Gulf coastal regions.

In general sunshine was normal to much above in the northern third of the country and in Florida and southern Georgia, but it was much below normal in an area extending from Kentucky southward to the Gulf and westward to southern California. Oklahoma City, Okla., had only 51 percent of normal which was the least for January there in 60 years of record. Albuquerque, N. Mex., had 69 percent of normal, also a new record. Other stations reporting near record low amounts were: Fort Smith, Ark., 49 percent of possible; Vicksburg, Miss., and Port Arthur, Tex., 43; Kansas City, Mo., 54; San Antonio, Tex., 55; and Los Angeles, Calif., 67 percent of normal.

Heavy fog, an unusual feature of the weather in several sections of the country, was particularly frequent in Florida and Gulf coastal areas. Fort Myers, Fla., reported heavy fog on 19 days which may be compared with the previous greatest number of 12 for January, and Tampa, Fla., reported 18 days when fog cut visibility to 1/4 mile or less which may be compared to the previous record of 10.

TEMPERATURE.--Temperatures for the month averaged above normal in extreme southern areas and below elsewhere. Positive departures were as much as 6° in parts of Arizona and New Mexico and 4° or more along the Gulf coast, while negative departures were 12° or more in north-central Montana and ranged from 6° to 8° in most other regions near the Canadian Border.

Abnormally cold weather lasted about 3 weeks in northern areas. The month generally was the coldest January since 1918 in parts of southern New England and generally since 1948 from Michigan and the Ohio Valley eastward. A few stations in Wisconsin and Upper Michigan reported their coldest January since 1929; most stations in Iowa, central and northern Illinois, and several in Wisconsin reported their coldest January since 1940. In much of the area from the northern Great Plains to the Pacific coast this was the coldest January since 1949.

Lowest temperatures in most areas east of the Great Plains occurred during the third week which in New England was the coldest week in many years. Subzero minima were recorded as far south as Richmond, Va., the Ohio Valley, and the northern portions of Missouri and Kansas; and subfreezing minima almost to the southern tip of Texas and well into central Florida, slightly damaging truck in both States. A number of stations in the Northeast recorded their lowest temperatures on record for January, among which were Hartford, Conn. (-17° on the 18th), Syracuse, N. Y. (-24.1° on the 15th), Providence, R. I. (9.4° on the 15th), and Burlington, Vt. (-29.6° on the 15th). Buffalo, N. Y., reported that the eastern end of Lake Erie froze over, and that fruit buds and some trees in the area were killed by the cold, with indications that the fruit crop may have suffered heavy loss.

The coldest weather in the Great Plains and Far West occurred during the last decade when subzero minima extended into Kansas, New Mexico, and Arizona. At Helena, Mont., temperatures for the fourth week averaged 36° below normal, the coldest week there in 77 years of record, and a low of -41.5° on the 25th was within 0.1° of the station's all-time low established on January 1, 1893. Frost penetration was 2 feet at Reno, Nev., and the deepest in parts of Wisconsin since 1936. The cold damaged some fruit buds in Washington's apple region and froze water pipes in Helena, Mont., Portland, Oreg., and several other northwestern cities.

The mild weather in southern areas was not particularly outstanding until the last few days of the month when temperatures rose to 15° or 20° above seasonable levels in Gulf coastal areas and the Southeast. At that time a number of stations recorded their highest temperatures on record for January, among which were Savannah, Ga. (84.4° on the 29th), New Orleans, La. (83° on the 30th), and Houston, Tex. (83° on the 31st). Owing to persistent above-normal temperatures in the Far Southwest, El Paso, Tex., had one of its warmest Januarys on record.

Extreme temperatures for the month ranged from -54° at West Yellowstone, Mont., on the 27th to 95° at Encinal, Tex., on the 10th.

PRECIPITATION.--Although precipitation generally totaled over an inch west of the Continental Divide, its benefits were greatest in California and the Far Southwest. Surface moisture was sufficiently replenished in California, where drought had prevailed since October, for growth of dryland crops. In an area including Arizona, Utah, southwestern Colorado, and western New Mexico, monthly totals generally exceeded 200 percent of normal and locally 300 to 450 percent. Prescott and Tucson, Ariz., reported monthly totals of 3.06 and 2.37 inches, respectively, the second greatest for January at both stations in about 100 years. Stream flow was above normal in most of Arizona at the end of the month.

Heavy rains in the lower Mississippi Valley and south of the Great Lakes also replenished surface soil moisture in most of the South sufficiently for fall crops to make good to excellent growth, and produced above normal stream flow in the Ohio Valley, West Virginia, Kentucky, and Tennessee. Monthly totals exceeded 4 inches in most of this area and ranged up to more than 8 inches in many localities of Tennessee and the lower Appalachian region.

The southeastern Great Plains also received good rains, most of which fell during the last decade. Monthly totals exceeded an inch in northeastern Texas, central and eastern Oklahoma, and extreme eastern Kansas. Surface soil moisture was greatly improved in these areas but subsoil moisture continued short.

The month's precipitation, although beneficial, was too light in Nebraska, eastern Colorado, western Kansas, the Oklahoma Panhandle, western Texas, and eastern New Mexico to bring more than temporary relief.

In southern Georgia and most of Florida, an area of prolonged dryness, precipitation was again less than 50 percent of normal, with totals less than 1/2 inch in most of the area and non-irrigated crops continued to suffer from lack of moisture.

SNOWFALL.--Snowfall was below normal generally in the extreme upper Mississippi Valley and northern Great Plains, but was well above normal in the Far West both in the mountains and at lower elevations, and also in the Northeast. The heaviest falls occurred in western Colorado where they ranged up to 147 inches. Grand Junction, Colo., recorded the greatest monthly total in its climatological history, 33.7 inches, and also measured its second greatest snow depth, 16 inches, on the 27th. In the Sierras and Cascades the snowpack, much below normal at the beginning of the month, was boosted by falls for the month ranging from about 30 inches in the lower Sierras to well over 100 inches in the northern Cascades. Many stations in the Central Valley and along the central and southern coast of California reported snowfall for the first time in several years.

In the Northeast monthly totals ranged up to more than 40 inches. Heavy falls occurred on the 3d to the 8th, 16th, and 29th. Portland, Maine, measured 35 inches, one of its greatest falls on record for January, and Buffalo, N. Y., reported 36.6 inches, the most there for January since 1945.

DESTRUCTIVE STORMS AND OTHER UNUSUAL PHENOMENA.--The worst outbreak of violent storms during January occurred on the 22d when tornadoes struck in many communities in an area extending from eastern Oklahoma into Tennessee and south-central Kentucky. Total damage exceeded $2,000,000 according to early estimates. Several persons were killed in Oklahoma. A tornado in Gans, Okla., dug several holes in the ground 10 feet in diameter and about 1-1/2 feet deep.

Glaze occurred on the 26th - 28th in northern Arkansas, southern Missouri, and parts of Tennessee. Damage, probably amounting to a few million dollars, was heaviest in the northeastern quarter of Arkansas.

CONDENSED CLIMATOLOGICAL SUMMARY

Section	Temperature						Precipitation			
	Monthly extremes						Monthly extremes			
	Station	Highest	Date	Station	Lowest	Date	Station	Greatest	Station	Least
		°F			°F			In.		In.
Alabama	Whatley	84	29	Bridgeport 2W	4	17	Muscle Shoals CAA AP	10.64	Fort Morgan	0.10
Arizona	Sahuarita 2NW	83	12	Fort Valley	-19	31	Tonto Cr. Fish Hatch.	16.27	Beaver Dam	.03
Arkansas	5 Stations	82	9+	Batesville Livestock	2	17	Pine Bluff CAA AP	11.59	Yellville	1.84
California	Yorba Linda	81	2	Boca	-27	9	Big Bear Lake Dam	18.83	Needles CAA AP	.32
Colorado	4 Stations	65	7+	Taylor Park	-43	18+	Crested Butte	11.09	2 Stations	T
Connecticut	Falls Village	60	23	2 Stations	-26	18	Groton	3.30	Bridgeport WB AP	1.25
Delaware	3 Stations	68	22	Georgetown	-12	18	Selbyville	2.70	Middletown 2S	1.61
Florida	5 Stations	89	16+	Jasper 9ESE	13	19	Vero Beach CAA AP	9.08	2 Stations	.04
Georgia	Bainbridge	86	30	Blairsville Exp. Sta.	4	18	Flat Top	13.83	Jesup 8S	.19
Idaho	Fairylawn	54	1	Obsidian 2NNW	-46	27	Island Park Dam	4.20	Swan Falls PH	.09
Illinois	Quincy	70	21	2 Stations	-23	14	Brookport Dam 52	6.37	Freeport Sewage Pl.	.64
Indiana	Scottsburg	67	22	do	-16	14+	Princeton	4.77	Columbia City	1.22
Iowa	Keokuk	70	21	Perry 1SE	-31	14	Keokuk	2.28	Sioux City 8N	.07
Kansas	2 Stations	75	21	2 Stations	-12	25	Bonner Springs	1.63	3 Stations	T
Kentucky	6 Stations	70	9+	Dewey Dam	-10	17	Ashcamp	13.29	Williamstown 5WSW	2.27
Louisiana	3 Stations	85	9+	2 Stations	11	17+	Marion	8.85	Point Au Fer Reef	.24
Maine	Madison	60	22	Fort Kent	-42	14+	Rockland	3.56	Presque Isle	.96
Maryland	3 Stations	68	22+	2 Stations	-16	18	Oakland 1SE	6.15	Emmitsburg 2SE	1.86
Massachusetts	Stockbridge	59	23	Birch Hill Dam	-34	18	Salem Air Station	4.37	Amherst	1.38
Michigan	2 Stations	56	22	2 Stations	-31	13+	Houghton CAA AP	4.16	Fayette Sack Bay	.22
Minnesota	Winona	44	22	Big Falls Ranger Sta.	-44	29	Itasca State Park Sch.	1.03	St. James Filt. Pl.	T
Mississippi	Pearlington 2NNE	87	29	2 Stations	8	17	Okolono	11.63	Wiggins	1.12
Missouri	Doniphan	77	9	Princeton	-19	14	Portageville	7.46	Polo	.43
Montana	Augusta	56	1	West Yellowstone	-54	27	West Yellowstone	3.66	Biddle	.00
Nebraska	Falls City	60	21	Fort Robinson	-31	25	Falls City	.77	2 Stations	.02
Nevada	North Las Vegas Dox	69	13	Fish Creek Ranch	-32	29	Pioche	3.95	Kings River Valley	T
New Hampshire	Plymouth 1WNW	64	23	First Conn Lake	-41	14	Mount Washington	3.46	Bethlehem	1.17
New Jersey	3 Stations	65	22+	Layton 3NW	-21	18	Berlin 1W	3.30	Swedesboro 5NW	1.24
New Mexico	2 Stations	81	12+	Gavilan	-21	23	Chama	6.63	3 Stations	.00
New York	Cairo	67	23	Messena CAA AP	-44	15	Hooker	6.90	Scotia	.78
North Carolina	5 Stations	80	28+	Celo 2S	1	3	Clingmans Dome	14.35	Greenville 3S	1.52
North Dakota	Mott	43	7	Watford City 14S	-41	24	Belfield	1.06	Tolley 4NE	T
Ohio	2 Stations	67	21+	2 Stations	-19	17	Chesapeake Huntg CAA	4.58	Hoytville 2NE	1.14
Oklahoma	7 Stations	82	9	do	-2	25	Kiamechi Tower	7.12	Kenton	.21
Oregon	Powers	60	17	Seneca	-43	26	Illahe	8.93	McDermitt 26N	.22
Pennsylvania	Uniontown	63	22	2 Stations	-25	15	Kregar 4SE	5.25	LeRoy	.67
Rhode Island	Providence WB Airport	57	23	Kingston	-17	18	Woonsocket	2.49	Block Island WB AP	1.79
South Carolina	2 Stations	85	29+	Chester 2SW	7	19	Caesars Head	10.23	Beaufort 7SW	.47
South Dakota	Pine Ridge	60	3	Pine Ridge	-40	25	Lead	.87	2 Stations	T
Tennessee	Newport	80	29	Crossville Exp. Sta.	-4	17	Shelbyville 3	12.59	do	5.80
Texas	Encinal 3NW	95	10	2 Stations	1	25+	Center	6.21	6 Stations	.00
Utah	St. George PH	62	14	do	-32	18+	Alta	6.72	Fruita	.11
Vermont	Bennington 2NW	60	22+	Lemington	-42	14	Searsburg Station	3.21	Enosburg Falls	1.16
Virginia	Diamond Springs	78	29	Partlow 3WNW	-16	18	Bristol	11.51	Cootes Store	1.28
Washington	Sequim	56	10	Chewelah 2S	-36	26	Forks 1E	9.72	Wawawai	.17
West Virginia	Williamson	71	22	Benson	-26	17	Bluefield 1	10.06	Moorefield	1.35
Wisconsin	Kenosha	55	21	Couderay	-35	30	Williams Bay	2.42	Ashland Exp. Farm	.10
Wyoming	2 Stations	57	1+	Lamar RS	-51	27	Snake River	4.22	2 Stations	.00
Puerto Rico	Guayama	92	8+	Carite Camp Tunnel	52	23	Rio Blanco 1800 Feet	13.92	Ponce	T

+ And also on a later date or dates.

Note: Dates in Table 1 apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for times of observations).

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure		Temperature											Average relative humidity	Precipitation							Wind					No. of days (sunrise to sunset)			Sky cover, tenths (sunrise to sunset)	Possible sunshine
		Station ø	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	No. of days		Average dew point		Total	Departure from normal	Greatest in 24 hours	No. of days		Snow, Sleet		Average hourly speed	Prevailing direction	Fastest mile			Clear	Partly cloudy	Cloudy		
												Max. 90° F. or above	Min. 32° F. or below						.01 inch or more	With thunderstorms	Total .	Max. depth on ground			Speed	Direction	Date					
	Ft.	Mb.	Mb.	°F	°F	°F.	°F	°F		°F.				°F.	%	In.	In.	In.			In.	In.	M. p. h.		M. p. h.			0–3	4–7	8–10	0–10	%
ALABAMA																																
Birmingham	610	998.0	1023.8	57	39	47.8	2.6	76	9+	16	17	0	10	38	73	6.00	1.02	2.18	16	0	0.0	0	10.4	N	34	W	29	2	6	23	8.2	29
Mobile	211	1015.3	1023.5	66	47	56.7	4.0	80	28+	23	18	0	3	49	77	1.45	-3.57	.68	14	0	T	0	11.0	N	--	---	--	4	10	17	7.4	--
Montgomery	198	1015.9	1023.5	62	42	51.7	2.5	82	31	19	19	0	8	43	74	2.82	-1.78	.90	12	1	.0	0	7.8	N	31	SW	9	2	7	22	8.0	40
ARIZONA																																
Flagstaff	6993	------	------	38	21	29.6	4.3	48	2+	-9	31	0	28	--	--	6.46	4.77	1.77	16	0	32.8	30	----	---	--	---	--	7	2	22	7.3	--
Phoenix	1114	978.0	1017.7	63	45	54.0	4.3	71	12	35	22	0	0	43	69	1.57	.97	.49	10	0	.0	0	3.8	E	*24	SE	27	5	4	22	7.6	72
Prescott	5014	846.6	1017.6	47	29	38.0	2.7	58	14	7	29	0	19	--	--	3.06	1.96	1.05	14	0	11.6	6	9.0	S	47	SW	8	4	7	20	7.3	49
Tucson	2558	927.5	1016.5	64	44	53.8	4.1	75	12+	29	22	0	1	36	56	2.37	1.74	.69	10	0	.0	0	6.6	SE	33	E	17	5	6	20	7.3	64
Winslow	4880	851.0	1016.9	49	29	38.7	6.0	64	14	16	18	0	20	24	58	1.06	.69	.47	6	0	2.9	T	7.9	WSW	*26	SW	26	8	4	19	7.0	--
Yuma	199	1012.2	1017.6	67	45	56.2	.9	74	1	35	28	0	0	34	49	.66	.33	.30	5	0	.0	0	6.7	N	25	N	17+	8	7	16	6.5	64
ARKANSAS																																
Fort Smith	458	1005.8	1023.1	47	30	38.4	-1.6	78	9	14	17	0	20	30	73	3.13	.24	1.25	12	3	T	T	9.1	ENE	28	E	22	2	4	25	8.5	24
Little Rock	257	1009.8	1023.5	48	32	39.8	-2.0	77	9	12	17	0	17	31	73	5.95	.83	2.04	12	3	T	0	10.0	NE	32	W	9	2	5	24	8.2	27
Texarkana	361	------	------	51	36	43.4	-2.5	82	9	15	17	0	11	--	--	7.67	2.55	5.79	13	3	T	T	8.9	NE	--	---	--	--	--	--	---	--
CALIFORNIA																																
Bakersfield	489	1001.4	1020.0	55	35	44.7	-2.2	67	13	27	28	0	11	36	76	.82	-.20	.64	6	0	T	0	4.1	NW	*23	N	20	6	9	16	7.0	--
Bishop	4108	874.0	1018.0	47	18	32.1	-5.8	56	8+	4	28	0	31	--	--	1.61	.49	1.39	5	0	T	T	----	---	--	---	--	14	7	10	4.5	--
Blue Canyon	5280	836.4	1017.3	37	24	30.7	-5.5	53	17	9	27	0	30	--	--	7.89	-1.28	2.78	12	0	39.5	29	----	---	--	---	--	10	5	16	6.1	--
Burbank	699	991.5	1018.4	60	42	51.0	-1.6	74	2+	28	28	0	2	39	69	5.72	3.37	2.39	15	0	T	T	3.4	ESE	*22	SE	5+	10	4	17	6.4	--
Eureka (U)	43	1016.6	1019.0	49	37	43.3	-3.9	64	12	28	27+	0	6	--	--	4.22	-1.98	.93	14	0	T	0	6.9	---	30	NW	20	8	5	18	6.5	48
Fresno	331	1007.5	1019.9	52	34	42.5	-2.2	63	13	24	9	0	12	37	83	1.75	.18	.68	8	0	.1	T	4.8	SE	25	SE	13	7	6	18	6.8	54
Los Angeles (U)	312	------	------	61	47	54.2	-.8	74	2	35	28	0	0	41	65	4.41	2.03	2.05	15	0	T	0	6.9	---	37	SE	29	9	6	16	6.5	47
Los Angeles	99	1014.2	1018.2	61	47	53.9	.7	73	2+	36	28	0	0	43	70	3.88	1.87	1.77	15	0	.0	0	6.7	E	*26	ENE	29	7	7	17	6.5	--
Mt. Shasta (R)	3544	892.0	1019.3	37	18	27.3	-5.5	56	1	2	29	0	30	--	--	6.58	2.04	1.85	9	1	51.7	21	----	---	--	---	--	9	7	15	6.1	--
Oakland	3	1019.0	1019.4	53	38	45.1	-2.1	59	12+	30	9+	0	5	38	76	2.82	-.48	1.51	11	0	T	0	7.4	SE	*32	SW	13	11	11	9	5.3	--
Red Bluff	341	1006.4	1019.6	52	33	42.6	-2.5	61	1+	25	9+	0	21	27	58	3.56	-.17	2.34	8	0	T	0	9.2	NNW	36	N	26	14	5	12	5.1	73
Sacramento	17	1018.0	1019.3	52	35	43.4	-.9	60	12	27	10	0	12	35	76	2.11	-.55	1.19	9	1	T	T	9.2	NNW	42	SW	13	10	7	14	5.7	69
Sandberg (R)	4517	861.8	1018.0	40	31	35.4	-4.4	55	2	14	28	0	17	--	--	6.30	4.00	2.71	15	0	31.1	22	14.8	---	*46	E	29	6	5	20	7.1	--
San Diego	19	1014.6	1018.0	63	50	56.5	1.6	72	16	42	28+	0	0	45	68	4.80	3.11	1.29	16	1	.0	0	6.3	NE	30	SW	27	8	5	18	6.7	49
San Francisco (U)	52	------	------	54	44	48.8	-1.3	61	6	36	28	0	0	--	--	2.84	-1.19	1.42	10	0	T	0	7.0	---	30	SW	19	12	9	10	5.3	63
San Francisco	8	1018.6	1019.4	53	39	46.0	-1.9	59	11+	32	10	0	1	39	78	3.36	-.11	1.69	10	0	T	0	7.1	WNW	44	SW	13	11	9	11	5.4	--
Santa Maria	238	1009.8	1018.7	58	35	46.6	-3.8	71	17	26	28	0	9	39	75	2.13	-.58	.70	10	0	T	0	6.3	WNW	*26	WNW	25+	11	8	12	5.7	--
COLORADO																																
Alamosa	7536	768.4	1020.0	36	8	22.2	5.3	49	14	-9	23	0	30	--	--	.52	.29	.22	7	0	3.6	1	----	---	--	---	--	9	8	14	5.9	--
Colorado Springs	6173	807.3	1019.4	40	11	25.9	-2.9	62	7	-3	16	0	31	11	60	.45	.23	.16	10	0	8.7	3	9.5	NNE	*38	SW	20	12	8	11	5.3	--
Denver	5292	835.1	1018.0	38	13	25.8	-2.9	59	20	-5	29	0	31	11	59	.32	-.18	.10	9	0	5.3	2	11.2	S	36	W	9	9	12	10	5.3	67
Grand Junction	4849	859.8	1021.5	33	17	25.0	1.0	43	14	0	30	0	30	19	78	2.46	1.86	.52	16	0	33.7	16	5.6	E	34	SW	9	7	6	18	6.8	55
Pueblo	4639	855.4	1019.4	43	13	28.3	-1.1	64	13	-3	25	0	31	13	59	.19	-.19	.06	9	0	5.3	1	7.7	WNW	35	W	9	9	9	13	5.6	79
CONNECTICUT																																
Bridgeport	7	1021.1	------	33	18	25.3	-3.9	54	23	-5	15	0	30	--	--	1.25	-2.18	.35	10	0	9.6	3	----	---	--	---	--	9	10	12	6.0	--
Hartford	169	1014.8	1021.0	31	11	20.8	-4.6	56	23	-17	18	0	29	8	58	1.91	-1.92	.54	13	0	18.3	7	11.5	NW	37	NNW	23	10	7	14	5.9	48
Middletown (U)	133	1015.7	------	30	10	20.2	---	55	23	-15	18	0	29	--	--	2.24	----	1.19	11	0	14.4	7	9.6	---	%57	NW	23	--	--	--	---	--
New Haven	6	1020.4	1021.0	32	16	24.3	-4.8	50	23	-6	15	0	29	--	--	2.37	-1.52	.85	14	0	13.5	5	7.1	---	23	W	23	10	8	13	6.2	57
DELAWARE																																
Wilmington	78	1019.0	1022.4	36	21	28.6	-4.7	62	23	-4	18	0	30	20	72	2.30	-1.26	.83	15	0	6.5	3	9.8	NNW	--	---	--	4	10	17	7.4	--
DIST. OF COLUMBIA																																
Washington (U)	72	------	------	40	26	33.0	-3.5	63	23	9	18	0	23	--	--	2.70	-.71	.53	15	--	9.8	3	7.4	---	41	NW	10	--	--	--	---	--
Wash. Nat'l. AP	14	1018.6	1023.2	40	26	32.9	-3.3	64	23	8	18	0	24	22	66	2.61	-.63	.48	14	0	10.1	3	8.5	S	56	NW	23	5	5	21	7.5	45
FLORIDA																																
Apalachicola (U)	13	1021.6	------	67	52	59.4	4.2	79	23	31	18	0	1	--	--	.04	-3.57	.02	3	0	.0	0	7.9	---	25	N	2+	9	11	11	5.6	57
Daytona Beach	31	1022.1	1023.7	74	52	63.1	3.6	85	29+	32	18	0	1	55	80	.97	-1.13	.81	5	0	.0	0	10.0	SW	*23	WSW	10+	7	13	11	6.0	--
Fort Myers	15	1022.5	------	78	53	65.9	1.3	86	30	38	19	0	0	--	--	.78	-.74	.78	2	1	.0	0	7.1	---	*22	NE	18+	10	16	5	4.8	--
Jacksonville (U)	24	1022.5	1023.9	70	50	60.3	4.4	84	29	28	18	0	2	50	75	.33	-2.35	.17	4	0	T	0	9.9	SW	29	N	11	4	12	15	7.0	53
Key West (U)	9	1020.9	------	80	66	72.7	1.9	86	31	54	1	0	0	--	--	.35	-1.19	.34	3	0	.0	0	7.6	---	24	NE	18	17	12	2	3.8	85
Lakeland (U)	214	------	------	75	56	65.3	3.3	84	28+	35	18+	0	0	--	--	2.24	.08	1.99	5	0	.0	0	6.5	---	--	---	--	10	14	7	5.3	52
Miami (U)	8	------	------	76	63	69.5	1.0	81	11	48	19	0	0	--	--	.08	-2.07	.07	3	0	.0	0	11.5	---	37	NE	19	22	6	3	2.8	84
Miami	8	1021.3	1022.5	79	61	70.1	1.8	83	10+	47	19	0	0	60	75	.08	-1.98	.08	2	0	.0	0	10.3	SE	23	N	18+	14	13	4	4.4	--
Miami Beach	9	------	------	77	65	70.9	.9	81	12	51	1	0	0	--	--	.04	-2.00	.03	2	0	.0	0	----	---	--	---	--	18	10	3	---	--
Orlando	106	1018.9	1023.5	76	54	64.7	2.8	84	28+	34	18	0	0	56	79	.91	-1.14	.59	4	0	.0	0	9.0	NNE	*25	SE	20	11	10	10	5.6	--
Pensacola (U)	13	1020.9	------	66	50	57.9	3.9	78	10	27	18	0	2	--	--	.72	-3.83	.19	11	0	.0	0	11.1	---	20	W	15	--	--	--	---	34
Tallahassee	64	1020.6	1023.4	69	47	58.4	4.8	83	30	22	18	0	3	49	77	.21	-3.64	.10	5	0	T	T	6.8	S	--	---	--	6	11	14	6.7	--
Tampa	19	1022.2	1023.7	75	55	64.8	3.3	83	28	35	19	0	0	56	80	1.53	-.46	1.31	7	0	.0	0	8.2	S	*26	NW	1	10	14	7	5.1	67
West Palm Beach	15	1021.4	1022.4	78	59	68.8	1.8	84	15	49	9+	0	0	60	79	6.38	3.90	6.36	3	1	.0	0	10.5	SE	*29	ENE	19+	15	10	6	4.4	--
GEORGIA																																
Athens	798	993.3	1023.2	55	36	45.5	.8	76	29	17	18	0	12	36	74	5.05	.04	1.45	16	2	T	T	9.7	SW	*29	SW	31	5	8	18	7.3	--
Atlanta	975	981.1	1024.1	54	38	45.9	1.3	75	29+	16	17	0	9	38	75	5.35	.68	1.47	16	2	T	0	13.3	NW	*40	WNW	29	3	8	20	7.6	36
Augusta	143	1016.4	1023.3	60	38	49.2	1.8	80	29+	16	19	0	10	40	74	2.33	-1.13	.85	12	0	T	T	7.5	W	*23	SSW	10	4	5	22	8.0	--
Columbus	385	1009.0	------	60	41	50.4	3.0	81	29	16	18	0	7	--	--	3.05	-1.53	.80	12	0	.0	0	----	---	--	---	--	6	5	20	7.5	--
Dawsonville (U)	1110	------	------	--	--	----	---	--	--	--	--	--	--	--	--	6.96	----	1.70	15	1	T	0	----	---	--	---	--	--	--	--	---	--
Macon	356	1009.3	1023.3	61	40	50.4	.9	81	29	20	19	0	7	40	72	1.79	-2.22	.50	11	0	T	0	9.7	WNW	34	SW	29	4	11	16	7.1	58
Rome	637	999.8	------	54	34	43.7	1.0	74	29	12	19	0	14	--	--	7.33	1.78	2.40	15	4	T	0	----	---	--	---	--	4	4	23	7.8	--
Savannah	48	1020.8	1023.5	64	42	52.9	1.3	84	29	17	19	0	7	44	76	.51	-1.94	.21	6	0	.0	0	9.5	SW	27	W	10	5	6	20	7.2	45
Thomasville (U)	283	------	------	69	48	58.3	4.1	84	30	23	18	0	4	--	--	.52	-3.49	.16	10	0	T	0	----	---	--	---	--	--	--	--	---	--
IDAHO																																
Boise	2842	923.1	1023.3	30	13	21.5	-5.8	45	11	-9	27+	0	31	15	79	1.04	-.29	.45	12	0	12.4	5	6.7	SE	34	SE	20	6	9	16	7.0	53
Idaho Falls 46W (R)	4933	848.0	1025.4	23	-9	7.1	-8.6	38	12	-29	28	0	31	--	--	1.15	.49	.63	10	0	18.1	11	4.9	---	a34	W	20	--	--	--	---	--
Idaho Falls 42NW (R)	4790	------	------	20	-14	3.3	-9.0	36	1	-30	24+	0	31	--	--	.76	.23	.37	10	--	----	--	4.9	---	a32	NNW	15	--	--	--	---	--
Lewiston	1413	969.9	1024.0	25	12	18.3	-12.5	44	11	-20	27	0	30	--	--	1.56	.51	.42	15	0	26.1	16	----	---	--	---	--	6	2	23	8.1	--
Pocatello	4444	862.9	1023.4	27	4	15.9	-6.1	42	12	-17	30	0	31	10	78	.71	-.50	.17	9	0	10.9	6	9.3	SW	37	SW	31	7	11	13	6.4	55
ILLINOIS																																
Cairo (U)	314	1010.5	------	40	26	33.0	-4.4	69	9	9	16	0	26	--	--	5.49	1.01	2.92	13	1	T	T	9.1	---	34	SW	20	6	6	19	7.3	33
Chicago	610	999.3	1023.5	27	11	18.8	-6.1	55	21	-7	14+	0	29	13	76	2.06	.22	1.00	15	0	12.9	7	10.3	SW	34	SW	21	8	8	15	6.5	51
Moline	589	1000.3	1023.8	26	7	16.6	-6.6	64	21	-19	14	0	29	10	74	1.33	-.17	.49	14	0	11.8	7	10.9	WNW	40	SW	21	10	7	14	6.3	45
Peoria	654	1000.3	1024.0	27	10	18.6	-6.4	62	21	-14	14	0	29	13	76	1.70	-.27	1.00	12	2	10.0	4	11.0	S	30	SW	3+	7	8	16	6.8	36
Springfield	589	1000.3	1024.7	30	14	22.0	-5.4	61	21	-14	14	0	29	17	77	1.59	-.44	.96	11	0	5.7	2	12.1	NNW	34	S	21	5	8	18	7.4	37
INDIANA																																
Evansville	383	1006.8	1024.3	37	22	29.8	-4.9	63	21	3	14	0	28	22	74	4.18	.25	2.69	11	0	1.8	1	9.4	N	42	SW	20	7	2	22	7.6	31
Fort Wayne	801	989.8	1022.8	27	12	19.6	-6.7	53	22	-9	16	0	29	15	79	1.84	-.70	.91	16	0	11.7	5	11.7	W	34	S	21+	4	5	22	8.0	39
Indianapolis	793	992.6	1023.9	31	16	23.5	-5.3	56	21+	-7	14	0	28	19	78	2.98	-.17	1.73	14	0	7.6	2	10.9	NW	35	W	17+	8	3	20	7.3	37

See footnotes at end of table.

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure		Temperature											Average relative humidity	Precipitation							Wind					No. of days (sunrise to sunset)			Sky cover, tenths (sunrise to sunset)	Possible sunshine
												No. of days							No. of days		Snow, Sleet				Fastest mile							
		Station ø	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F. or above	Min. 32° F. or below	Average dew point		Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max. depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy		
	Ft.	Mb.	Mb.	°F.	°F	°F.	°F.	°F.		°F.				°F.	%	In.	In.	In.			In.	In.	M. p. h.		M. p. h.			0–3	4–7	8–10	0–10	%
INDIANA (Cont'd.)																																
South Bend	768	992.9	1022.5	27	12	19.4	-5.2	56	22	-8	16	0	29	14	78	2.52	0.52	0.94	20	1	25.4	8	12.0	SSW	•28	N	22	2	6	23	8.4	--
IOWA																																
Burlington	694	997.3	1024.8	27	8	17.7	-6.3	67	21	-24	14	0	29	11	73	1.88	.14	.79	10	1	14.6	8	9.8	NW	34	NW	17	7	7	17	6.7	52
Des Moines	948	991.2	1024.5	25	7	15.8	-6.3	54	21	-18	14	0	31	10	77	.79	-.44	.42	10	0	13.1	9	12.5	NNW	37	SW	19	7	8	16	7.0	51
Dubuque	1065	996.3	1022.9	21	3	12.4	-7.0	50	21	-15	26	0	29	6	75	.85	-.52	.45	11	1	12.9	7	----	---	--	---	--	9	8	14	6.3	--
Sioux City	1094	980.0	1024.3	24	3	13.4	-5.7	41	2+	-20	14	0	31	4	67	.33	-.41	.18	7	0	5.5	4	14.0	NNW	42	S	2+	9	9	13	6.0	71
Waterloo	870	------	------	22	2	12.0	-6.7	47	21	-19	26	0	30	--	--	.42	-.74	.19	7	0	9.6	5	12.0	---	--	---	--	--	--	--	---	--
KANSAS																																
Concordia (U)	1375	971.6	------	30	13	21.3	-6.8	49	3+	-4	25	0	31	--	65	.51	-.08	.21	7	0	7.9	4	8.0	---	30	NW	17	9	6	16	6.6	64
Dodge City	2594	927.2	1022.1	36	15	25.0	-5.3	60	21	-6	25	0	31	15	68	.25	-.24	.15	5	0	3.1	2	14.2	S	43	SW	2	6	6	19	7.2	45
Goodland	3645	888.6	1021.1	35	7	20.7	-5.1	54	12	-11	25	0	31	12	73	.13	-.18	.04	5	0	4.4	1	10.6	WSW	•32	NNW	17	7	7	17	6.5	--
Topeka	879	986.8	1024.8	33	14	23.1	-5.6	69	21	-6	23	0	31	14	70	.35	-.72	.10	9	0	4.9	3	10.8	N	40	S	19+	4	8	19	7.3	42
Wichita	1321	972.2	1023.2	35	18	26.4	-5.6	68	21	3	25	0	29	17	70	.19	-.86	.04	8	0	2.3	1	13.8	N	36	N	22	5	5	21	7.6	39
KENTUCKY																																
Lexington	978	986.5	1023.7	39	23	31.4	-2.5	63	21	0	17	0	27	25	79	4.45	-.05	1.41	15	0	1.3	T	10.9	S	--	---	--	7	4	20	7.4	--
Louisville	485	1003.5	1023.5	39	25	32.0	-2.9	66	21	3	17	0	27	24	73	2.83	-1.27	.94	16	0	3.2	1	10.5	N	35	S	20+	7	2	22	7.4	37
LOUISIANA																																
Baton Rouge	64	1020.0	1022.8	67	48	57.7	5.3	82	28+	26	17+	0	5	50	76	1.88	-3.61	.60	9	1	.0	0	10.9	N	--	---	--	2	7	22	8.3	--
Lake Charles	12	1020.7	1020.6	65	49	57.0	4.4	78	31	26	17	0	2	51	84	.96	-3.86	.68	11	0	.0	0	8.6	NE	•23	SW	9+	1	6	24	8.7	--
New Orleans (U)	9	1020.3	------	68	52	60.2	4.3	83	30	30	17	0	1	--	--	1.40	-3.38	.64	9	0	T	T	7.0	---	20	NW	10	4	11	16	7.1	40
New Orleans	3	1020.3	1022.6	69	51	60.0	5.1	83	31	26	18	0	2	53	80	1.55	-3.13	.46	14	0	.0	0	9.7	SSW	•37	NW	22	3	11	17	7.2	--
Shreveport	252	1012.9	1022.5	55	39	47.4	-.4	81	9	16	17	0	6	39	76	5.07	.35	1.48	13	4	T	T	10.4	SSE	--	---	--	3	4	24	8.5	28
MAINE																																
Caribou	624	992.6	1017.7	11	-9	1.3	-7.4	42	22+	-31	14	0	30	9	62	.98	-1.26	.40	13	0	14.0	24	11.0	NW	•48	NW	23	5	9	17	6.7	--
Portland	61	1015.4	1019.4	26	1	13.9	-6.8	53	23	-20	18	0	29	4	64	2.07	-2.36	.65	8	0	35.3	20	8.9	WSW	32	N	10	12	8	11	5.5	55
MARYLAND																																
Baltimore (U)	14	------	------	40	26	33.0	-3.6	67	23	7	18	0	22	--	--	1.92	-1.74	.37	15	--	----	--	----	---	--	---	--	--	--	--	---	--
Baltimore	146	1018.0	1023.1	39	22	30.3	-3.9	66	23	-4	18	0	28	24	77	2.28	-1.38	.38	15	0	10.7	6	8.3	NW	60	NW	23	4	8	19	7.3	47
Frederick	294	------	------	38	20	28.7	-4.0	63	23	-10	18	0	29	--	--	2.30	-.58	.75	15	0	9.5	4	----	---	--	---	--	--	--	--	---	--
MASSACHUSETTS																																
Blue Hill Obs.(R)	629	995.1	1019.7	28	12	20.4	-5.5	54	23	-16	15	0	30	--	68	2.95	-1.14	.90	12	0	24.6	18	16.6	WNW	50	NW	23	12	7	12	5.5	50
Boston	15	1014.9	1019.7	32	15	23.4	-5.7	58	23	-12	15	0	29	13	64	2.47	-1.03	.74	10	0	20.6	12	17.9	W	•51	WNW	23	14	4	13	5.3	62
Nantucket	43	1019.4	1019.9	34	20	27.2	-4.9	50	23	6	15	0	29	20	73	2.97	-.90	.73	14	0	8.9	6	13.0	NW	42	NW	10+	5	8	18	6.9	41
Pittsfield	1153	973.8	------	27	5	15.8	-5.4	57	23	-22	15	0	29	--	--	1.67	-1.43	.50	13	0	17.7	11	----	---	--	---	--	--	--	--	---	--
Worcester	986	980.9	------	26	8	16.8	-7.2	54	23	-19	15	0	30	--	--	1.63	-1.70	.71	8	0	21.7	11	15.1	---	•44	WNW	23	12	6	13	5.6	--
MICHIGAN																																
Alpena (U)	587	996.3	------	24	10	16.7	-4.5	47	21+	-5	30	0	30	--	--	1.07	-.59	.48	16	0	9.9	5	11.0	---	33	NW	22	5	10	16	7.0	36
Detroit	619	994.2	1022.2	27	15	21.1	-5.1	52	22	-3	17	0	30	11	66	1.99	-.09	.74	15	0	17.9	9	11.5	W	31	N	22	5	5	21	7.7	41
Detroit (Willow Run)	722	991.5	1021.5	27	13	19.8	-5.5	53	22	-6	16+	0	30	14	76	1.81	.01	.79	12	0	15.5	7	11.0	SW	•32	W	4	5	5	21	7.5	--
East Lansing (U)	856	------	------	28	13	20.1	-3.7	54	21+	-5	17	0	30	--	--	1.98	.11	.88	18	0	14.4	5	6.1	---	17	W	4	--	--	--	---	38
Escanaba (U)	594	995.3	------	20	5	12.4	-5.1	41	20	-11	14	0	31	--	--	.47	-1.06	.21	8	0	4.8	8	10.1	---	26	NW	4+	11	4	16	5.8	56
Flint	761	991.5	1021.4	26	10	17.6	-5.6	53	21+	-5	16	0	30	12	75	1.82	.24	.89	12	1	11.8	5	12.5	SSW	•31	S	21	5	6	20	7.4	--
Grand Rapids	681	994.9	1021.5	27	13	19.7	-3.8	51	21+	-3	17	0	30	15	80	2.19	.29	.92	23	1	25.4	9	11.8	S	32	NW	4+	0	8	23	8.7	45
Marquette (U)	677	990.5	------	20	6	13.0	-5.7	40	20	-9	16	0	31	--	65	.57	-1.60	.12	15	0	13.4	18	9.7	---	37	S	3	6	8	17	6.9	50
Muskegon	627	997.0	1021.7	27	16	21.5	-3.4	47	21	4	16	0	30	15	75	2.07	.12	.62	23	0	25.3	8	----	---	--	---	--	0	5	26	9.1	--
Sault Ste. Marie	721	995.3	1019.3	18	-2	8.4	-5.4	42	21	-22	13	0	31	6	86	1.44	-.72	.42	19	0	22.0	22	10.6	WSW	26	NW	9	3	11	17	7.6	39
MINNESOTA																																
Duluth	1409	977.3	1021.0	11	-9	1.2	-7.1	33	19+	25	13	0	31	-8	65	.19	-1.04	.08	6	0	4.6	14	13.7	NW	42	SW	27	7	13	11	6.1	62
Intern'l. Falls	1179	977.0	1021.5	7	-18	-5.3	-8.3	30	19	-37	24+	0	31	-16	55	.62	-.27	.38	9	0	6.5	11	12.0	SW	--	---	--	11	5	15	5.7	--
Minneapolis	830	987.5	1023.6	20	0	10.1	-4.5	39	21	-13	30	0	31	2	69	.32	-.48	.12	9	0	4.9	2	11.9	NW	33	SW	19	9	9	13	5.7	62
Rochester	1017	983.4	1023.1	20	0	10.0	-4.3	43	21	-19	30	0	31	4	73	.18	-.75	.12	6	0	2.0	1	11.8	WNW	--	---	--	9	11	11	5.8	--
St. Cloud	1034	981.7	1022.6	16	-6	4.9	-5.6	36	19	-20	29+	0	31	-5	62	.40	-.35	.16	10	0	3.8	2	9.3	WNW	--	---	--	9	7	15	6.0	--
MISSISSIPPI																																
Jackson	305	1010.9	1023.1	60	39	49.5	1.2	80	9+	16	17	0	8	41	77	3.85	-1.24	1.91	15	1	.0	0	9.2	SSE	31	SW	4	4	3	24	8.3	25
Meridian	294	1009.3	------	61	40	50.7	3.2	82	29+	15	19	0	9	--	--	3.26	-1.83	1.69	13	1	.0	0	----	---	--	---	--	3	8	20	7.6	--
Vicksburg (U)	234	1013.5	------	58	41	49.1	-.1	77	28+	19	17	0	8	--	--	3.75	-1.69	1.64	15	2	.0	0	9.2	---	31	NW	22	3	3	25	8.6	21
MISSOURI																																
Columbia	778	994.2	1024.0	34	17	25.3	-4.5	73	21	-1	14	0	28	18	73	1.07	-.73	.79	9	1	3.4	2	10.0	SSE	38	NW	17	6	4	21	7.5	31
Kansas City	741	988.2	1024.8	34	18	25.6	-4.4	71	21	3	10+	0	29	17	71	1.31	-.12	.90	11	1	6.9	4	10.4	N	42	SW	21	5	8	18	7.1	30
St. Joseph	809	------	------	31	13	21.9	-5.2	62	21	-6	30	0	31	--	--	.63	-.52	.30	7	0	7.2	4	7.2	---	•44	SSW	19	6	7	18	7.0	--
St. Louis (U)	465	1002.7	------	36	20	28.0	-5.3	63	21	2	14	0	28	--	--	1.08	-1.24	.72	10	0	2.6	1	10.9	---	46	SW	20	4	5	22	7.8	30
St. Louis	552	1002.7	1024.2	35	19	26.9	-5.3	66	21	0	14	0	29	19	72	.97	-.95	.50	10	0	2.7	2	9.1	NNW	--	---	--	2	8	21	7.9	--
Springfield	1265	972.9	1023.1	38	20	29.1	-3.6	71	21	2	16	0	27	23	80	1.48	-.83	.69	12	2	4.6	2	13.6	S	45	SW	21	3	5	23	8.0	39
MONTANA																																
Billings	3568	892.7	1023.3	21	2	11.2	-11.7	47	2	-28	25	0	31	1	65	.82	.29	.29	10	0	9.0	3	12.6	SW	42	NW	6	9	6	16	5.9	70
Glasgow (U)	2277	945.1	1024.8	10	-9	.5	-10.0	35	7	-34	24	0	31	-3	82	.48	.08	.14	9	0	7.6	6	8.6	NW	•32	NW	7+	6	7	18	7.2	--
Butte	5530	826.6	1024.8	20	-9	5.4	-8.8	41	1	-41	26	0	31	-1	--	.49	-.10	.27	12	0	10.2	9	4.1	SSE	•26	SSE	8	6	9	16	6.7	--
Great Falls	3664	889.6	1023.6	16	0	7.9	-14.8	47	1	-31	25	0	30	0	71	1.80	1.25	.38	20	0	20.7	9	15.5	SW	47	SW	6	8	5	18	6.8	68
Havre	2488	930.2	1025.7	13	-7	3.0	-13.2	37	7	-37	25	0	31	1	77	.92	.46	.36	16	0	14.8	11	8.1	---	30	SW	29	5	4	22	7.6	40
Helena	3893	874.4	1027.0	13	-10	1.7	-15.9	38	1+	-42	25	0	31	-5	74	.95	.44	.32	13	0	18.7	10	5.8	NW	33	SE	7	5	7	19	7.2	49
Kalispell	2965	------	------	18	1	9.6	-10.7	36	7	-28	26	0	31	--	--	1.12	-.20	.49	12	0	24.3	18	----	---	--	---	--	6	3	22	7.4	--
Miles City	2629	935.0	1024.4	17	-4	6.3	-9.8	47	2	-37	25	0	31	-2	--	.58	.11	.26	11	0	5.6	7	10.0	NW	•37	WSW	16	8	7	16	6.6	--
Missoula	3200	904.5	1025.5	19	2	10.5	-8.9	39	12	-33	26	0	31	5	77	1.12	.31	.32	18	0	19.9	10	4.2	E	34	E	8	6	3	22	7.6	40
NEBRASKA																																
Grand Island	1841	953.6	1023.6	27	7	17.1	-5.9	47	20	-14	10	0	31	6	65	.30	-.28	.30	1	0	3.7	4	12.9	N	--	---	--	8	8	15	6.6	--
Lincoln (U)	1166	------	------	28	11	19.7	-5.3	47	3+	-5	10	0	31	--	--	.44	-.38	.34	5	0	5.1	4	11.1	---	58	S	19	9	8	14	6.2	59
Norfolk	1544	964.4	1023.5	25	3	14.0	-5.3	45	7	-17	14	0	31	5	64	.17	-.62	.15	2	0	2.3	2	----	---	--	---	--	9	9	13	6.1	--
North Platte	2779	918.1	1022.7	28	4	16.1	-7.9	52	7	-14	10+	0	31	6	66	.14	-.25	.06	6	0	2.8	1	8.5	N	42	NW	17	7	9	15	6.7	59
Omaha	978	982.1	1024.7	26	9	17.6	-5.4	44	6+	-10	14	0	31	8	67	.38	-.47	.28	3	0	6.8	5	12.4	SSE	37	S	2	10	5	16	6.3	52
Omaha,N.Omaha AP	1323	972.9	------	24	6	14.8	-5.8	42	6+	-13	10+	0	31	--	--	.35	-.50	.27	2	0	7.5	6	----	---	--	---	--	--	--	--	---	--
Scottsbluff	3950	878.4	1021.2	33	5	19.0	-4.5	52	2	-19	16	0	31	8	63	.19	-.14	.09	4	0	4.9	3	10.5	NW	•35	NW	17	9	7	15	5.9	--
Valentine (U)	2587	925.2	------	24	-3	11.0	-9.0	55	2	-24	25	0	31	--	--	.10	-.46	.09	2	0	6.4	6	10.3	---	42	NW	16	10	6	15	5.8	67
NEVADA																																
Elko	5075	844.2	1021.7	31	3	16.9	-5.0	48	13	-23	30	0	31	11	74	.89	-.18	.29	10	1	9.3	6	3.4	ENE	•21	WNW	8	9	8	14	6.1	--
Ely	6257	806.3	1020.4	34	4	18.7	-4.3	52	1	-25	29	0	30	11	69	1.01	.07	.39	13	1	18.5	7	11.6	S	43	S	20	9	8	14	5.9	61
Las Vegas	2162	950.9	1017.5	54	33	43.6	-.6	67	13	24	29	0	16	24	48	.26	-.18	.20	5	0	1.0	1	9.3	SW	•43	SSW	8	13	6	12	5.3	56
Reno	4397	861.2	1019.9	39	13	25.8	-5.4	53	2	-3	9	0	31	16	68	1.20	.16	.77	7	0	4.4	1	5.2	SSW	52	SSE	19	15	5	11	5.0	77
Winnemucca	4299	868.3	1021.3	36	8	21.7	-6.1	53	1	-19	29+	0	31	15	72	.91	-.05	.29	6	0	12.2	5	7.1	NE	36	W	8	9	8	14	6.1	47

See footnotes at end of table.

State and station	Elevation (ground)	Pressure		Temperature											Average relative humidity	Precipitation							Wind					No. of days (sunrise to sunset)			Sky cover, tenths (sunrise to sunset)	Possible sunshine
												No. of days							No. of days		Snow, Sleet				Fastest mile							
		Station ø	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F. or above	Min. 32° F. or below	Average dew point		Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max. depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy		
	Ft.	Mb.	Mb.	°F	°F	°F.	°F.	°F.		°F.				°F.	%	In.	In.	In.			In.	In.	M. p. h		M. p. h.			0–3	4–7	8–10	0–10	%
NEW HAMPSHIRE																																
Concord	339	1006.7	1018.6	28	-1	13.5	-6.6	56	22	-30	18	0	30	6	71	1.65	-1.26	0.45	9	0	20.5	23	7.7	NW	37	NW	23	13	8	10	5.1	62
Mt. Washington	6262	794.0	------	5	-11	-2.9	-8.3	38	23	-37	14	0	31	--	90	3.46	-1.64	.66	19	0	31.8	10	44.0	W	%104	WNW	11	3	6	22	8.3	31
NEW JERSEY																																
Atlantic City(U)	8	1019.9	------	38	26	31.9	-3.9	57	23	7	15	0	22	--	--	1.86	-1.92	.45	12	0	7.9	4	14.2	---	47	NW	10	6	5	20	7.1	43
Newark	11	1020.7	1022.0	36	21	28.0	-3.5	62	23	0	15	0	29	20	70	1.77	-1.83	.58	13	0	7.8	4	9.5	WNW	*35	NNW	23	8	7	16	6.5	--
Trenton (U)	56	1014.7	------	36	22	28.8	-3.8	62	23	2	15	0	28	--	--	1.87	-1.29	.78	15	1	5.6	2	9.1	---	35	NE	10	6	10	15	6.8	48
NEW MEXICO																																
Albuquerque	5310	848.3	1016.8	49	30	39.9	6.2	63	14	18	17+	0	19	24	56	.78	.50	.55	4	0	1.5	T	7.2	N	38	W	9	6	10	15	6.5	49
Clayton	4969	843.9	1017.3	47	18	32.2	-.7	67	8	1	16+	0	30	--	--	.20	-.07	.19	2	0	2.4	2	----	---	--	---	--	7	10	14	6.4	--
Raton	6379	802.9	1017.3	47	13	30.0	3.8	62	7	-2	17	0	30	--	--	.12	-.30	.09	4	0	1.3	1	----	---	--	---	--	9	9	13	5.8	--
Roswell	3612	894.3	1018.0	56	27	41.6	2.0	77	13	6	18	0	24	21	54	.09	-.33	.09	1	0	.0	0	8.2	---	52	SW	28	7	8	16	6.8	--
NEW YORK																																
Albany	277	1017.3	1021.1	27	5	16.1	-6.4	55	23	-24	14	0	29	10	75	1.16	-1.11	.39	13	0	16.7	7	8.3	S	49	W	23	5	11	15	6.5	50
Binghamton	1601	958.1	1019.9	26	9	17.3	-4.4	53	23	-20	15	0	30	11	76	1.74	-.64	.51	20	0	24.6	8	11.2	NW	57	NW	23	0	7	24	8.4	30
Buffalo	693	991.3	1021.2	27	14	20.6	-4.9	56	22	-12	15	0	29	14	73	4.92	2.14	2.40	21	0	36.6	19	14.8	WSW	42	SE	20	2	6	23	8.3	44
New York (U)	10	1020.3	------	36	22	29.2	-3.7	60	23	3	15	0	28	--	--	1.86	-1.60	.58	13	0	6.3	3	14.9	---	71	NW	23	9	9	13	5.9	62
New York	19	1020.0	1021.7	35	23	29.1	-3.9	62	23	0	15	0	26	18	63	1.86	-1.33	.57	13	0	8.1	3	13.7	WNW	56	NW	23	5	12	14	6.5	--
Rochester	543	1000.8	1021.2	27	12	19.4	-5.3	54	22	-16	15	0	29	15	82	2.62	.26	1.10	15	0	25.6	10	13.4	WSW	33	SW	4	2	9	20	8.0	44
Schenectady	217	------	------	29	8	18.5	-3.0	54	23	-19	18	0	29	--	--	1.02	-1.40	.30	11	0	19.9	10	----	---	--	---	--	17	6	8	---	--
Syracuse	424	998.6	1021.9	28	9	18.8	-6.7	57	22	-24	15	0	29	10	70	2.19	-.60	.60	19	0	25.2	15	9.3	WSW	42	NW	14	3	7	21	8.0	30
NORTH CAROLINA																																
Asheville (U)	2203	------	------	48	32	39.8	.5	72	29	13	2+	0	17	--	--	4.02	1.04	2.07	13	0	.8	T	9.8	---	35	NW	10	3	3	25	8.3	27
Charlotte	725	994.3	1023.3	53	35	44.2	1.9	74	29	16	18	0	12	35	71	2.73	-.95	1.01	14	0	T	T	9.1	SW	54	N	10	4	2	25	8.0	39
Greensboro	891	990.5	1023.6	49	29	39.1	.1	75	29	10	18	0	20	29	70	5.09	1.72	2.38	14	1	.4	T	8.1	SW	34	NW	10	3	7	21	7.8	49
Hatteras (R)	4	1021.9	1022.5	51	39	45.3	-2.7	67	28+	24	18	0	6	39	79	2.60	-1.50	.84	17	0	T	0	14.9	NNE	40	SW	29	4	5	22	7.9	37
Raleigh	433	1009.0	1023.2	51	31	40.7	-.7	77	29	12	18	0	18	32	74	2.82	-.52	1.36	12	1	T	T	8.7	N	*26	W	10	3	4	24	7.9	40
Wilmington	30	1022.0	------	56	37	46.4	-1.4	79	10	18	19	0	12	--	--	2.32	-.80	.76	12	0	T	T	11.1	---	37	NE	14	4	9	18	7.5	48
Winston-Salem	967	986.7	1023.1	49	31	39.8	.5	75	29	12	18	0	19	29	69	4.66	.97	1.91	16	0	1.0	1	8.2	SW	*32	WNW	10	5	4	22	7.7	--
NORTH DAKOTA																																
Bismarck	1650	959.0	1024.3	13	-10	1.0	-7.3	33	6+	-35	29	0	31	-4	75	.43	.07	.12	12	0	6.5	3	11.5	WNW	42	W	6	9	5	17	6.6	68
Devils Lake (U)	1471	965.5	------	10	-9	.8	-4.0	32	19	-27	29	0	31	--	--	.40	.00	.20	8	0	4.0	4	9.2	---	29	NW	16	6	5	20	7.3	57
Fargo	895	986.8	1024.1	12	-7	2.5	-4.6	36	19	-27	29	0	31	-4	71	.31	-.29	.16	8	0	3.3	2	15.4	N	42	NW	17	8	6	17	6.8	57
Williston (U)	1877	951.2	1024.0	11	-7	1.7	-8.3	32	7	-32	24	0	31	-6	63	.60	.11	.18	12	0	7.1	5	7.0	---	29	NW	16	4	8	19	7.3	45
OHIO																																
Akron	1210	983.3	1023.1	28	15	21.5	-5.9	53	22	-8	17	0	29	15	76	1.87	-.87	.75	19	0	9.3	6	12.3	S	--	---	--	1	4	26	8.8	--
Cicinnati Obs.	761	------	------	35	22	28.6	-4.5	63	21	2	17	0	27	--	--	3.21	-.23	1.12	16	1	5.5	2	6.3	---	19	SW	17+	--	--	--	---	43
Cincinnati	869	989.9	1023.2	35	20	27.8	-4.0	62	21	-5	17	0	27	20	73	3.08	-.32	1.12	15	1	5.8	2	9.6	SSW	*29	SW	20+	4	5	22	7.9	--
Cleveland (U)	663	------	------	30	19	24.6	-4.9	57	21	-4	17	0	30	--	--	----	----	----	--	--	----	--	----	---	--	---	--	--	--	--	---	--
Cleveland	787	992.9	1022.2	30	16	23.0	-5.5	54	21+	-7	17	0	30	19	83	2.03	-.35	.62	18	0	12.8	8	14.7	S	35	NE	10+	1	1	29	9.3	13
Columbus (U)	724	------	------	33	20	26.6	-4.5	57	21	-2	17	0	28	--	--	1.67	-1.14	.65	14	--	9.1	4	----	---	--	---	--	--	--	--	---	--
Columbus	815	992.3	1023.7	33	18	25.8	-3.9	57	21	-7	17	0	29	20	77	1.94	-1.00	.56	18	0	10.2	5	9.0	SSE	35	NW	23	3	4	24	8.4	28
Dayton	1002	985.4	1023.4	31	17	23.9	-5.8	57	21	-6	16+	0	28	17	74	1.80	-1.16	.88	16	0	9.0	3	11.3	NW	36	NW	23	5	5	21	8.0	39
Sandusky (U)	603	998.8	------	29	16	22.3	-6.5	56	21+	-8	17	0	30	--	--	2.78	.49	1.15	16	1	17.7	10	8.6	---	36	NE	10	4	8	19	7.5	37
Toledo	767	996.1	1022.8	27	13	20.1	-6.3	54	22	-8	16	0	30	16	80	1.66	-.59	.60	18	0	13.2	7	10.4	WSW	38	SW	20	5	4	22	7.8	30
Youngstown	1178	978.0	1022.6	29	14	21.6	-5.9	54	22	-12	17	0	29	17	81	2.15	-1.17	.62	22	0	17.1	6	11.7	SSW	*28	WSW	18	1	2	28	9.1	--
OKLAHOMA																																
Oklahoma City	1280	977.3	1022.7	42	25	33.2	-3.9	68	21	9	10	0	23	27	82	1.49	-.01	.67	8	2	T	T	14.1	N	40	SW	21+	4	4	23	8.1	29
Tulsa	672	997.6	1023.0	43	25	34.0	-3.4	75	21	11	10+	0	24	26	77	1.60	-.38	.76	12	2	1.3	1	12.0	NNE	*35	NNE	16	5	5	21	8.0	42
OREGON																																
Astoria	8	1018.6	1019.2	42	29	35.9	-4.2	50	11+	15	27	0	22	30	81	4.76	-5.90	.83	19	0	4.2	1	6.6	E	*29	S	11	7	3	21	6.9	--
Burns (U)	4140	872.7	1021.0	29	7	18.2	-5.7	42	31	-25	27	0	31	11	72	1.37	-.10	.62	12	0	17.5	9	----	---	--	---	--	7	9	15	6.2	--
Eugene	361	1006.4	1020.6	39	26	32.1	-6.1	52	11	-4	27	0	19	--	--	2.98	-2.43	1.01	16	0	7.9	8	7.9	---	*29	N	25	4	2	25	8.1	--
Meacham	4050	------	------	24	11	17.4	-7.5	40	12	-13	26	0	31	--	--	2.39	-1.91	.46	17	0	28.9	28	----	---	--	---	--	5	1	25	8.2	--
Medford	1312	971.2	1020.3	42	26	33.9	-3.3	53	16+	11	27	0	27	28	81	1.70	-.81	1.25	11	0	2.2	1	3.3	NNE	*23	SSE	14	4	5	22	7.9	--
Pendleton	1492	967.5	1024.0	27	11	19.0	-11.6	53	11	-22	27	0	28	14	80	1.81	.33	.55	13	0	22.8	17	6.7	SE	*23	SW	31	3	4	21	8.3	--
Portland	21	1014.9	1021.2	37	26	31.2	-6.2	54	11	6	26	0	20	23	74	2.23	-2.36	.54	16	0	4.2	2	11.4	ESE	35	S	11	6	5	20	7.0	32
Roseburg	505	1001.0	1020.3	41	29	35.0	-4.5	52	15	9	27+	0	19	--	--	2.42	-2.18	.63	14	0	5.5	2	3.9	---	20	S	11	1	3	27	9.0	8
Salem	195	1012.5	1020.3	39	27	33.0	-5.4	52	11	9	27	0	21	27	82	2.57	-3.15	.71	16	0	2.4	1	8.5	S	*25	S	31	5	4	22	7.8	--
Sexton Summit(R)	3836	------	------	35	25	29.8	-6.0	47	17	13	26+	0	28	--	--	3.49	-.53	1.02	16	0	30.8	18	----	---	--	---	--	4	5	22	7.8	--
PENNSYLVANIA																																
Allentown	376	1007.8	1022.7	33	17	25.1	-3.4	59	23	-6	18	0	30	16	70	1.87	-1.34	.64	13	0	7.3	1	10.7	WNW	--	---	--	4	11	16	7.0	--
Erie	732	------	------	29	17	22.9	-4.3	56	22	-5	17	0	29	--	--	2.93	.59	1.08	18	0	25.6	15	10.6	---	24	S	22	0	2	29	9.4	--
Harrisburg	335	1008.3	1022.9	35	21	28.0	-3.1	62	23	-2	18	0	29	16	63	1.64	-.98	.52	14	0	10.8	3	7.7	WNW	34	NW	23	5	6	20	7.4	58
Philadelphia (U)	26	------	------	38	26	31.6	-3.3	60	23	8	15	0	24	--	--	1.31	-2.08	.27	15	--	----	--	----	---	--	---	--	--	--	--	---	--
Philadelphia	10	1017.6	1022.3	36	22	29.2	-4.0	61	23	5	15+	0	29	19	69	1.67	-1.70	.58	15	0	4.7	2	9.0	N	42	NW	23	5	8	18	7.3	57
Pittsburgh (U)	749	------	------	35	22	28.5	-4.5	59	22+	-1	17	0	29	--	--	1.50	-1.33	.39	15	--	5.5	--	----	---	--	---	--	--	--	--	---	--
Pittsburgh	1151	991.1	1022.6	32	18	25.0	-4.0	57	22+	-6	17	0	29	17	73	1.65	-1.12	.53	16	0	9.3	4	10.8	WSW	*32	WNW	23	1	3	27	8.9	46
Reading (U)	266	1009.7	1022.[illegible]	36	22	28.9	-3.3	60	22+	2	15	0	28	--	--	1.49	-1.66	.53	13	0	6.4	2	10.7	---	47	W	23	4	11	16	6.9	52
Scranton	940	986.3	1022.4	30	13	21.6	-5.3	58	23	-10	15	0	30	13	67	1.49	-.77	.37	17	0	11.1	4	8.9	WSW	35	NW	23	3	9	19	7.5	44
Shippingport (U)	736	------	------	33	19	26.0	---	57	22+	-3	17	0	29	--	--	1.52	----	.58	13	0	3.1	2	3.2	---	%33	NNW	23	--	--	--	---	--
Williamsport	527	1002.[illegible]	------	32	16	24.1	-4.4	57	23	-10	18	0	29	--	--	1.59	-1.00	.52	14	--	9.3	5	----	---	--	---	--	3	9	19	7.8	--
RHODE ISLAND																																
Block Island	110	1015.4	1020.1	35	22	28.2	-3.7	53	23	-1	15	0	28	--	--	1.79	-1.88	.48	8	0	2.2	1	----	---	--	---	--	10	9	12	6.1	--
Providence	55	1014.5	1020.7	32	14	22.7	-6.0	57	23	-9	15	0	29	13	66	2.17	-1.58	.87	9	0	14.8	5	11.1	NW	*46	S	23	12	7	12	5.4	57
SOUTH CAROLINA																																
Charleston (U)	9	------	------	59	44	51.5	.1	78	10	25	18	0	4	--	--	1.06	-1.42	.50	9	0	.0	0	9.8	---	26	W	10	--	--	--	---	48
Charleston	41	1021.3	1023.2	61	40	50.1	-.2	81	28	17	19	0	8	42	78	1.43	-1.05	.47	10	0	.0	0	10.7	NNE	--	---	--	3	7	21	7.7	--
Columbia	217	1015.1	1023.3	58	38	47.9	.9	80	31	15	3+	0	10	39	75	2.48	-.66	.87	11	0	T	0	7.8	SW	*23	SW	10+	4	7	20	7.4	62
Florence	146	1017.5	------	58	38	47.9	1.6	79	28+	18	18	0	11	--	--	1.83	-1.02	.73	7	0	T	T	----	---	--	---	--	3	8	20	7.6	--
Greenville	1018	984.2	1022.6	52	36	43.5	.2	74	29	16	18	0	11	34	71	5.15	.69	1.25	15	2	T	T	10.3	SW	36	NE	10	5	2	24	8.1	37
Spartanburg	801	------	------	52	35	43.7	.3	74	29	17	18	0	12	--	--	3.79	-.72	1.22	13	2	T	T	9.7	---	*35	NNW	10	--	--	--	---	--
SOUTH DAKOTA																																
Huron	1282	973.6	1024.1	19	-3	8.0	-5.5	40	7	-22	29	0	31	2	75	.17	-.40	.05	6	0	4.1	1	11.9	SSE	41	NW	17	10	8	13	5.8	76
Rapid City	3165	901.8	1022.8	22	0	10.8	-10.3	45	19	-23	26	0	31	3	72	.40	-.08	.18	8	0	4.1	2	9.6	NNW	48	NW	16	8	7	16	6.2	51
Sioux Falls	1420	968.5	1023.5	20	-2	9.2	-5.0	39	7	-17	16+	0	31	-3	57	.12	-.60	.05	4	0	2.2	1	11.8	SSE	*35	NW	17	8	12	11	5.6	--
TENNESSEE																																
Bristol	1519	966.6	------	47	30	38.0	-.6	68	29	10	17	0	19	--	--	9.18	5.68	1.94	18	0	1.0	T	----	---	--	---	--	3	5	23	8.2	--
Chattanooga	670	996.2	1023.5	51	34	42.6	1.0	71	29	13	17	0	12	33	73	9.12	3.89	3.43	15	2	T	0	8.8	S	34	NW	10+	4	6	21	8.0	30
Knoxville	950	986.9	1023.4	50	33	41.4	.9	73	29	11	17	0	15	33	74	9.63	5.09	3.09	18	2	T	T	9.2	NE	40	SW	10+	3	3	25	8.3	25
Memphis (U)	271	------	------	46	31	38.5	-3.4	72	9	13	16	0	20	--	--	10.86	5.48	2.68	14	--	T	T	----	---	--	---	--	--	--	--	---	--

See footnotes at end of table.

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure		Temperature								No. of days		Average dew point	Average relative humidity	Precipitation			No. of days		Snow, Sleet		Wind		Fastest mile			No. of days (sunrise to sunset)			Sky cover, tenths (sunrise to sunset)	Possible sunshine
		Station Ø	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F or above	Min 32° F or below			Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy		
	Ft.	Mb.	Mb.	°F	°F	°F	°F.	°F.		°F		¤		°F	%	In.	In.	In.			In.	In	M p h		M p h			0–3	4–7	8–10	0–10	%
TENNESSEE (Cont'd.)																																
Memphis	263	1008.6	1023.8	47	32	39.3	-2.3	74	9	11	17	0	18	31	73	11.39	5.84	2.71	14	4	T	T	11.5	N	35	SW	9+	3	2	26	8.5	32
Nashville	577	1003.7	1024.0	46	29	37.5	-2.4	70	9	8	17	0	21	31	80	9.39	4.46	3.82	12	3	T	T	9.3	NNW	38	NW	9	5	3	23	7.9	27
Oak Ridge (R)	905	988.8	--	49	34	41.4	3.3	68	29	15	17	0	10	--	--	10.08	4.02	2.35	17	1	T	T	6.1	--	26	---	14	4	6	21	8.0	--
TEXAS																																
Abilene	1759	958.3	1020.9	56	32	44.0	.7	84	9	14	17	0	15	30	62	.54	-.34	.54	6	0	T	T	11.5	N	44	SW	8	5	6	20	7.5	--
Amarillo	3590	889.9	1018.8	51	22	36.6	1.3	75	13	5	25	0	26	19	54	.33	-.31	.29	3	0	1.6	1	13.5	SW	48	W	9	6	4	21	7.5	63
Austin	615	999.7	1022.1	59	42	50.5	.6	81	9	22	17	0	3	41	72	.55	-2.08	.22	10	1	.0	0	11.1	N	36	N	10	1	7	23	8.5	29
Brownsville	16	1016.9	1019.7	75	56	65.5	5.0	82	22+	33	17	0	0	59	84	.35	-1.20	.17	7	0	.0	0	15.0	SSE	32	NE	22	6	12	13	6.3	44
Corpus Christi	41	1019.3	1020.5	69	51	60.0	3.1	85	9	28	18	0	3	52	79	.14	-1.25	.04	8	0	.0	0	12.2	SSE	34	S	21	0	9	22	8.4	42
Dallas	487	1003.1	1022.5	53	35	44.0	-1.7	83	9	16	17	0	14	36	76	1.55	-.92	.98	8	0	T	T	11.6	N	41	NW	22	4	3	24	8.1	33
Del Rio	1091	985.4	1020.6	62	43	52.5	.6	77	14	24	18	0	3	40	66	.18	-.65	.09	7	0	.0	0	8.1	---	33	[illegible]	10	5	4	22	7.9	31
El Paso	3920	887.6	1017.2	61	38	49.3	5.9	72	12	21	17	0	6	30	48	.24	-.18	.21	2	0	T	T	10.8	S	49	W	28	5	10	16	6.7	65
Fort Worth	544	1001.0	1022.6	53	35	43.7	-1.6	82	9	16	17	0	13	35	74	1.72	-.70	.91	9	2	T	T	12.9	N	•46	N	9	4	2	25	8.3	--
Galveston (U)	7	-----	-----	64	54	58.9	4.4	74	4+	29	17	0	1		--	1.54	-2.55	.54	7		.0	0	12.8	-	34	SE	22	-		--	- -	33
Galveston	5	1019.3	1021.7	65	53	58.8	4.5	74	4+	28	17	0	1	53	85	1.50	-2.84	.48	7	0	.0	0	13.0	N	--	--	--	0	6	25	8.5	-
Houston (U)	41	1015.9	- - -	66	50	57.9	4.1	80	29	26	17	0	2	-	--	1.41	-2.57	.38	11	2	.0	0	9.8		29	NW	10	3	6	22	8.1	36
Houston	50	1019.0	1021.9	66	50	57.9	4.6	83	31	25	17	0	3	50	80	.91	-3.25	.42	11	0	.0	0	12.2	N	--	-	-	0	5	26	8.9	--
Laredo	500	1004.1	1019.6	70	50	59.8	2.2	92	9	31	17	1	1	47	69	.31	-.71	.11	9	0	.0	0	9.3	ENE	•32	NNE	10	4	8	19	7.7	--
Lubbock	3243	904.8	1019.4	54	26	40.1	1.3	79	13	7	17	0	24	27	65	.08	-.59	.04	5	0	T	T	13.6	SW	•46	WSW	8	5	6	20	7.2	--
Midland	2854	918.7	1019.5	57	32	44.9	.7	80	13	14	17	0	14	29	60	.39	-.23	.25	6	0	T	T	8.9	NE	•30	NE	9	6	7	18	7.2	--
Port Arthur	16	1020.7	1022.1	66	50	57.7	4.8	78	28+	25	17	0	2	51	80	.64	-4.48	.35	12	1	.0	0	13.3	N	50	S	22	1	9	21	8.2	23
San Angelo	1903	952.3	1020.8	57	34	45.8	-1.5	85	13	15	17	0	12	33	66	.55	-.44	.54	5	0	T	T	10.8	NE	•29	NE	9+	5	8	18	7.2	--
San Antonio	792	995.6	1021.0	62	45	53.3	2.7	81	9	23	18	0	3	42	69	.51	-1.30	.23	10	0	T	0	9.0	NNE	38	NE	10	1	5	25	8.8	27
Victoria	110	1016.3	1021.0	65	49	57.1	1.9	82	9	27	17+	0	3	48	77	.66	-2.06	.26	12	0	.0	0	12.2	---	%43	N	10+	1	7	23	8.6	--
Waco	500	1000.7	1022.0	56	38	46.6	-.7	80	9	19	17	0	11	38	74	1.53	-.85	.53	11	2	T	0	14.3	N	--	---	--	2	3	26	8.7	--
Wichita Falls	1020	984.1	1022.3	49	29	39.2	-1.4	81	9	14	16	0	18	28	70	1.17	-.14	.42	9	2	1.2	1	10.5	N	•29	N	16	3	2	26	8.4	--
UTAH																																
Milford	5028	843.2	1019.6	37	15	26.1	2.3	54	13	-13	29+	0	29			1.27	.70	.63	13	0	18.3	13	----	---	--	---	--	9	9	13	6.1	--
Salt Lake City	4220	867.6	1020.7	36	16	26.0	-.5	56	13	-2	30	0	30	20	75	1.37	.17	.39	15	0	18.4	8	6.5	NE	36	SE	20	5	7	19	7.3	44
VERMONT																																
Burlington	331	1005.0	1020.6	23	0	11.7	-6.2	51	22+	-30	15	0	29	4	68	1.20	-.69	.60	9	0	12.2	7	10.3	S	42	S	20	3	9	19	7.7	45
VIRGINIA																																
Lynchburg	947	988.4	-----	44	27	35.5	-2.2	63	23+	8	18	0	21	--	--	3.99	.56	.83	19	0	4.6	3	7.6	---	33	W	10	5	5	21	7.6	34
Norfolk	26	1022.3	1023.6	48	32	39.7	-1.8	75	29	16	18	0	16	31	75	4.11	.94	1.05	15	1	4.1	2	12.1	NNE	52	W	10	4	9	18	7.5	53
Richmond	162	1017.2	1023.6	45	26	35.2	-3.0	69	22+	0	18	0	21	27	74	3.36	-.28	.82	17	0	5.8	3	7.4	S	33	NW	10	3	8	20	7.7	36
Roanoke	1174	979.2	1023.0	44	28	35.7	-2.2	64	23	13	17	0	21	24	66	3.74	.35	1.05	14	0	1.6	1	8.7	SE	--	---	--	3	9	19	7.7	--
WASHINGTON																																
Olympia	190	1012.2	1019.8	39	26	32.2	-4.8	48	11+	0	26	0	22	26	78	3.02	-3.67	.87	17	0	12.4	7	6.5	SW	•39	S	11	7	4	20	6.9	--
Seattle (U)	14	------	------	41	31	36.1	-4.6	50	11	16	27	0	16	--	--	2.74	-1.75	.61	16	0	10.1	5	9.2	---	43	S	11	7	7	17	6.8	41
Seattle	14	1019.0	1020.1	--	--	--	---	-	--	--	--	--	--	27	76	- --	----	-	--	--	----	--	6.2	SSE	--	---	--	--	--	--	---	--
Seattle-Tacoma	376	1005.8	1020.5	38	27	32.6	-4.6	49	11	9	26	0	24	27	80	2.41	-2.32	.59	15	0	7.5	5	12.6	NNE	•39	SSW	30	8	5	18	6.7	--
Spokane	2357	951.2	1023.3	21	9	15.0	-9.9	36	11+	-18	27	0	31	10	79	1.34	-.38	.41	16	0	20.8	11	5.9	NE	21	S	7	9	2	20	6.9	35
Stampede Pass (R)	3958	877.8	1021.0	21	11	16.3	-7.4	32	12	-7	25+	0	31	--	--	6.68	-6.37	2.47	19	0	57.1	63	----	---	--	---	--	8	5	18	6.8	--
Tatoosh (R)	101	1015.2	1018.7	41	34	37.8	-4.2	46	1+	24	25	0	7	31	78	5.73	-4.46	2.16	15	0	1.3	T	20.3	E	63	S	6	9	5	17	6.2	57
Walla Walla (U)	949	987.1	1025.1	26	15	20.6	-11.4	48	6	-16	27	0	27	--	--	1.76	.08	.39	13	0	20.8	13	4.5	---	22	S	10	3	4	24	8.5	31
Yakima	1061	983.4	1024.6	26	6	16.0	-10.9	48	31	-19	26	0	31	11	77	.56	-.40	.33	5	0	9.1	7	3.1	WNW	•29	SSW	7	5	5	21	7.4	--
WEST VIRGINIA																																
Charleston	950	986.3	1023.1	42	24	32.5	-3.9	66	10+	-5	17	0	24	22	66	5.78	1.79	1.85	21	0	5.7	2	6.8	WNW	•27	WNW	10	3	4	24	8.5	--
Elkins	1970	-----	------	38	19	28.8	-3.4	61	23	-18	17	0	29	21	--	4.57	1.35	1.12	18	0	11.9	5	6.2	WNW	•25	WSW	10	3	1	27	8.7	--
Huntington (U)	565	-----	------	41	24	32.8	-5.2	67	21	0	17	0	27	--	--	4.53	.92	1.09	19	0	5.1	3	----	---	-	---	--	--	--	--	---	--
Parkersburg (U)	615	- ----	------	37	22	29.4	-5.0	63	21	-9	17	0	27		--	3.35	.18	1.28	19	1	9.7	3	5.5	--	25	NW	10	3	5	23	8.3	31
WISCONSIN																																
Green Bay	689	997.3	1021.7	19	1	9.5	-6.6	40	21	-15	30	0	30	2	71	.35	-.94	11	9	0	3.6	4	12.9	SW	40	SW	20	8	10	13	6.2	55
La Crosse	652	996.6	1022.9	21	3	12.3	-3.4	46	21	-14	30	0	30	3	64	.25	-.97	.12	7	0	3.4	3	11.2	S	•30	W	3	7	12	12	6.0	--
Madison	857	985.1	1022.7	22	4	13.1	-6.0	47	21	-12	14	0	29	5	69	.41	-.90	.13	9	0	6.6	4	11.1	SW	33	W	4	9	9	13	6.0	59
Milwaukee	672	995.9	1022.5	23	6	14.9	-7.0	53	21	-10	26	0	30	8	74	.88	-.70	.31	11	0	11.2	7	14.6	WNW	40	NE	9	12	5	14	5.8	52
WYOMING																																
Casper	5322	834.1	1019.2	27	5	16.2	-6.1	45	20	-22	16	0	31	5	60	.42	-.27	.10	8	0	10.3	2	17.3	SW	•48	SW	20	6	10	15	6.4	--
Cheyenne	6131	807.3	1018.3	32	10	20.7	-4.8	48	11	-15	16	0	30	9	62	.67	.11	.31	10	0	7.6	5	14.9	WSW	54	NW	6	9	10	12	5.8	47
Lander	5563	832.4	1020.3	27	3	14.8	-2.0	48	12	-17	16	0	30	2	59	.15	-.35	.08	2	0	1.7	2	5.2	---	36	SW	20	12	10	9	5.1	70
Sheridan	3942	884.9	1023.4	23	-3	9.9	-10.2	48	1+	-26	25	0	31	2	69	.41	-.34	.11	8	0	9.5	5	7.7	NW	56	NW	16	8	10	13	5.8	55
PACIFIC AREA																																
Canton Island	9	1009.1	1009.3	88	78	82.9	-.1	90	27	76	9	1	0	72	73	.02	-1.06	.01	2	0	.0	0	15.2	E	•23	ESE	2+	4	14	13	6.9	--
Hilo	31	1014.6	1016.6	78	63	70.7	.3	85	24	59	15	0	0	63	80	8.80	-5.33	2.96	27	0	.0	0	9.7	WSW	•29	S	16+	2	14	15	7.3	39
Honolulu	7	1015.6	1016.1	79	67	72.7	.5	84	2+	61	26	0	0	63	73	13.33	8.68	5.87	14	1	.0	0	10.7	ENE	33	E	6+	9	11	11	6.0	71
Koror (R)	94	1005.8	1009.5	87	75	81.2	1.0	89	1+	73	3+	0	0	75	83	4.74	-7.29	1.56	20	0	.0	0	----	---	--	---	--	0	1	30	9.5	—
Lihue	115	1009.8	1015.3	78	65	71.8	1.7	82	27	57	25	0	0	64	79	16.14	9.91	7.51	22	4	.0	0	10.4	ENE	28	NE	8+	3	10	18	7.3	39
Majuro	10	1009.1	1009.4	84	77	80.8	---	87	25+	74	1+	0	0	75	82	5.90	----	1.52	16	0	.0	0	----	---	--	---	—	2	8	21	7.8	--
Ponape (R)	119	1004.1	1009.5	86	76	80.8	-.4	89	4+	72	1+	0	0	74	82	11.23	-.51	3.15	24	1	.0	0	----	---	--	---	--	0	5	26	9.0	--
Truk (Moen Is.)	8	1009.1	1009.4	85	79	81.6	.7	87	4	73	3	0	0	75	80	14.22	6.63	3.46	18	7	.0	0	----	---	--	---	--	0	4	27	9.5	--
Wake Island	11	1014.9	1015.3	80	71	75.8	-1.7	84	9	65	11	0	0	65	70	.88	-.38	.32	12	0	.0	0	14.1	ENE	•29	E	12	10	12	9	5.4	--
Yap (R)	53	1007.8	1009.8	85	75	80.3	-.5	89	25	72	21	0	0	75	85	15.10	8.27	4.99	25	0	.0	0	----	---	--	---	--	0	0	31	10.0	--
WEST INDIES																																
San Juan (U)	47	------	------	80	71	75.4	.5	81	9+	68	8	0	0	--	--	1.54	-3.15	.55	16	0	.0	0	----	---	--	---	--	--	--	--	---	--
San Juan P.R.	15	1016.0	1018.8	81	68	74.8	---	83	17	63	8	0	0	67	79	3.78	----	.80	23	0	.0	0	9.5	ENE	31	[illegible]	30	11	19	1	4.4	75
ALASKA																																
Anchorage	92	1021.7	1027.2	22	8	15.0	2.0	41	3+	-10	7+	0	30	10	74	1.36	.60	.77	10	0	3.9	6	4.6	NNE	•31	SSW	5	6	5	20	7.3	35
Annette	110	1019.6	1023.8	35	25	29.7	-4.9	44	5	14	23+	0	24	20	70	3.75	-5.65	1.52	8	0	T	T	8.0	N	•27	ENE	14	17	1	13	4.5	--
Barrow	22	1021.7	1022.1	4	-12	-4.3	10.8	32	15+	-35	2	0	31	-11	71	.73	.57	.26	17	0	7.3	16	15.8	S	47	SW	16	b1	b0	b7	---	--
Barter Island	39	1021.3	1023.2	5	-13	-4.2	----	37	16	-38	9	0	31	-13	66	.83	----	.19	14	0	9.8	18	18.0	WSW	•75	[illegible]	4	c4	c1	c10	---	--
Bethel	10	1019.0	1020.6	26	8	16.8	10.0	43	27	-31	6	0	27	15	89	2.12	1.22	.89	14	0	12.5	14	9.4	N	•32	SE	25	4	7	20	7.6	--
Cold Bay	90	1013.2	1017.9	38	31	34.4	5.3	44	28	14	19	0	20	33	92	6.45	3.93	1.32	22	0	7.1	3	21.1	SSE	•58	SE	7+	0	8	23	8.4	--
Cordova	40	1023.7	1025.7	29	12	20.4	-4.6	53	30	-5	23	0	29	12	73	3.92	-3.13	1.00	10	0	7.7	5	2.1	ESE	•20	NNE	30	11	5	15	5.8	--
Fairbanks	436	1009.5	1027.9	11	-8	1.5	11.3	35	29	-47	7	0	31	-4	76	1.92	.93	.39	18	0	26.3	37	2.4	N	•17	[illegible]	17	2	6	23	8.3	--
Juneau	15	1025.7	1026.6	27	14	20.6	-5.6	41	5	0	25	0	27	12	73	1.05	-3.43	.50	7	0	3.4	2	6.4	N	26	SE	4	13	3	15	5.7	55
King Salmon	44	1020.7	1022.8	29	12	20.3	6.2	46	27	-11	10	0	28	17	85	3.02	1.97	.73	12	0	7.1	7	9.1	[illegible]	•43	SSW	4	8	[illegible]	15	6.4	—
Kotzebue	10	1021.3	1022.0	15	0	7.2	13.8	35	27+	-35	6	0	31	3	82	.57	.10	.19	11	0	20.3	33	20.0	ESE	•56	ESE	13	5	3	23	7.7	—
McGrath	334	1012.9	1026.6	13	-5	4.0	12.7	38	28	-38	6	0	30	-1	78	3.67	2.53	1.03	17	[illegible]	36.2	43	3.4	NW	•23	SSW	14	4	6	21	7.8	—
Nome	13	1020.3	1021.2	21	7	14.3	8.7	35	27	-28	5	0	31	11	84	2.10	.85	.42	20	0	15.1	19	11.7	E	38	NE	1	5	1	25	8.4	20
Northway	1713	963.1	1031.2	-3	-23	-12.9	4.2	26	30	-56	8	0	31	--	--	.43	-.18	.28	9	0	8.4	33	----	---	--	---	—	2	11	18	7.4	—
St. Paul Island	22	1012.9	1013.9	34	28	30.5	4.1	39	14	5	2	0	26	29	93	2.09	.27	.61	17	[illegible]	6.7	9	----	---	--	---	--	2	7	22	8.3	--
Yakutat	28	1024.4	1025.7	31	17	23.9	-2.6	40	5+	4	24	0	29	21	90	5.07	-6.53	2.54	10	0	5.2	3	4.2	E	•27	[illegible]	7	7	7	17	6.9	--

Data from airport unless otherwise specified. U indicates Urban, R indicates Rural, sites.

- • Data entered in column "Fastest Mile" is the fastest mile observed. This station is not equipped with automatic recording wind instrument.
- + And also on a later date or dates.
- % Peak gust.
- ¤ Number of days maximum 70° or above for Alaskan stations
- Ø Station pressures apply to elevation shown in Table 10b of the annual issue of this publication.
- a Maximum hourly average.
- b Sun below horizon Jan. 1 to 23 inclusive.
- c Sun below horizon Jan. 1 to 16 inclusive.

HEATING DEGREE DAYS

(Base 65°F.)

State and station	Current season		Normals July through this month
	This month	Period July through this month	
ALABAMA			
Birmingham	530	1352	1753
Mobile	302	795	1039
Montgomery	428	1100	1381
ARIZONA			
Flagstaff	1091	3972	4198
Phoenix (U)	322	1107	980
Phoenix	334	951	1119
Prescott	832	2549	2641
Tucson	340	988	1123
Winslow	810	2913	2904
Yuma	265	595	682
ARKANSAS			
Ft. Smith	818	1958	2048
Little Rock	773	1730	1898
Texarkana	665	1461	1513
CALIFORNIA			
Bakersfield	622	1505	1380
Bishop	1013	2574	2515
Blue Canyon	1058	2829	2899
Burbank	427	762	976
Eureka (U)	665	2863	2585
Fresno	692	1801	1640
Los Angeles (U)	328	540	779
Los Angeles	337	630	1075
Mt. Shasta (R)	1163	3479	3324
Oakland	611	1892	1790
Red Bluff	687	1642	1559
Sacramento (U)	626	1626	1594
Sacramento	665	1806	1714
Sandberg (R)	912	2297	2184
San Diego	259	525	813
San Francisco (U)	494	1718	1709
San Francisco	584	1826	1890
San Jose	536	1390	1348
Santa Maria	564	1724	1566
COLORADO			
Alamosa	1316	4943	5112
Colorado Springs	1204	3554	3513
Denver	1206	3300	3489
Grand Junction	1236	3674	3564
Pueblo	1131	3166	3383
CONNECTICUT			
Bridgeport	1224	3120	3169
Hartford	1360	3732	3458
New Haven	1253	3324	3276
DELAWARE			
Wilmington	1120	2807	2824
DIST. OF COLUMBIA			
Washington (U)	985	2336	2488
Washington	988	2463	2523
FLORIDA			
Apalachicola (U)	199	540	827
Daytona Beach	127	461	533
Fort Myers	57	251	250
Jacksonville	202	563	804
Key West (U)	3	18	46
Miami (U)	23	122	110
Miami	18	101	118
Miami Beach	5	57	80
Orlando	91	341	410
Pensacola (U)	243	568	912
Tallahassee	233	737	991
Tampa	82	297	424
West Palm Beach	23	151	154
GEORGIA			
Athens	602	1510	1738
Atlanta	585	1399	1757
Augusta	492	1224	1356
Columbus	454	1192	1514
Macon	454	1104	1321
Rome	646	1700	1956
Savannah	391	953	1099
IDAHO			
Boise	1343	3884	3509
Lewiston	1441	3768	3307
Pocatello	1518	4437	4060
ILLINOIS			
Cairo (U)	985	2155	2321
Chicago (U)	1342	3168	
Chicago	1425	3387	3595
Chicago University	1396	3351	
Moline	1492	3702	3730
Peoria	1434	3416	3563
Springfield	1324	3154	3359
INDIANA			
Evansville	1085	2626	2654
Ft. Wayne	1402	3446	3582
Indianapolis	1280	3053	3263
South Bend	1406	3509	3694
IOWA			
Burlington	1462	3510	3605
Des Moines	1518	3715	3802
Dubuque	1622	4151	4215
Keokuk (U)	1364	3223	
Sioux City	1593	3902	4156
KANSAS			
Concordia (U)	1347	3095	3192
Dodge City	1229	2940	3027
Goodland	1368	3540	3676
Topeka (U)	1246	2870	2979
Topeka	1291	3041	3152
Wichita	1190	2787	2786
KENTUCKY			
Lexington	1034	2538	2892
Louisville	1016	2462	2666
Pikeville (U)	*826		
LOUISIANA			
Baton Rouge	275	735	1039
Lake Charles	280	695	1009
New Orleans (U)	211	520	770
New Orleans	218	591	848
Shreveport	548	1249	1398
MAINE			
Caribou	1973	5914	5663
Greenville (U)	1849	5520	
Portland	1580	4494	4220
MARYLAND			
Baltimore (U)	983	2207	2417
Baltimore	1069	2633	2773
Frederick	1122	2933	2842
MASSACHUSETTS			
Blue Hill Obs. (R)	1383	3771	
Boston	1284	3262	3128
Nantucket	1163	3045	3098
Pittsfield	1521	4362	4291
MICHIGAN			
Alpena (U)	1490	4421	4320
Detroit	1355	3423	3536
Detroit (Willow Run)	1393	3534	3614
East Lansing (U)	1385	3614	
Escanaba (U)	1623	4691	4686
Grand Rapids	1393	3701	3927
Marguette (U)	1607	4757	4602
Muskegon	1340	3652	3836
S. Ste. Marie	1748	5249	5162
MINNESOTA			
Duluth (U)	1954	5746	5386
Duluth	1978	5747	5600
Internat. Falls	2183	6286	6145
Minneapolis	1698	4389	4577
Rochester	1703	4558	4716
St. Cloud	1863	5032	5173
MISSISSIPPI			
Jackson	481	1186	1417
Meridian	463	1187	1517
Vicksburg (U)	492	1090	1282
MISSOURI			
Columbia	1222	2869	3064
Kansas City	1215	2783	2960
St. Joseph	1328	3153	3223
St. Louis (U)	1142	2566	2686
St. Louis	1175	2693	2822
Springfield	1109	2631	2842
MONTANA			
Billings	1663	4155	4072
Glasgow	2001	5180	5141
Great Falls	1770	4519	4270
Havre (U)	1924	4851	4811
Helena	1962	5032	4818
Kalispell	1760	5080	4720
Miles City	1815	4470	4584
Missoula	1686	4784	4684
NEBRASKA			
Grand Island	1478	3623	3761
Lincoln (U)	1397	3257	3490
Norfolk	1576	3921	4161
North Platte	1512	3908	3852
Omaha	1463	3463	3675
Scottsbluff	1421	3854	3925
Valentine (U)	1673	4201	4091
NEVADA			
Elko	1489	4636	4241
Ely	1432	4547	4232
Las Vegas	657	1759	1622
Reno	1211	3819	3474
Tonopah	1195	3402	3323
Winnemucca	1336	4155	3765
NEW HAMPSHIRE			
Concord	1592	4516	4299
Mt. Washington Obs.	2106	8044	
NEW JERSEY			
Atlantic City (U)	1019	2405	2502
Newark	1140	2844	2951
Trenton (U)	1115	2781	2856
NEW MEXICO			
Albuquerque	771	2761	2727
Clayton	1010	2874	2986
Roswell	720	2145	2202
NEW YORK			
Albany	1511	4090	3901
Binghamton	1471	4151	4193
Buffalo	1370	3547	3695
New York (U)	1104	2710	2766
New York	1104	2630	2724
Rochester	1408	3743	3765
Schenectady	1438	3827	
Syracuse	1428	3745	3594
NORTH CAROLINA			
Asheville (U)	774	2123	2427
Charlotte	643	1590	1978
Greensboro	796	2087	2319
Hatteras (R)	609	1141	1315
Raleigh	748	1852	2036
Wilmington	571	1230	1402
Winston-Salem	775	2007	2255
NORTH DAKOTA			
Bismarck	1958	5198	5254
Devils Lake (U)	1991	5697	5769
Fargo	1935	5202	5399
Grand Forks	1999	5625	
Pembina	2043	5617	
Williston (U)	1963	5244	5271
OHIO			
Akron	1344	3476	3464
Cincinnati (U)	1048	2352	2653
Cincinnati	1147	2950	3028
Cleveland	1295	3162	3313
Columbus	1211	2902	3233
Dayton	1267	3039	3222
Sandusky (U)	1319	3163	3238
Toledo	1385	3513	3573
Youngstown	1339	3476	3437
OKLAHOMA			
Oklahoma City	978	2294	2282
Tulsa	957	2196	2238
OREGON			
Astoria	896	3158	2733
Burns (U)	1443	4271	4103
Eugene	1011	3080	2770
Meacham	1471	4517	4348
Medford	957	3161	2711
Pendleton	1424	3635	3161
Portland (U)	1002	2738	2418
Portland	1041	3045	2673
Roseburg	924	2894	
Salem	986	3010	2640
Sexton Summit (R)	1083	3309	3278
PENNSYLVANIA			
Allentown	1230	3322	3337
Harrisburg	1139	2980	3022
Philadelphia (U)	1025	2429	2557
Philadelphia	1103	2710	2777
Pittsburgh (U)	1124	2717	2882
Pittsburgh	1234	3155	3384
Reading (U)	1113	2834	2888
Scranton	1337	3708	3413
Williamsport	1263	3393	3382
RHODE ISLAND			
Block Island	1131	2936	2989
Providence	1304	3433	3346
SOUTH CAROLINA			
Charleston (U)	414	874	1103
Charleston	465	1122	1250
Columbia	531	1254	1544
Florence	531	1225	1603
Greenville	657	1643	1873
Spartanburg	655	1633	1881
SOUTH DAKOTA			
Huron	1766	4517	4626
Pierre	1743	4415	
Rapid City	1678	4232	4219
Sioux Falls	1729	4405	4637
TENNESSEE			
Bristol	831	2181	2506
Chattanooga	688	1729	2105
Knoxville	728	1773	2214
Memphis	788	1757	1973
Nashville	845	1890	2150
TEXAS			
Abilene	647	1568	1721
Amarillo	871	2350	2651
Austin	454	989	1130
Brownsville	102	299	437
Corpus Christi	216	552	695
Dallas	651	1453	1477
Del Rio	382	928	1004
El Paso	478	1661	1756
Ft. Worth	656	1519	1512
Galveston (U)	204	505	758
Galveston	206	547	780
Houston (U)	254	617	843
Houston	256	680	903
Laredo	208	526	576
Lubbock	766	2098	2256
Midland	617	1646	
Port Arthur	260	698	993
TEXAS (Cont'd.)			
San Angelo	594	1465	1410
San Antonio	370	873	1062
Victoria	281	673	760
Waco	568	1275	1311
Witchita Falls	793	1804	1937
UTAH			
Milford	1203	3882	3828
Salt Lake City	1203	3663	3473
VERMONT			
Burlington	1649	4517	4385
VIRGINIA			
Lynchburg	912	2307	2471
Norfolk	778	1680	1986
Richmond	915	2151	2360
Roanoke	901	2294	2472
WASHINGTON			
Olympia	1007	3342	3122
Seattle (U)	891	2728	2529
Seattle-Tacoma	995	3259	3025
Spokane	1547	4389	3993
Stampede Pass (R)	1506	5386	5111
Tatoosh Island (R)	832	3393	3193
Walla Walla (U)	1370	3443	2989
Yakima	1515	4115	3657
WEST VIRGINIA			
Charleston	1002	2421	2607
Elkins	1113	3101	3312
Huntington (U)	991	2299	2434
Parkersburg (U)	1093	2610	2773
WISCONSIN			
Green Bay	1718	4723	4641
La Crosse	1630	4235	4459
Madison	1605	4176	4269
Milwaukee	1544	4043	3999
WYOMING			
Casper	1506	4348	4345
Cheyenne	1365	4017	4137
Lander	1553	4499	4833
Sheridan	1705	4404	4505
ALASKA			
Anchorage	1545	7101	6419
Annette	1087	4255	3964
Barrow	2146	11259	10875
Barter Island	2144		
Bethel	1490	7991	7363
Cold Bay	943	5377	
Cordova	1376	5979	5430
Fairbanks	1969	9540	8693
Juneau	1369	5384	5169
King Salmon	1378	7253	
Kotzebue	1787	9570	8850
McGrath	1890	9451	8663
Nome	1565	8345	7808
Northway	2421	10656	9508
St. Paul	1060	6081	5753
Yakutat	1268	5503	5265

Data from airport unless otherwise specified.
U indicates Urban, R indicates Rural, sites.
* Jan. 1-29, Jan. 30-31 missing due to flooding.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

JANUARY 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
IOWA Entire State	Entire month				4	56	5		Snow and cold	Snow-packed roads resulted in traffic accidents on most days of month in all parts of State. More than 115 separate accidents reported, many of them involving more than 1 vehicle.
COLORADO Western and southwestern portions	Most of month								Snow	Heavy snowfall, beginning early in month, continuing intermittently, resulted in record January snowfall at a number of points. Snowfall heaviest in extreme western portion and San Juan Basin. Crested Butte's fall totaled 146-1/2 inches, which is a record for January; Grand Junction had 33.7 inches, an alltime record. Many snowslides in Wolf Creek Pass, Red Mountain, and Loveland Pass areas closed passes and roads several times during month. No deaths or serious injuries reported, but many minor accidents. Unestimated amount of general damage to roads, buildings, vehicles, communication systems, and powerlines resulting from heavy drifts and snowslides. Many small communities isolated for several days at a time and some without electric power until damaged lines could be repaired.
KANSAS Western two-thirds	2	11 a.m.-5 p.m.							Wind and dust	Strong southerly winds of 20 to 30 m.p.h., reaching 40 m.p.h., occasionally, caused much blowing dust. Visibilities lowered to 1-1/2 to 6 miles reported from 11 a.m., until late in afternoon. Lowest visibility was 1-1/2 miles at Garden City.
	4									Minor storms reported at Anniston and Heflin, Ala.
CALIFORNIA Central coast, southern mountains, and coastal basin areas	4-6						1		Wind and rain	Only light precipitation occurred in central coastal areas, but heavy rain and snow fell in south, particularly in Ventura and Los Angeles Counties. Some flooding occurred in San Fernando Valley and La Tuna Canyon. No major damage. At Hall Canyon Reservoir rain gage recorded 1.70 inches in 13 hours.
PENNSYLVANIA Susquehanna Valley (lower portion)	6	Night			1	4	2		Snow	1-inch snowfall made roads slippery and caused many automobile accidents. In Lancaster area, 4 persons injured in an accident. Another man died from heart attack while pushing car stalled in snow. Storm moved eastward.
CONNECTICUT Entire State	6-7	P.m. 6th-p.m. 7th			1	7			Snow	Snowfall of 2 to 6 inches caused numerous skidding accidents on highways which resulted in 1 death and injuries to 7 persons in separate accidents.
RHODE ISLAND Entire State	6-7	P.m. 6th-p.m. 7th				3			Snow	Storm affected highway traffic, with skidding accidents injuring 2 persons. Another person injured in fall on icy sidewalk. Snowfall 3 to 6 inches.
NEW ENGLAND Northern and central portions	7	All day			6		4	1	Snow	6 to 12 inches of snow in east-central and northeastern Massachusetts, southern New Hampshire, and southwestern Maine delayed traffic and caused scores of injuries due to hazardous streets. Schools closed. 6 deaths attributed to coronary trouble brought on while embattling snow. Other areas received 1 to 5 inches of snow, except little or none in northern Vermont.
KANSAS Southern and eastern portions	9	5 a.m.-noon							Glaze	Freezing drizzle began about 5:30 a.m., over south and east, and by 8:30 a.m., Highway Patrol reported slick and icy roads from Marion County east and also in Dodge City-Garden City area. Accidents numerous, but most not too serious.
ILLINOIS Extreme northern portion	9	Evening							Snow	8 to 10 inches of snow in band from Dixon and Rockford to Wheaton and Arlington Heights.
	9									Minor storm also reported near Tucson, Ariz.
MICHIGAN (Lower) Southern third	9-10	Afternoon 9th-a.m. 10th						1	Snow	Heavy snow deposited 4 to 12 inches by early morning of the 10th. Highway and street travel greatly hampered and some highways closed. In several localities this storm resulted in heaviest single snowfall for 25 to 30 years.
NEW YORK	10	Midnight-noon			2				Snow	Low pressure area moved south of New York State, giving amounts of snow to slightly over a foot to some sections of western and central New York with lightest amounts in northern sections. At least 2 deaths occurred from heart attacks, 1 shoveling snow and the other from exertion of putting chains on his car. Many schools closed.
NORTH CAROLINA Western portion	10	Forenoon					4		Wind	Cold front crossing State caused gusty winds up to 50 m.p.h. 2 small aircraft damaged; widespread minor damage to powerlines and trees.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
VIRGINIA	10	9 a.m.-6 p.m.						1	Wind and electrical	Strong winds caused much minor damage to buildings in all sections of State. Shingles blown off, windows and a few plate-glass store windows broken, trees blown down or limbs broken, and some interruption of telephone and power services in cities. More than 3,000 homes in Richmond without electricity for 1 to 3 hours. 1 house, struck by lightning at Norton, sustained damages about $500. Metal silo overturned at East Stone Gap. Wind reached 67 m.p.h., at Roanoke and 73 m.p.h., at Norfolk. Storm moved eastward.
MARYLAND Chesapeake Bay area	10	11 a.m.-2 p.m.						1	Wind	Numerous persons stranded in duck blinds and were rescued. Oyster tonging boat damaged when gale winds snapped its mast off; 10- to 12-foot waves reported. At Friendship International Airport gusts up to 50 m.p.h., from west-northwest occurred at 12:21 p.m., and gusts to 68 m.p.h., from west-northwest at Andrews Air Force Base at 11:32 and 11:34 a.m.; at Annapolis Naval Academy gusts to 74 m.p.h., from northwest at 12:48 p.m.
NEW ENGLAND Northern and central portions	10	Day			3		4	1	Snow, sleet, and wind	3 to 8 inches of snow general, excepting little or none in northwestern Vermont, northern Maine, and southeastern Massachusetts coastal area. 3 deaths attributed to storm, 1 by automobile accident and 2 by exertion. Some injuries from accidents on slippery roads. Minor wind damage in some Massachusetts localities. Electric service outed by wind on Nantucket. Many schools closed.
ARIZONA Williams Air Force Base (near), Pinal County	10	2:55-3 p.m.			0	0			Tornado	Funnel cloud moving eastward touched ground in open desert.
DELAWARE	10							1	Wind	High winds snapped TV antennas, uprooted trees, ripped off signs, caused interruption of utility services, blew some roofs off, particularly on chicken houses in lower Delaware, ripped numerous shingles from houses, etc.
MARYLAND Lower Marlboro (near), Calvert County	10				1			1	Wind	Duck hunter drowned after he slipped off his 12-foot skiff which was overturned by gale winds.
	10									Minor storm also reported in Philadelphia, Pa., area.
OKLAHOMA Most of State	10-11	During night			2	Many		1	Rain and glaze	Glaze and sleet storm caused hazardous road conditions over most of State. 2 deaths and many injuries attributed to automobile accidents on icy roads.
WEST VIRGINIA Bluefield and vicinity, Mercer County	10-11	Night						1	Wind	Roofs blown off houses; billboards destroyed. Storm moved eastward.
WASHINGTON Columbia River Gorge, southern Clark and Skamania Counties	12-13						4		Wind	High wind through Columbia Gorge caused considerable property damage. Several persons narrowly escaped serious injury when tree blown down, demolishing their residence. Powerlines damaged in several communities.
CALIFORNIA Entire State	12-14						5		Wind, rain, snow, and electrical	Heavy rains occurred in central and south with heavy snow in Sierras above 4,000 feet. Some street flooding occurred in a few central towns, and some highways blocked by small slides in Santa Cruz Mountains. Large tree blown down at Pebble Beach, Monterey County, and more than double the normal number of traffic accidents occurred in San Francisco. In southern California underground telephone cables damaged by cave-in resulting from flooding of drain excavation, and $20,000 tractor buried in silt and mud. Another cave-in at Pacific Palisades broke sewer line, with estimated damage of $60,000. Elsewhere, heavy rains caused overflow of storm drains and a few mud slides in Santa Barbara area; some street intersections between Culver City and west Los Angeles flooded to as deep as 18 inches, and slides with rocks as large as automobiles blocked traffic on highway between Snow Valley and Big Bear Lake. Developing within main storm and probably associated with passage of cold front, severe thunderstorm developed in vicinity north of Lincoln, Placer County, prior to 2 a.m., on 13th and moved in apparent northeast direction, passing between Colfax and Nevada City. 25x45-foot roof section blown from barn about 6 miles north of Lincoln, and carried 150 feet, dropping on

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

JANUARY 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
CALIFORNIA (Cont'd)										powerline and disrupting power at 2 a.m. High winds with gusts estimated at 70 m.p.h., occurred at Grass Valley, with thunder and lightning. 5 telephone cables burned. Home struck by lightning in Nevada City and another at Meadow Vista. Large locust tree uprooted at Grass Valley, and several large oak trees blown down at Auburn.
IDAHO North-central area	13-15								Snow	Snow began on 13th, ended evening of 15th, left 15 inches on ground at Grangeville, 5 inches at Lewiston. Several minor traffic accidents in and near Lewiston.
NEW YORK	13-20				3				Cold and snow	Some of coldest weather of many years spread through State during 13th with severely cold temperatures on morning of 14th and 15th and with cold daytime temperatures especially on 15th. During this period snow squalls occurred on night of 17th-18th in snow belts east of Lakes Erie and Ontario with second snow squall period on 19th. Damage from cold, mostly breaks in communications and electric wires as well as some breaks in gas mains. 1 gas main break cut off supplies to over 20,000 homes north of Syracuse and east of Lake Ontario. At least 2 deaths occurred from snow shoveling, and 1 man wandered out into severe cold and died of exposure.
OKLAHOMA Hughes, Okfuskee, and Seminole Counties	14-15	During night				Several		1	Rain and glaze	Glaze covered most of 3-county area, causing treacherous road conditions. Several injuries resulted from numerous automobile accidents.
NEW ENGLAND Northern and central portions	14-15				8		4	5	Freeze	Severe freeze killed peach buds and overtaxed and broke down numerous heating systems over entire area. Thousands of motorists stranded with dead batteries. Temperatures as low as -32° reported in Massachusetts. Deaths and numerous frostbite injuries resulted.
SOUTH CAROLINA Northern and central portions	15	Day			1	Several		1	Glaze	A number of wrecks, attributed to glaze, 1 fatality, several injuries, and several thousand dollars property damage .
NORTH CAROLINA Western portion	15				4	Several			Ice	Very little damage directly caused by this storm; most losses due either to slow-downs in traffic or to traffic accidents indirectly attributable to icy streets and highways. At least 4 persons killed in such accidents, and several others injured; motor vehicles, involved, damaged to the extent of $50,000. Many schools closed for 1 or more days.
VIRGINIA	15-16					14	3	1	Snow and ice	Snow and freezing rain caused extremely hazardous travel conditions on highways and streets. Traffic accidents accounted for 13 injuries, some of them quite serious. 1 person badly injured by fall. Numerous minor traffic collisions caused some damage to automobiles and trucks as well as slight personal injuries not included above. 1 injury occurred in Nelson County, 2 in Fluvanna County, 4 in Augusta County, and 6 in Floyd County.
CONNECTICUT Entire State	16	All day			1				Snow and cold	Although snowfall not heavy, 4 to 6 inches, storm was severe due to occurrence in midst of severe cold wave, which added to effects of storm. Numerous schools closed, meetings cancelled, and minor skidding accidents on slippery highways. Death of elderly man attributed to exposure and overexertion while shoveling snow.
NEW ENGLAND Northern and central portions	16	Day					4	1	Snow	4 to 8 inches of snow hit most areas, except less in Vermont. Traffic hampered by poor road conditions, with minor accidents occurring.
CALIFORNIA San Bernardino County	16						1		Wind	Dry north and northeast winds, with gusts to 68 m.p.h., in San Bernardino, Ontario, Fontana, and Chino areas. Tree uprooted and small shed roof blown off in San Bernardino.
IDAHO Lewiston (near), Nez Perce County	16				1				Cold	Man found frozen to death in ditch near his stalled truck.
SOUTH DAKOTA Central and western portion	16-17	5 p.m. 16th-5 p.m. 17th			3		4		Wind and snow	Visibility occasionally zero, with roads blocked by drifting snow in northern Black Hills. Wind overturned house trailer being towed 12 miles east of Pierre. Airplane accident resulted in 3 deaths, 8 miles northeast of Pierre, evening of 16th while ground visibility low due to snow squalls and blowing snow.
	19									Minor storm reported at Alva, Okla.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
CALIFORNIA Entire State, except southeast desert	19-20					3	2		Wind, rain, and snow	Heavy rains, with locally strong winds in north. Heavy snow, with high winds in Sierras and northern mountains. Snow to depth of 2 feet closed Highway 99 for 6 hours between Redding and Dunsmuir. Heavy snow with high winds closed Highway 40 over Donner Pass for 8 hours. Boy lost in snowstorm near Big Bend suffered severe frostbite. 2 men overcome by exhaust fumes in stalled car near Cisco Grove required hospitalizing. High winds toppled trees, TV antennas, and power poles in Santa Cruz-Watsonville area. Up to 7 inches of snow fell above 3,000 feet in southern mountains, with winds to 40 m.p.h., in mountains and interior desert regions.
IDAHO Entire State	19-23				2	2			Snow and wind	Most widespread and heaviest snowstorm of winter. Most of snow fell between evening of 19th and night of 20th, but hazardous travel conditions continued through 23d, as strong winds caused drifting in several areas. Numerous minor traffic accidents reported and icy highways caused 2 deaths on 19th; near Lewiston, man killed when his car skidded into truck and on 20th, near American Falls, infant killed and 2 adults injured when a car skidded off highway into deep ditch. Reports of losses from property damage few, but near Caldwell 7 head of cattle killed when roof of loafing shed collapsed under 8-inch snowfall. Snow removal from city streets, highways, and county roads was major operation in nearly all parts of State, and schools were closed for a day or two in some northern counties and in eastern counties of Bonneville, Madison, and Jefferson. Delays in air travel common, many trains running behind schedule, and rural mail deliveries delayed.
OREGON Entire State	19-25					Several	5	2	Snow and rain	Snow depths from this storm in portions of Oregon's Columbia Basin east of Cascades greatest since 1950. Depths of 10 to 20 inches observed in Umatilla County, and 7 to 10 inches generally elsewhere in valleys of central and southeast. Willamette Valley maximum depths generally 3 to 6 inches; in coastal and southwestern valleys depths of 1 inch not usually exceeded. Schools closed in a number of areas and logging operations interrupted. Very hazardous motoring conditions created and a number of traffic accidents occurred over State. Snow generally beneficial to agriculture, as it afforded much-needed protection to fall-seeded crops and a welcome addition to soil moisture in valleys and snow pack in mountains. Storm moved eastward.
WASHINGTON Entire State	19-28								Snow and cold	Heavy snow over entire State on 19th and 20th. Snowfall ranged from 3 to 8 inches in west and from 8 to 10 inches in east. Highways remained open, but very slick, resulting in large number of accidents and persons injured. From 20th to 28th minimum temperatures from zero to 15° recorded in west and from -15° to -36° in east.
UTAH Salt Lake City, Salt Lake County	20	A.m.							Wind	Wind gusts to over 50 m.p.h., caused minor damage to trees and property.
	20									Minor storm also reported in St. Charles area, Mo.
COLORADO South-central area	20-21	Afternoon 20th-a.m. 21st							Wind	High wind during afternoon and night of 20th, and early hours of 21st, did considerable damage to powerlines, buildings, cars, trees, etc., in area from Colorado Springs southward. At La Veta, several head of cattle killed when barn blown down on them, also plate-glass window blown out, sign blown down, and TV antennas damaged. Old timers in La Veta said it was one of the strongest winds ever noted there. Powerlines and trees damaged in Colorado Springs, Pueblo, and Walsenburg.
TENNESSEE	20-Feb 1							1	Rain	13-day rainy spell resulted from stagnation of arm of Bermuda High over southeastern United States which channeled warm, moist, southwesterly winds into zone of stationary front over Tennessee. Rainfall amounts for period generally from 8 to 10 inches. Most severe flooding occurred on Little Pigeon River at Sevierville, Tennessee River at Chattanooga, Duck River at Shelbyville and Columbia, Elk River at Fayetteville, and Cumberland River at Nashville. At Sevierville thousands of dollars of damage reported as 300 families evacuated from their homes. About 50 families forced from their homes in Chattanooga and like number from combined cities of Shelbyville, Columbia, and Fayetteville. At Nashville

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

JANUARY 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TENNESSEE (Contd)										flooding of streets and basements was extent of damage. Across State, with exception of Cumberland Plateau, scattered reports of flooded lowlands and roads and washed-out bridges received. No estimate of total damage yet made.
MINNESOTA Northern half	21	A.m.-p.m.			2		3	1	Snow and wind	Moderate to heavy snow, new accumulation 4 to 7 inches, accompanied by high winds reduced visibility and made highway travel hazardous. Numerous traffic accidents occurred, resulting in 2 deaths. Storm moved eastward.
FLORIDA Broward and Palm Beach County areas	21	Throughout day					5	7	Rain and hail	Storm affected important winter vegetable areas of these 2 counties and isolated points in neighboring counties. Although area of destruction rather limited, numerous observers reported 6 to 9 inches of rainfall in several hours. Several points reported rainfalls of near 21 inches in less than 24 hours, 1 report of 15 inches in 5 hours. Rainfall caused flooding of a number of truck crop fields; water completely covered some mature as well as growing crops. Much replanting required. Most water removed from fields by pumping, but not until considerable damage done. Quality of produce from fields pumped considerably reduced. Sunny and abnormally warm weather following storm conducive to development of disease and further general lowering of crop quality. Hail accompanying this localized storm activity caused crop damage of $1,000,000.
OKLAHOMA Lincoln, Creek, Pawnee, Payne, and Oklahoma Counties	21	5 p.m.						1	Rain and hail	Hail size of marbles to 1-1/2 inches in diameter fell over scattered sections of 5-county area. Some roof damage resulted and 32 windows broken in school near Oilton. Star-shaped formations of ice, measuring 6 inches from tip to tip, fell near Avery, Lincoln County. Storm moved northeastward.
OKLAHOMA Warner, Muskogee County	21	6:55 p.m.	5	400	0	0	4	1	Tornado (suspected), wind, rain, and electrical	Tornado suspected, although little evidence other than loud roar and scattered debris. Wind caused destruction of service station, farmstead, and numerous outbuildings. Storm moved northeastward.
ARKANSAS Hatfield (2 miles south of) Polk County	21	9 p.m.						1	Electrical and rain	Barn destroyed by fire set by lightning. Power- and communication lines damaged by lightning.
	21									Minor storms also reported at Fayette, Liberty, Tina, Warrensburg, and northeast of Butler, Mo.; and south of Ada, Okla.
OKLAHOMA McClain and Cleveland Counties	22	2 a.m.						1	Wind, rain, hail, and electrical	Cold front which developed severe thunderstorm moved across central and eastern sections. Widespread damage to roofs, windows, TV antennas, trees, etc., caused by strong winds and hail over 2-county area. Hail as large as ping pong balls reported.
OKLAHOMA St. Louis to Ryal, Pottawatomie, Seminole, Hughes, Okfuskee, and McIntosh Counties	22	3:30-4:15 a.m.	60	450	0	0	4	1	Tornado, wind, rain, hail, and electrical	Several thunderstorms developed across central and eastern Oklahoma along cold front. Tornado skipped along 60-mile path from St. Louis, Pottawatomie County, through Wewoka, Seminole County, where most destruction occurred, through Wetumka, Hughes County, through Weleetka, Okfuskee County, to Ryal, McIntosh County. Although no funnel sighted, witnesses indicate rapid approach, passage, and fading away of terrible roar. Excessive lightning continuous. Considerable marble-sized hail fell along path. St. Louis received considerable damage to houses, utilities, etc., and many outbuildings destroyed. 1 house had porch blown off and another 50 feet away not disturbed. In Wewoka tile building burst outward, TV aerials twisted in knots, many outbuildings destroyed, and windows and venetian blinds completely disappeared from 1 home. In Wetumka 2 business buildings heavily damaged and damage to TV antennas and utilities extensive. Weleetka received damage to roofs, outbuildings, trees, etc. Last evidence of storm was near Ryal where farmstead almost completely demolished. Storm moved northeastward.
OKLAHOMA Haskell and Sequoyah Counties	22	6 a.m.	5	50	10	21	5	1	Tornado	Storm moving northeastward struck Hoyt in Haskell County, damaging 9 homes and several outbuildings. Damage estimated at $12,000. This may have been same storm that struck Gans less than 1 hour later. In Gans tornado struck with sudden fury, killing 8 persons and injuring 21. 1 person died after storm from heart attack and 1 of the injured died later. Path of storm narrow, but complete destruction resulted. 8 homes destroyed, 15 damaged, 12 other buildings destroyed and 6

See reference notes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
OKLAHOMA (Cont'd)										damaged. 37 different families suffered losses. A peculiarity of tornado was as it bounced into community it dug several holes in ground about 10 feet in diameter and 1-1/2 feet deep.
ARKANSAS Hunt, Horse Head Lake, and Harmony areas, Johnson County	22	6:45 a.m.	14		0	0		1	Tornado, wind, rain, hail, and electrical	Several homes and other buildings damaged. Loaded, 1-ton truck rolled over several times. Storm moved east-northeastward.
ARKANSAS Bismarck (2 miles southeast of), Hot Spring County	22	9 a.m.	4	880	0	0	4	1	Tornado	2 homes destroyed, 8 damaged, 11 other buildings destroyed, and 10 damaged. Storm moved northeastward.
ARKANSAS Bono area, Craighead County	22	10:20 a.m.	2	440				1	Wind, electrical and rain	Barn destroyed by wind; 2 hogs killed by lightning.
LOUISIANA Princeton area	22	10:50-11:05 a.m.	1-7/10	180	3	9	4	4	Tornado and rain	Struck first 500 yards east-southeast of school and moved in general northeast direction on erratic path, lifting and dipping. Heavy rain obscured funnel at times. Heavy damage for 180 yards and lighter damage extending outward over area 7/8 mile. Driver stopped within 100 yards of funnel reported difficulty breathing and car moved up and down on springs; truck ahead thrown 100 yards with debris scattered over 1/4 mile. Livestock killed.
ARKANSAS Crossroads community, Craighead County	22	11:30 a.m.			0	0		1	Tornado, wind, rain, and electrical	Several barns destroyed, houses and other buildings damaged, grain elevator damaged. Power- and communication lines blown down.
MISSOURI Kennett, Dunklin County	22	11:40 a.m.	1	100	0	1	4		Tornado, wind, rain, and electrical	Man knocked unconcious when he came in contact with broken powerline. Major damage to 19 homes, minor damage to 100 homes. Storm moved northeastward.
PENNSYLVANIA Oil City, Venango County	22	All day							Rain	Heavy rain coupled with ice on Allegheny River and melting snow on ground, caused flooding in Oil City. Water approximately 1 feet deep at height of flood.
ARKANSAS Crossett (4 miles west of), Ashley County	22	1:15 p.m.	4	Narrow	0	0	4	1	Tornado, wind, and rain	House and outbuildings damaged; 300,000-board feet of standing timber and 700 cords of standing pulp timber damaged. Storm moved northeastward.
KENTUCKY Adairville (4 miles northeast of), Logan County	22	3:30 p.m.	1	880	0	0	°4	C	Tornado	Storm struck 2 farms about 4 miles northeast of Adairville. 6 farm buildings and residence damaged or demolished. Posts uprooted, trees blown down, utility lines knocked out. Included in losses were several hundred barrels of government stored corn, quantity of hay and other feeds, and farm machinery. Cloud described as "black as night." Storm moved northeastward.
MISSISSIPPI Charleston, Tallahatchie County	22	3:45 p.m.	**500	500			4	1	Wind	Several small houses and a church blown over; planing mill collapsed. Police chief said storm not a tornado. Wind blew west window in and east window out of 1 house. Storm moved east-northeastward.
TENNESSEE Nashville area, Davidson County	22	4:30 p.m.	15	20-100	0	4	6	1	Tornado, wind, and rain	Tornado moving east-northeastward struck Belle Meade suburb southwest of Nashville and moved in skipping fashion to suburb of Donelson. 1 house and 1 church destroyed, 10 houses heavily damaged and numerous houses received minor damage.
TENNESSEE Oakland School, Wilson County	22	5 p.m.			0	0		1	Tornado (suspected) and wind	Storm blew roofs off 2 houses and a barn, blew away garage, damaged outbuildings, and destroyed timber. Location and time of occurrence suggest that this storm may be remnants of earlier tornado at Nashville.
TENNESSEE Bethel community, Rutherford County	22	6:30 p.m.		10	0	0		1	Tornado (suspected) and wind	Barn demolished, roof removed from house, and 2 porches and roof damaged on second house. Storm moved northeastward.
TENNESSEE New Union, Summitville, Fredonia, and Vervilla communities, Warren and Coffee Counties	22	8:30 p.m.	5	30	0	0	5	1	Tornado, wind, and rain	20 to 25 homes, school, and barn damaged, chicken-coop factory leveled and several head of livestock crushed. Storm moved northeastward.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

JANUARY 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
ALABAMA Summerfield, Dallas County	22	10 p.m.	Short		0	0	3	1	Tornado (suspected)	Sudden and very brief onrush of wind demolished 2 chicken houses and blew heavy 8-inch creosoted timber through fence.
ALABAMA Tuskegee, Macon County	22	Evening					4	1	Electrical	Fire, believed caused by lightning, destroyed church.
MISSOURI Kansas City, Jackson County	22				6				Snow	6 men died from heart attacks probably brought on by exertion during snowstorm.
	22									Minor storms also reported in Clifty community, Ark.; at Holcomb and Springfield, Mo.; and at Pauls Valley, Okla.
MICHIGAN (Lower) Southern portion	22-23	Early a.m. 22d-a.m. 23d				1	3	1	Electrical, wind, rain, and snow	Thunderstorms occurred during early morning of 22d. Lightning severely damaged home near Lapeer and high winds damaged factory at Paw Paw. Falling temperatures, freezing rain, and then snow followed thunderstorms later in day, leaving several inches of snow in many localities by morning of 23d.
WEST VIRGINIA Braxton, Clay, Kanawha, Lincoln, Wayne, Mingo, Logan, Boone, Fayette, Raleigh, Wyoming, McDowell, Mercer, Summers, and Monroe Counties	22-30				2	5			Rain	Heavy rains caused record and near-record local flooding of cities, towns, highways, and low-lying farmlands. Most low-lying communities suffered at least water in basements. Heavy damage reported to farmlands from erosion.
MARYLAND Baltimore area	23	7 a.m.-noon						1	Wind	High winds, with gusts exceeding 60 m.p.h., knocked down trees and limbs around city, shoved freighter in Patapsco River into construction equipment at harbor tunnel, postponed launching of 32,650-ton tanker at Sparrows Point Shipyard, ripped off roof of radio station transmitter building at Chesaco Park.
DISTRICT OF COLUMBIA Washington	23	7:18 a.m.-10:21 p.m.				14	4	1	Wind	Falling limbs damaged some automobiles, and brick wall downed by wind demolished several cars on parking lot; some shop windows blown out, and some powerlines downed; inaugural flags torn from 5th-floor moorings at District Building and their 5-foot masts snapped in some instances; nearly a dozen banners were missing.
	23									Minor storm also reported in Mercer County, N. J.
OKLAHOMA Most of State	23-31				Several	Many	5	1	Rain, sleet, and snow	Glazed conditions developed over most of State, except extreme northwest and Panhandle. Intermittent precipitation kept situation critical during entire period. Roads dangerously icy causing numerous automobile accidents which resulted in several deaths and many injuries. A number of broken bones reported from falls on ice. Property damage confined mostly to Durant area, Bryan County, where trees and utility lines badly broken, although surrounding counties reported similar light damage.
ILLINOIS Extreme northern portion	24-25	Night							Snow	6 inches of snow at Freeport, Rockford, and Marengo.
CALIFORNIA Entire State, except southeast desert	24-26				2		2		Straight-line wind, snow, and rain	Snowfall, widespread over north and central, caused minor traffic accidents. Highway 101 blocked by snow north of Cummings, Mendocino County. 2 cattlemen, lost in blizzard in mountains 30 miles east of Madera, found frozen to death when found on 29th. Moderate rain in Pasadena area caused minor traffic accidents. Snow level in mountains lowered to 5,000 feet. Angeles Crest road temporarily blocked. Wind damaged roofs in Llano area.
COLORADO Cumbres Pass	25-31								Snow and wind	3 trains, including a freight, a rescue train, and a work train, stalled by heavy snow of record proportions on and near Cumbres Pass, near Colorado-New Mexico border, isolating about 60 members of crews from 26th through 31st. First train stalled by very heavy snow which began on 25th, and rescue train and work train attempting to reach first train blocked by avalanches. Continuing heavy snow and high winds through end of month created severe, ground-blizzard conditions, hampering efforts to reach isolated men by Army snow weasels and helicopters.
	26									Minor storm reported at Salt Lake City, Utah.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
ARKANSAS Northern half	26-28	Evening 26th-early morning 28th			4	5			Freezing rain or glaze	Considerable damage over entire area, with most severe damage in northeast quarter of State. Extensive severe damage to trees, shrubs, power- and communication lines, with some damage to buildings. Storm over northeastern quarter of State described as most severe in past 10 years. Damages amounted to several millions of dollars, but due to widespread nature of storm, accurate estimate of monetary loss not possible. The Southwestern Bell Telephone Company estimated its loss in northeastern portions about $250,000. Area is served by several telephone companies. Power companies suffered severe losses. Damage to trees staggering. In some cities streets impassable due to fallen trees and limbs. Highways also blocked. No possibility of estimating loss in timber, and valuable shade trees. Power and communication failures lasted several hours, and in some areas extended into one or more days. Considerable resultant loss in frozen food, due to extended power failures. Glazed highways resulted in many automobile accidents, some of which involved several vehicles.
KANSAS	26-31								Glaze and sleet	Sleet, freezing drizzle, and glaze reported on number of days latter part of month, but principally on the last 6. Many localities affected, especially in the south and east. Some places reported glaze 1/4 inch thick. Driving conditions became very hazardous. Accidents numerous, with several quite serious.
OKLAHOMA Madill, Marshall County	27							1	Electrical and rain	Lightning struck powerline and ignited 10,000-barrel oil-storage tank.
TENNESSEE Obion County	27-28				1	9		1	Ice	Fallen trees and limbs blocked highways, disrupted phone and electric services, damaged roofs, and interrupted operation of industries. Damage to phone system alone estimated at $50,000 to $75,000. Accidents resulted from ice-covered roads and sidewalks.
TENNESSEE Lake County	27-28					Many	5	1	Ice	Fallen limbs damaged roofs and powerlines and blocked traffic. 4 minor automobile accidents, with no injuries. Numerous minor injuries, due to falls on slippery steps and pavement. Hundreds of trees and shrubs ruined.
	27-28									Minor storms also reported in Dyer and Weakley Counties, Tenn.
MISSOURI New Madrid, Dunklin, and Pemiscot Counties	27-29						6		Ice	Many phone and powerlines downed. Trees and shrubs heavily damaged by weight of ice. Travel by highways disrupted; schools closed.
CALIFORNIA Central and southern portions	27-30				3	Many	3		Snow, rain, hail, and wind	Storm brought widespread snowfall to unusually low levels in central and south. Strong to gale-force winds occurred in mountain passes of south. Unprecedented snow caused widespread automobile accidents, 300 in Los Angeles County alone, causing 3 deaths and numerous injuries. Snow made many roads impassable, and caused closing of 15 schools in Saugus, Newhall, and Antelope Valley in southern mountains, and a few in mountainous areas of central. Accumulations of snow broke branches of some trees in citrus groves near Upland. Aside from a few minor traffic accidents, storm caused little damage in San Diego County, although snow ranged down to 2,000 feet on El Cajon Mountain. Streets flooded by torrential rains in southwest Los Angeles and snow heavy enough to break branches from trees in Woodland Hills area of North Hollywood. Hail fell at Long Beach. Winds tore awnings and battered trees in Whittier area. Thousands of automobiles and over 200 trucks stalled on mountain highways during storm.
ILLINOIS Central portion	28	All day							Glaze	Widespread light glazing in area bounded approximately by Alton, Jacksonville, and Olney. Some glazing at Kankakee.
TENNESSEE Ashport, Lauderdale County	28					1		1	Electrical	Lightning struck and ignited house, resulting in complete loss of house and furnishings.
	28									Minor storm also reported at Albertville, Ala.
MAINE Northern and central portions	29	Day					4	1	Snow, sleet, and glaze	Generally 2 to 5 inches of snow in southern portions and 5 to 10 inches in northern sections delayed highway traffic, but relatively few accidents reported. Sleet and glaze added to hazards in some southern areas.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
NORTH CAROLINA Statesville area, Iredell County	29	5:15 p.m.	** 1,000	150	0	0	3		Tornado	Funnel seen. Statesville Airport hangar damaged, trees up to 10 inches in diameter broken off. Tornado moved eastward.
	29									Minor storms also reported in Carroll and Dade Counties, Ga.; and in Coffee, Fentress, and Giles Counties, Tenn.
WASHINGTON Bellingham, Whatcom County	31-Feb.1	P.m.31st-a.m.1st.					5		Wind	Strong, northerly winds caused some property damage in Bellingham area during night of 31st and morning of 1st. Logs and barges being towed in area damaged by waves and high wind.

° Includes crop damage.
C Crop damage included with property damage.
** Yards instead of miles.
† Storms are placed in categories varying from 1 to 9 as follows:

1	Less than $50
2	$50 to $500
3	$500 to $5,000
4	$5,000 to $50,000
5	$50,000 to $500,000
6	$500,000 to $5,000,000
7	$5,000,000 to $50,000,000
8	$50,000,000 to $500,000,000
9	$500,000,000 to $5,000,000,000

GENERAL SUMMARY OF RIVER AND FLOOD CONDITIONS

JANUARY 1957

The most damaging floods during the month were the severe floods in streams in southeastern Kentucky, southwestern West Virginia and adjoining portions of Tennessee and Virginia. Record stages were reported on several of the streams. Flooding was almost entirely of the headwater type. The record flooding necessitated evacuation of several towns in the area.

ST. LAWRENCE DRAINAGE

Flooding occurred in several small streams and tributaries in southwestern New York on the 22d and 23d. The northern counties bordering Lake Ontario were effected most seriously with streams running as much as 3 ft. above bankful stage. Flooding also occurred in many poorly drained lowland areas. Tonawanda Creek which runs northward from Wyoming County to Batavia, N.Y., and thence westward into the Niagara River, flooded extensively on the 24th and 25th. The delayed flooding of Tonawanda Creek caused added hardship because of the near zero temperatures at that time. Flooding in some of the suburbs of Buffalo was the worst recorded. The flooding was caused by heavy rainfall and the rapid melting of a heavy snow cover. Just previous to the thaw Buffalo reported 19 inches of snow on the ground with even deeper snow cover southward over the hills. About 1 to 2 inches of rain was reported over southwestern New York on the 21st and 22d. The ground was not frozen in some sections, delaying the runoff to some extent. Another alleviating factor was the rapid drop in temperature with a heavy snowfall early on the 23d. The flood was directly responsible for one fatality. Damage was mostly restricted to the flooding of perhaps thousands of basements and in a few instances the first floors of residences. There were a few evacuations on the 22d and 23d, but more were forced from their homes on the 24th and 25th by the overflowing Tonawanda Creek. Highway traffic was disrupted throughout the area with many detours necessary. A few automobiles were trapped in flooded areas. Some road washouts occurred and a section of one railroad was so badly eroded that it may be abandoned.

ATLANTIC SLOPE DRAINAGE

The slight flooding in the Susquehanna River Basin in New York on the 23d was due to melting snow and light rainfall. The water equivalent of snow in the upper Chemung Basin was estimated at nearly 1 inch and in the lower Chemung Valley about 0.5 inch. The rainfall on the 23d averaged 0.4 inch in the Susquehanna Basin; the water equivalent of the snow cover ranged from 1.5 inches in the upper portion to 0.5 inch in the lower basin. The rainfall averaged 0.6 inch and the snow cover melted rapidly due to warm temperatures on the 22d and 23d. The snowmelt ended abruptly on the 23d when the temperatures fell rapidly below freezing.

The Ocmulgee River rose to 2.1 ft. above flood stage at Abbeville, Ga., on the 1st and continued in flood until the 4th. No damages resulted from the high water.

EAST GULF OF MEXICO DRAINAGE

There were two rises in the Tombigbee Basin in Alabama during January. The first occurred on the 9th and 10th and the second towards the end of the month. The heavy rainfall (1.5 inches) on the 5th over the upper watersheds of the Warrior and Tombigbee Rivers set off the first rise. The only point to exceed flood stage was in the lower portion at Whitfield, Ala. As the month ended this station was again above flood stage and rising.

MISSISSIPPI SYSTEM

Upper Mississippi Basin.--The monthly mean stage of the Mississippi River at Minneapolis, Minn., for January was 5.5 ft., 0.6 foot below the long-term mean. This is the lowest monthly mean January stage since 1950 when a mean of 5.4 ft. was recorded. One year ago the mean was 6.5 ft. At St. Paul, Minn., the monthly mean stage for the month was 2.4 ft., just under the 21-year January mean stage of 2.5 ft.

A comparison of snow depths on January 31 with that of other years is given in the following table:

COMPARATIVE SNOW DEPTHS (Inches)

STATION (Minnesota)	1957	1956	1955	1952
Bimidji	11	26	8	17*
International Falls	11	22	15	11
Fargo (N. Dak.)	2	7	3	--
Duluth	14	29	17	20
Alexandria	2	16	6	13
New Ulm	T	6	4	10*
Minneapolis	2	11	6	8
Rochester	1	10	3	7

*Estimated

A comparison of the frost penetration on January 31 with that of other years is given in the following table:

COMPARATIVE FROST DEPTHS (Inches)

STATION (Minnesota)	1957	1956	1955
Red Lake Falls	36	12	18
Virginia	24	18	3
Brainerd	42	24	36
Mora	48	40	36
Montevideo	36	22	14
Worthington	7	12	24
St. Cloud	36	30	22

Thickness of ice at Lake Pepin on the Mississippi River on January 26 was 23 inches. This compared to 20.5 inches reported on January 22, 1955.

Missouri Basin.--An ice jam in the Missouri River near Cascade, Mont., caused some flooding on the 27th, 28th and 29th. U. S. Highway No. 91 was flooded for about 2 or 3 days. There was no damage reported other than the inconvenience resulting from the detouring of traffic.

Ohio Basin.--The Allegheny River froze over throughout its length during the first part of January. Unseasonably high temperatures on the 21st and 22d resulted in some movement of the ice pack and an ice gorge developed near Oil City, Pa., on the Allegheny River and on Oil Creek. The snow cover over the upper Allegheny Basin varied from 5 to 25 inches and the runoff from snowmelt resulted in a serious threat to Oil City, Pa., as the ice gorge backed up the water in Oil

Creek and flooded the business sections of Oil City. Moderate to heavy rains fell over the upper Allegheny Basin on the 22d and 23d, averaging about 1.25 inches. This rainfall resulted in the ice moving out of the Allegheny River very rapidly and the threat of a serious flood at Oil City was relieved. Flood stages were exceeded by 2 feet at Olean, N. Y., on the Allegheny River and at Meadville, Pa., on French Creek. With a snow cover of 4 to 7 inches over the Cheat River Basin and rainfall averaging 1 to 1.2 inches on the 22d and 23d, flood stage was just reached at Parsons, W. Va. Snow cover over the remainder of the Monongahela Basin was negligible and rainfall averaging 0.5 to 0.75 inch resulted in minor rises in the Monongahela River. The Ohio River at Pittsburgh, Pa., exceeded normal pool conditions for a period of 93 hours, and crested at 21.6 ft. at noon on the 24th. Moderate to heavy rains (1.5 to 2.5 inches) on the 28th and 29th over the headwaters of the West Fork, Tygart and Cheat River Basins resulted in flood stages being exceeded by 0.5 to 2.5 ft.

Moderate to heavy rains on the lower Scioto on the 9th resulted in minor flooding on Paint Creek at Bourneville, Ohio, on the 9th and 10th. No damage resulted.

The flooding on the White River at Edwardsport, Ind., from the 24th to the 29th was due to rainfall concentrated over a 2 to 3 day period beginning on the 21st.

SEVERE FLOODS IN OHIO RIVER TRIBUTARY STREAMS OF SOUTHEASTERN KENTUCKY AND SURROUNDING AREAS OF VIRGINIA, WEST VIRGINIA AND OF THE UNCONTROLLED TRIBUTARIES OF THE TENNESSEE RIVER.

Prolonged successive rainy weather during the last 10 days of January and first 2 days of February with concentration of heavy showers and thunderstorms all night on January 28-29 resulted in severe flooding in headwater areas of the Guyandot, Big Sandy, Kentucky and Cumberland Rivers in Virginia, West Virginia and Kentucky. Localized flooding also extended into the upper New River Basin in West Virginia and Virginia and over the Powell and Clinch Rivers, headwater streams of the Tennessee Basin in Virginia and Tennessee.

Weather Bureau warnings for severe flash flooding were issued for headwater areas of the Kentucky, Big Sandy and Guyandot Rivers on the morning of January 29 when scattered reports produced evidence of greatly excessive headwater rainfall. Surveys by the U. S. Corps of Engineers and the U. S. Geological Survey, following the floods, in remote headwater areas of the Kentucky River indicate that at least 50 to 75 percent more rain actually fell over portions of the headwaters than was evidenced from measurements at the regular gaging stations. These surveys are summarized in later portions of this report. Weather Bureau officials inspecting the flood area found that advance warnings helped to prevent heavy losses in many cases. The rapidity of the flood rise in the extreme headwaters, however, precluded much, if any, advance precautions. Also, the extreme flood heights, with the main streets of some towns 10 feet or more under water, did not leave much to be done in the way of protection outside of complete evacuation. This was a flood which had not been approached in nearly 100 years.

The worst flood of record occurred on the Big Sandy River and tributaries from the headwaters downstream to near Paintsville, Ky. Pikeville, Ky., was the hardest hit of all towns in the Big Sandy drainage. The entire business district was flooded and approximately 50 percent of the residential section of this town with population of about 5,100 was flooded. Damage in the city was estimated in the millions of dollars. Detailed reports of flooding in the respective river drainages follow.

New River.--Flooding occurred locally in the New River watershed at and near Bland, Va., on Walker Creek. About the time Walker Creek was at its highest stage a dam on one of the smaller creeks, 1 mile upstream from the town, broke causing a large wave to move down Walker Creek washing 8 houses off their foundation; some were destroyed, and others were severely damaged. Flooding in the upper portion of the Elk River in central West Virginia caused damage at Sutton, population 1,070. In Sutton there was water damage to 6 business places and 11 houses. This flood produced highest stage, 31.30 feet, since the flood of July 1932 when a crest of 36.2 feet was recorded. Downstream from Sutton there was scattered flooding to the mouth of the river at Charleston, W. Va.

Guyandot River.--Rainfall in headwaters of the Guyandot River was not quite as heavy as in the headwaters of the adjacent Big Sandy drainage, but the resulting stages reached the highest ever known for a major portion of the stream. Many of the small towns and villages were flooded in low places, but none were completely covered with water. At Pineville, W. Va., in the upper portion of the basin the river exceeded the previous record flood of February 28, 1955, but damage was light. Two school girls were drowned while crossing a stream in a boat. At Logan, W. Va., about mid-point in the Guyandot Valley, the city water supply plant was flooded along with 200 homes and many automobiles. The large steam plant was flooded for the first time since it was built in 1939. The crest stage was 28.23 feet, obtained by leveling to the high water mark on a building; the mark was above the level of the top of the river gage. The damage was light for the remainder of the valley from Logan to the mouth of the river at Huntington, W. Va. The crest at Logan was 3 feet above the crest of the 1955 flood and 1.2 feet above the highest known. There were 4 people drowned in the vicinity of Logan during this flood.

Big Sandy River.--Heavy rain in the extreme headwaters on the night of January 28-29 produced the greatest flood in history in the Big Sandy River, surpassing the historic flood of 1862 by several feet from the headwaters downstream to near Paintsville, Ky. The Levisa Fork joined by the Russell Fork 100 miles upstream from the confluence of the Big Sandy with the Ohio is the major tributary in the Big Sandy Basin. Severe flooding occurred on the Russell Fork at Haysi, Va., population 476, where 95 percent of the business and 80 percent of the residential district flooded from a depth of 2 to 8 feet. The Pound River, a tributary of Russell Fork, flooded Pound, Va., with 75 percent of the town flooded and 125 houses damaged. On Levisa Fork above the mouth of the Russell Fork at Grundy, Va., population 850, the entire business section and most of the residential section was flooded. Extensive damage was reported to highways and roads in Buchanan County, Va. Downstream on Levisa Fork below the confluence with Russell Fork, Pikeville, Ky., was the hardest hit of all towns in the flood. The 1950 population was 5,154.

The entire business district was covered from a depth of a few inches up to 8 feet and approximately 50 percent of the residential section of the town was flooded. The Levisa Fork crested at 52.73 feet on January 30. This was the greatest flood in Pikeville's history exceeding the stage of 52 feet, according to a high-water mark in the February 1862 flood. Flood stage at Pikeville is 36 feet. The city water supply was flooded and 14 days after the crest had passed, drinking water was being shipped in. Damage at Pikeville was estimated in the millions. Downstream in the rural area between Pikeville and Prestonsburg, Ky., the valley was flooded from one mountain side to the other, including several small towns. Most of this area is in Pike County where damages were estimated as 30 million dollars, 2,375 houses damaged, 266 destroyed and 2,402 families evacuated in the rural area. In Prestonsburg, Ky., a town of 3,585 population, 85 percent of the residential section was flooded and the business section was flooded to a depth of 12 feet in the heart of the business area. All means of communications went out during the night of the 29-30th. Downstream at Paintsville, Ky., damage was severe and 85 percent of the residential section was flooded from a few inches to 10 feet in some places; the entire business section was flooded. Downstream from Paintsville to Louisa, Ky., loss was confined to small farms. At Louisa there was little damage and from Louisa to the mouth no damage was reported. On the Tug Fork which flows into the Big Sandy at Louisa damage was heavy with severe flooding in Matewan, Williamson, Welch, Iaeger and Litwar, W. Va. The crest of 43.0 feet at Williamson, W. Va., approached or exceeded the flood of 1862. At Welch, W. Va., the hospital was flooded to a 1-foot depth on the first floor.

Kentucky River.--The most severe flooding of record over the headwaters of the North, South and Middle Forks of the Kentucky River occurred on January 29-30, 1957. The North Fork reached an unprecedented crest height of 37.3 feet on January 29 at Hazard, Ky. The previous record stage of 36.3 feet in 1912 was accepted by the people in the community as the worst flood on record. Downstream from Hazard on the North Fork at Jackson, Ky., a cutoff completed during the past summer, is believed to have reduced the flooding in the Jackson area. Severe flooding occurred on the Middle and South Forks, exceeding most previous floods according to recollection of old time residents. At Booneville, Ky., on the South Fork, water overtopped the U.S. Geological Survey recorder house by about 2 feet. The North Fork below Jackson, Ky., did not reach record flooding as was also true of the main stem of the Kentucky. Severe overflow occurred in the Beattyville, Ky., area which is located near the junction of the North, Middle and South Forks. Heaviest damage in the area was the devastation at Hazard where preliminary damage estimates vary between 20 and 40 million dollars. Two people were drowned and six others lost their lives directly or indirectly because of the flood. Other heavily damaged areas on the North Fork were Whitesburg, Millstone and Neon, Ky. On the Middle Fork the principal town to suffer major damage was Hyden, Ky.; on the South Fork, Oneida and Booneville, Ky. Tabulated below are reports of unofficial rainfall derived from surveys by the U.S. Corps of Engineers and U.S. Geological Survey. This survey covered only the Middle Fork Kentucky River drainage basin and actual figures are subject to later adjustment. All accumulations include precipitation from the beginning of the storm on January 27 through January 31. The amount of precipitation occurring after flood peaks on Thursday evening (January 31) was about 1.5 inches.

Location	Amount of Rainfall (Inches)	Container	Basin
1. 3.5 miles from Haskinston, Ky., towards Harlan, Ky., where Bad Creek empties into Middle Fork.	9.57	Wash tub	Upper portion Middle Fork
2. 1.5 miles upstream from Haskinston, Ky.	a/12.4 at least	lard can	Upper portion Middle Fork
3. 2 miles downstream from Hyden, Ky. Accumulation period Jan. 27 to Feb. 2.	10.1	wash tub	Upper portion Middle Fork
4. Bowlingtown, Ky., on Middle Fork Kentucky River	b/ 8.74	wash tub	Upper portion Middle Fork
5. 1/2 mile from center of town of Buckhorn. Accumulation period Jan. 27 to Feb. 2.	5.0	fruit juice can	Lower portion Middle Fork
6. Sebastians Branch, Ky.	3.68	-	Lower portion Middle Fork

a/ Some rain ran out of pail. Pail was level and filled to brim.
b/ Tub overflowed.

Due to extreme headwater concentration of excessive rainfall, record flooding did not occur along the main stem of the Kentucky River. At Lock 14, Heidelberg, Ky., the crest was 33.5 feet, 2.1 feet below the February 1939 flood. Along the North Fork from Jackson, Ky., to Lock 14 and below on the main Kentucky, advance warnings allowed evacuation of people and protection of movable property at a number of towns and other small settlements downstream to and including a small section of Frankfort, Ky.

Green River.--Rainfall from the storm on January 28 and 29, averaging a little over 3 inches, produced the second rise of the month on the Green River and resulted in flood stages by the close of the month. Crests on this rise produced stages well above flood stage on the Green River and 14 feet above flood stage on the Barren River at Bowling Green, Ky. There was local damage, particularly along the smaller streams in the area above Bowling Green, Ky.

Cumberland River.--The heavy rains in the Cumberland Basin during the period January 21 to February 2, 1957, caused the worst flood of record in headwater areas at Corbin and Cumberland, Ky. Severe flooding was experienced in the Harlan, Williamsburg and Barbourville, Ky., area. About 500 families required evacuation in Barbourville and a large percent of the residential area was affected. At Williamsburg, the Cumberland River crested at 33.77 feet on January 31 just slightly below the 34.0 feet registered in the January 10, 1946, flood and 1.2 feet under the alltime high of 35.0 feet set in the March flood of 1886. Flooding over the Middle and Lower reaches of the Cumberland river was mostly minor to light.

Tennessee River Basin.--Heavy rainfall during the last 10 days of January and the first week of February caused floods over several of the uncontrolled tributaries of the Tennessee River and high flows in the main river. Damage was severe on the Clinch River in the vicinity of Clinchport, Va., where the worst flood since 1864 was experienced, with many homes suffering heavy damage. At Big Stone Gap, Va., the flood on the Powell River was the worst since January 1918. The Pigeon River rose to within one-half foot of the record stage of 1928 at Sevierville, Tenn., and a major portion of the town was flooded on January 31 and February 1, 1957. Heavy damages were sustained in this community. Nominal damages occurred at Chattanooga, Tenn., where the main Tennessee River was 2 feet above flood stage and remained so for several days. Damages elsewhere along the main river were negligible. Less damaging floods occurred at Fayetteville, Tenn., on the Elk River, Shelbyville and Columbia, Tenn., on the Duck River, and Knoxville, Tenn., on First Creek.

Ohio River.--Flooding was limited to minor overflow in lowlands along the lower Ohio River downstream from Evansville, Ind., and did not begin until the first week in February.

Precipitation values for the period of flooding are tabulated in Table 2 of this report. Complete data are published in the monthly Climatological Data by States and may be obtained on request from the Superintendent of Documents, Government Printing Office, Washington, D.C. That publication gives the location of the stations. Mass accumulation of rainfall from several representative recording gages are presented in figure 2. These data are provisional. Final figures will be published later in Hourly Precipitation Data.

Table 1, Representative Crest Stages of Jan.-Feb. 1957 Flood.

PROVISIONAL DATA

River and Station	Flood Stage (Feet)	Present Flood		Maximum Previous Flood	
		Stage (Feet)	Date	Stage (Feet)	Date
Elk: Sutton, W. Va.	30	31.30	1/29	37.2	3/13/18
Guyandot:					
Pineville, W. Va.	13	14.70	1/29	13.58	2/28/55
Logan, W. Va.	20	28.23	1/30	[a]27.0	1/28/18
Branchland, W. Va.	30	42.5	1/30	42.57	3/1/55
Tug Fork:					
Williamson, W. Va.	28	43.0	1/30	-	-
Kermit, W. Va.	38	45.95	1/30	[b]46.7	7/31/1875
Levisa Fork:					
Pikeville, Ky.	36	52.73	1/30	[c]52	Feb. 1862
Prestonsburg, Ky.	38	48.0	1/30	40.98	3/1/55
Paintsville, Ky.	40	45.95	1/31	[d]46.6	Feb. 1862
Big Sandy: Louisa, Ky.	45	50.78	1/31	52.61	3/2/55
North Fork Kentucky:					
Hazard, Ky.	20	[e]37.54	1/29	[f]36.3	1912
Jackson, Ky.	29	[e]40.41	1/30	43.1	2/4/39
Kentucky:					
Lock 14 Heidelburg, Ky.	30	[g]35.00	1/30	35.6	2/4/39
Lock 10 Ford, Ky.	25	[e]33.65	2/1	35.1	3/29/13
Lock 4 Frankfort, Ky.	31	35.2	2/3	47.46	12/19/15
Barren: Bowling Green, Ky.	28	42.3	1/31	52.2	1/18/13
Cumberland:					
Pineville, Ky.	1002	1005.5	1/30	-	-
Williamsburg, Ky.	21	33.77	1/31	[f]35.0	3/30-31/1886
Nashville, Tenn.	40	41.6	1/30	55.3	Jan. 22, 1882
Clarksville, Tenn.	46	51.5	1/30	65.7	Jan. 25, 1937

a Gage at different site and gage datum.
b Derived by Corps of Engineers from study of high water in Big Sandy Valley.
c Maximum stage known, about 52 feet in February 1862.
d From levels to floodmark by Corps of Engineers.
e Taken from graph based on gage readings.
f Highwater mark.
g Crest from U. S. Geological Survey gage 1000 ft. upstream.

Table 2, Precipitation Jan. 21-31, 1957

Station	Day of month											PCPN JAN. 21-31	TOTAL JAN. PCPN
	21	22	23	24	25	26	27	28	29	30	31		
KENTUCKY													
ALBANY		.38	2.09		.06	.03	.34	.58	4.07	.94	.09	8.58	10.82
ALLEN	.15		1.17				.27	.63	2.17	1.05	-	5.44	-
ANCHORAGE	.07	1.08	T					.35	.11		.12	1.73	2.90
ASHCAMP					.07	1.03	2.05	2.12	3.50		1.03	9.80	13.29
ASHLAND DAM 29	.08	.02	1.12	.02		.05	.02	.06	.69	.44	.16	2.66	3.81
BARBOURVILLE	.30	.40	.74		.02		.50	1.05	3.60	1.34	.55	8.50	10.98
BARDSTOWN S J PREP SCH		1.77	.06					.13	.03			1.99	3.23
BAXTER	.35		.55		.05	.02	.30	.85	2.77	.93	.30	6.12	8.52
BENHAM	.13		.74			T		1.10	2.30	1.01	.35	5.63	7.66
BEREA COLLEGE	.21	*	2.10				.29	1.23	1.26		.36	5.45	7.48
BEREA WATER WORKS	.21	T	1.70		T		.26	.67	2.00	.34	.13	5.31	7.40
BLAINE	.30	.32	.94		.03			.78	1.01		.18	3.56	5.53
BONNIEVILLE	*	2.30					.30	1.10	.90		.40	5.00	7.50
BURDINE 2 NE	.15	.15	.80					1.00	2.47	.30	.25	5.12	7.22
BURKESVILLE	.27	.10	2.36	T	.04	T	.29	.91	3.45	.77	.03	8.22	10.42
CAMPBELLSVILLE	T	2.26	.19		.03		.30	.91	1.43	.02	.24	5.38	7.20
CARROLLTON LOCK 1	.05	.10	.75		T			.15	.20	.05	.03	1.33	2.65
CLAY CITY 1 WNW	.13		1.50		.10			.38	1.20	.13	.22	3.66	5.63
CLERMONT E	.09	1.63	.05		.02		*	.56	.18		.11	2.64	4.12
COLLEGE HILL LOCK 11	.15		1.46		T	T	.04	.58	1.63	.09	.09	4.04	6.19
COLUMBIA	.23	.50	2.02					1.25	.27	2.25	.10	6.62	8.54
CUMBERLAND FALLS ST PK		*	.50					2.50	5.76		.30	9.06	11.89
CYNTHIANA	.07	.02	1.03		T	.05		.17	.26	.07	.14	1.81	3.37
CYNTHIANA 2	.30	.39	.63	.07				.36	.16	.30		2.21	4.20
DANVILLE	.08	.12	1.92	T	.04	.02	.06	.57	1.56	.06	.13	4.56	6.63
DELPHIA 1 E	.25		.75	.10			.22	.45	2.20	.30	.90	5.17	7.14
DEMA	.38	.24	.81				.43	1.20	2.14		.44	5.64	8.45
DEWEY DAM	.12		1.16	T	.03	.04	.15	.59	1.21	.80	.12	4.22	6.71
DIX DAM	.08	.16	1.50		.05		T	.55	1.12	.10	.08	3.64	5.27
DUNNVILLE	.20	T	2.25				T	1.53	2.11	.20	T	6.29	8.58
EDMONTON	.30	.30	2.40				.15	1.02	2.68	.35		7.20	9.10
ELIZABETHTOWN	*	1.09				T		1.23	T		T	2.32	2.54
FALMOUTH	.07	T	.97		.02	.02		.07	.45	.03	.08	1.71	2.82
FARMERS	.13		1.48	T	.02	.02		.31	.87	.16	.11	3.10	4.83
FLEMINGSBURG	T	.02	.92	.02	.04			.72	.42	.10	.21	2.45	4.07
FORD LOCK 10	.16		1.68		.02	.06		.36	.86	.22	.02	3.38	5.36
FRANKFORT LOCK 4	.12	T	1.14		T	T		.14	.20	.10	.27	1.97	3.59
FREEBURN 2 SW	.13	.04	.87	.04		.02	.20	.67	1.29	.04	.16	3.46	5.63
FRENCHBURG	T	1.65	T	.02	.03	.04	.55	1.30	.12	.05	.06	3.82	-
GAMALIEL	.26	.58	2.02	T	.02	T	.28	.66	3.67	.56	.05	8.10	9.53
GEORGETOWN WATER WORKS	.14	.28	.83		.10			.32	.18	.01	.22	2.08	3.38
GEST LOCK 3	.12	.01	.96		T			.25	.26	.05	.08	1.73	2.76
GLASGOW	.27	.55	1.82		.04		.25	.85	2.15	.25	.05	6.23	7.55
GLASGOW WKAY	.02	2.46	.03		.05		.50	1.27	1.79		.27	6.39	8.27
GLENDALE	.28	.46	1.62		.03			.44	.91	.10	.03	3.87	5.49
GRANT DAM 38	T	.05	.90		T			.04	.26	.11	.03	1.39	2.64
GRAYSON	.16	T	1.32	T	T			.39	.68		.24	2.79	4.15
GREENSBURG	.17	.45	2.32		T	T	.29	.77	1.92	.11	.05	6.08	7.59
GREENSBURG HIWAY 61 BR	.18	.31	2.42		.04	.03	.06	1.06	1.98	.12	.08	6.28	8.36
GREENUP DAM 30	.12		.76	T	T	.02		T	.67	.18	.11	1.86	3.13
HAZARD WATER WORKS	.22	T	1.32				.30	.92	2.10	1.25	.25	6.36	8.39
HEIDELBERG LOCK 14	.11		1.68	T		T	.18	.59	1.46	.60	.07	4.69	6.64
HIGH BRIDGE LOCK 7	.11	.03	1.85		.05	.07	.05	.45	.98	.18	.20	3.97	5.91
HINDMAN SETTLEMENT SCH	.12	1.02	.41		.08		1.02	.73	1.65	.60	.26	5.89	8.59
HYDEN	.47	*	1.55				*	*	4.80		T	6.82	9.92
INEZ	.10	.10	1.12				.27	.90	1.30		.35	4.14	-
JACKSON	.07	.30	1.40	T	T	.05	.21	1.20	1.76		.20	5.19	8.17
JEREMIAH	.16		1.18				.44	.74	5.20			7.72	9.63
KEENE 1 NNE	.16	.36	1.48		.12			.70	.68	.10		3.60	5.65

Table 2, cont'd. Precipitation Jan. 21-31, 1957

Station	Day of month											PCPN JAN. 21-31	TOTAL JAN. PCPN
	21	22	23	24	25	26	27	28	29	30	31		
KENTUCKY (CONT.)													
LA GRANGE		.05	1.41					.03	.55	.09	.10	2.23	3.63
LANCASTER	.11	.22	1.80		.03	.03	.06	.73	1.78	.08		4.84	7.16
LAURA	.11		1.05				.29	.71	1.71	.59	.16	4.62	7.16
LEXINGTON WB AIRPORT	T	1.41	T		.04		.07	.53	.40	.06	.02	2.53	4.45
LIBERTY	.26	.05	2.20		.02	.02	.24	.85	2.05	.27	.07	6.03	8.16
LITTLE HICKMAN LOCK 8	.11	.05	1.68		.04		.06	.53	1.12	.12	.08	3.79	5.86
LOCKPORT LOCK 2	.13	.01	1.04		T			.22	.43	.02	.18	2.03	3.41
LONDON CAA AP	.04	2.12	.02		.04		.80	1.51	2.48	.03	.38	7.42	10.09
LOUISA 2	.08		1.15		T	T	T	.43	.83	.41	.09	2.99	4.43
LOUISVILLE	T	1.12	T		T			.38	.10		.10	1.70	2.78
LOUISVILLE WB AP	.02	.94	T	T	T		T	.31	.05	.10	.05	1.47	2.83
LOUISVILLE UPPER GAGE	.10	.07	1.23		T			.20	.21	.04	.07	1.92	2.90
MANCHESTER 4 SE	.30		1.60				.39	.80	3.00	.92	.11	7.12	9.56
MAYSVILLE DAM 33	.15	.02	.85		T	.05		.14	.48	.05	.10	1.84	3.02
MC KEE	.19	T	2.01	T	T		.34	.78	1.90	.40	.08	5.70	8.21
MIDDLESBORO	.47	.01	1.01		.07	.02	.29	1.30	2.08	.83	.65	6.73	9.19
MIDWAY	.11	.24	.95		.02	T		.33	.18	.03	.15	2.01	3.97
MONTICELLO	.24		2.01		T	T	.28	.77	4.07	.85	.03	8.25	10.67
MOUNT STERLING	.18	1.73	T		.22			.25	1.10		.13	3.61	6.32
MOUNT VERNON		2.42	.10		.02		.44	1.12	2.02		.27	6.39	8.67
MUNFORDVILLE	.22	.67	2.68	T	.03	T	.16	.74	1.70	.20	.14	6.54	8.13
ONEONTA DAM 35	.08		.68		T			.02	.33	.07	.02	1.20	2.47
PAINTSVILLE	.12		1.13	T			.15	.60	1.10	.60	.36	4.06	6.53
PIKEVILLE	.16	.17	.79		T	.04	.45	1.04	2.04	-	-	4.69	-
PINEVILLE	.21	T	.60	T	.03	.02	.42	.77	2.97	1.36	.51	6.89	9.18
RAVENNA LOCK 12			1.61				.10	.60			.50	2.81	5.35
RICHMOND	.17	.07	1.57		.03	T	.05	.69	1.67	.06	.24	4.55	6.93
ST JOHN BETHLEHEM ACAD	.14	.27	1.20			.04	.01	.27	.80	.60	.02	3.35	5.16
SALVISA LOCK 6	.11	.13	1.33		.02	T		.43	.75	.11	.07	2.95	5.12
SALYERSVILLE 2 SE	.16		1.19				.12	.68	1.70		.30	4.15	6.50
SHELBYVILLE 2 W	.09	.30	.96		T			.16	.02	T	.10	1.63	2.88
SHEPHERDSVILLE	.11	.90	.30	.09				.34		.11		1.85	3.01
SOMERSET 1 N	.11	2.64	.14	.03	.06	.02	.51	1.05	1.93	.03	.37	6.89	9.90
SPRINGFIELD	.14	.55	1.37		T		.05	.55	.91	T	.16	3.73	5.69
STEARNS	.34		1.43				.42	.62	3.54	1.16	.37	7.88	10.17
SUMMER SHADE		2.92	T		.07		.64	-	-	-	-	3.63	-
SUMMER SHADE SUBSTA	.26	.42	2.30		.14	.04	.05	1.31	2.95	.36	.14	7.97	9.99
TAYLORSVILLE		.52	1.70	.10				.33	.33	.09	.10	3.17	4.78
TYRONE LOCK 5	.14	.02	1.21		T	.02		.25	.44	.11	.10	2.29	3.88
VALLEY VIEW LOCK 9	.10	.02	1.57		.03	T	.04	.55	.94	.10	.08	3.43	5.30
VANBUREN	.14	.35	1.20	.05				.35	.05	.15	.37	2.66	4.50
VANCEBURG DAM 32	.15		.86		T	.08		.01	.61	.10	.16	1.97	3.02
WAYNESBURG 7 NE	.26		1.80				.25	.92	1.91	.33	.07	5.54	7.62
WEST LIBERTY	.09	T	1.53		.03	.02	.09	.63	1.23	.25	.15	4.02	6.24
WILLIAMSBURG	.25	.40	.50		.04		.66	2.85	.05	.05	1.10	5.90	8.06
WILLIAMSTOWN 5 WSW	.08	.15	.65		.11	T		.21	.38		.11	1.69	2.27
WILLOW LOCK 13	.12		1.68			.01	.14	.73	1.75	.35	.15	4.93	7.05
WOLF CREEK DAM	.22		2.40		T	T	.30	.92	3.10	1.09	T	8.03	10.28
TENNESSEE													
ALLARDT	.54	.60	.42	T	.10		.98	1.88	1.82	.05	.98	7.37	19.49
ARTHUR	.32		.88		.11		.32	1.65	1.63	1.32	.85	7.08	9.67
BEAUTY SPOT	.10		.70		.02	.13	.29	1.49	.44	1.12	1.47	5.76	7.31
BIG SYCAMORE	.22	.02	1.00		.03	.06	.37	1.45	1.42	1.36	1.00	6.93	9.32
BLUFF CITY	.09		.90			.13	.34	1.31	1.75	.75	.79	6.06	8.52
BOONE DAM	.13	T	.66	T	T	.08	.10	1.43	1.78	.82	.73	5.73	8.02
BRISTOL WB AIRPORT	.10	.19	.26		.11		1.00	1.94	1.28	.20	1.75	6.83	9.18
BULLS GAP	.13		.73		.03	.45	.43	1.42	.92	.75	1.03	5.89	8.05

Table 2, cont'd . Precipitation Jan. 21-31, 1957

Station	Day of month											PCPN JAN. 21-31	TOTAL JAN. PCPN
	21	22	23	24	25	26	27	28	29	30	31		
TENNESSEE (CONT)													
BUTLER	.18		.34			.06	.35	1.60	1.50	1.09	.87	5.99	8.12
CAMP CREEK BALD	.05		1.09		.05	.20	.45	3.18	.35	1.07	1.92	8.36	10.57
CARTHAGE	.59	.07	1.90	T	.04	.02	.53	.62	2.79	1.04	.35	7.95	9.49
CEDAR CREEK	.15		.48			.10	.37	1.35	1.26	.72	.90	5.33	7.20
CENTER HILL DAM	.32		1.90		.05	T	.32	1.01	1.21	1.58	.32	6.71	8.21
CENTERSVILLE	.10		.35			.14	.59	1.53	1.10	1.03	.80	5.64	7.87
CHEROKEE DAM	.11		.69		.01	.11	.22	1.65	.81	.70	.88	5.18	6.71
CLARKRANGE	.45	T	1.05		T	.15	.30	1.60	2.08	1.52	.61	7.76	9.47
CLINTON	.60	T	.95		.10	*	*	2.11	.80	.40	1.23	6.19	7.75
COLESVILLE	.11		.46			.29	.49	1.62	1.84	1.04	.79	6.64	9.40
COOKEVILLE 1 W	.34	T	1.32		.06	T	.45	1.37	1.46	1.46	.38	6.84	8.38
CRANDULL 2	.13		.98			.23	*	1.75	2.75	*	1.60	7.44	10.20
CROSSVILLE EXP STA	.55		.65		.06	.01	.39	2.25	1.36	.82	1.42	7.51	9.40
DALE HOLLOW DAM	.56		1.83		.04	.02	.37	.62	3.50	1.32	.18	8.44	10.87
DANDRIDGE	.23		.20		.25	.30	.65	2.10	.82	1.07	1.70	7.32	8.53
ELIZABETHTON	.13		.16			.11	.44	1.39	1.50	.95	.72	5.40	7.00
ELK VALLEY 2 W	.45		.45		.10		.54	1.51	2.13	.89	.80	6.87	9.13
EMBREEVILLE	.01	.01	.24		.01	.12	.47	1.58	.94	1.41	.90	5.69	7.36
ERWIN	.09		.44			.12	.29	1.50	1.07	1.21	.82	5.54	6.97
FLAT GAP	.13		.65		.02	.05	.37	1.37	2.17	1.77	1.00	7.53	9.47
FRANKFORT	.39		.52		.08		.51	1.74	1.55	.93	1.10	6.82	8.12
GAINESBORO	.51	.07	2.15		.05	.06	.60	3.80	1.30	*	.35	8.89	10.76
GREENEVILLE EXP STA		.23	.22		.07	.09	.76	1.71	1.16	.02	2.12	6.38	7.69
GREENEVILLE 5 SSW			.38				.52	1.75	.51	.98	1.05	5.19	6.36
HAMPTON	.08		.22			.38	.40	1.25	1.50	1.30	.84	5.97	7.33
HEBBERTSBURG	.38	.16	.62		.05	.10	.35	1.66	.59	1.03	1.57	6.51	7.61
JAMESTOWN 1 NE	.48		1.70				.55	.80	2.50	1.32	.50	7.85	10.56
JEAROLDSTOWN	.12		.89			.12	.10	1.76	2.13	.63	1.27	7.02	9.12
JEFFERSON CITY EVAP	.15	.27	.35		.13	.02	.92	1.29	1.08	.05	1.60	5.86	7.11
JOHN SEVIER STEAM PLANT	.14		.69		.02	.11	.45	1.24	2.07	.89	1.00	6.61	8.81
JOHNSON CITY SUBSTA	.11		.22		.02	.09	.15	1.52	1.77	.89	.64	5.41	7.21
JOHNSON CITY VET HOSP	.14		.26			.15	.45	1.74	1.36	.95	1.02	6.07	7.84
JOPPA	.07		.65		.08	.02	.36	1.10	2.34	.72	1.11	6.45	7.52
KINGSPORT 3 SE	.13		.56		.04	.15	.34	1.16	1.79	1.10	.85	6.12	8.66
KINGSPORT T E C	.10		.60			.10	.28	1.10	1.73	1.10	.80	5.81	8.29
LA FOLLETTE	.54		.52		.09	.06	.19	1.68	1.84	1.08	.92	6.92	8.47
LICK CREEK	.11		.72			.10	.46	1.26	1.55	.72	1.06	5.98	7.98
LIMESTONE COVE	.14		.52				.22	2.00	1.05	1.08	.80	5.81	7.47
LIMESTONE TVA	.10		.17			.16	.55	1.91	.80	.77	.90	5.36	7.22
LITTLE CHUCKY	.08		*			*	1.10	1.40	.38	.70	1.90	5.56	7.16
LITTLE WAR GAP	.12		.70		.07	.07	.35	1.41	1.42	1.37	1.20	6.71	9.25
LIVINGSTON	.40		2.56	T	T	.03	.52	.75	3.10	1.05	.35	8.76	10.69
MONTEREY	.50	T	1.00			.05	.37	1.75	2.40	1.65	.63	8.35	10.40
MORRISTOWN	*		.74		.03	.12	.37	1.44	1.04	1.03	1.11	5.88	7.55
MOUNTAIN CITY 2	.09	.18	.35		.08	T	.58	2.00	1.37	.02	1.37	6.04	7.79
NEWCOMB	.32		.65					1.45	1.65	1.21	.50	5.78	7.18
NOLICHUCKY DAM	.03		.47			.13	.16	2.19	.79	.95	1.22	5.94	7.23
NORRIS DAM	.24	.02	1.85			.12	.18	1.38	2.47	1.14	1.04	8.44	9.79
OAK RIDGE WB	.15	1.54		.04	.28		1.78	1.06	.41	.35	2.19	7.80	10.08
ODOMVILLE	.22		.61			.29	*	1.71	1.43	1.10	.97	6.33	7.61
ONEIDA	.32		1.29				.42	.98	1.85	1.21	.43	6.50	8.89
PAULETTE	.30		.60			.15	.50	1.40	1.40	.80	1.30	6.45	7.55
PETROS	.43		1.35		.13	.16	.36	2.18	1.41	1.00	1.35	8.37	10.43
PILOT MOUNTAIN	.10		.52			.28	.30	1.99	2.40	.89	.90	7.38	8.75
RED BOILING SPGS 4 NNW	.25	1.94	.93		.05		.51	1.68	3.51	.01	.32	9.20	10.85
RITTA	.28	.03	.91		.10	.11	1.12	1.07	.42	.42	1.20	5.66	6.84
ROAN HIGH KNOB	.12	.07	1.48		.05	.10	.25	2.00	1.09	.77	.88	6.81	8.43

Table 2, cont'd. Precipitation Jan. 21-31, 1957

Station	Day of month											PCPN JAN. 21-31	TOTAL JAN. PCPN
	21	22	23	24	25	26	27	28	29	30	31		
TENNESSEE (CONT.)													
ROAN MOUNTAIN	.06		.65			.08	.22	1.50	1.48	.98	.82	5.79	7.38
ROGERSVILLE 1 NE	.15	.20	.20		.12		1.10	1.94	2.07	.05	1.53	7.36	8.72
SOUTH HOLSTON DAM	.14		.66		T	.16	.32	1.32	1.76	1.04	.71	6.11	8.24
STANLEY KNOBS	.13		.55		.01	.17	.35	1.25	1.52	1.39	.98	6.35	8.64
STONE MOUNTAIN	.15		.52			.15	.30	1.88	1.17	1.24	.95	6.36	8.80
STRAWBERRY PLAINS	.15		.65	.01	.06	.05	.50	1.61	.26	.52	1.16	4.97	6.04
TAYLORS	.34	.41	1.24				.42	2.21	2.37	.20	1.22	8.41	10.71
TAZEWELL 2 SE	.23		1.05			.09	*	1.85	*	3.27	.90	7.39	8.87
THORN HILL	.12		.69		.05	.06	.27	1.40	2.50	1.54	1.12	7.75	10.14
TURLEY	.46		.55		.11		.42	1.91	1.78	1.69	.58	7.50	9.51
UNICOI 2 ESE		.15	.30		.15		1.06	1.86	1.48	.15	1.92	7.07	8.78
VASPER	.39		1.00			.27	.41	2.00	2.00	1.00	1.00	8.07	9.48
WALKERS FORD	.19		1.10			.11	.46	1.34	2.07	1.67	1.33	8.27	9.66
WARTBURG 2 SE	.31	.40	.42		.15	.01	.63	1.60	2.00	.08	1.43	7.03	8.47
WATAUGA DAM	.16	T	.30	T	T	.14	.13	1.84	2.03	1.22	.71	6.53	8.69
WELL SPRING	.47		.39		.10		.67	.93	1.63	.77	1.20	6.16	7.77
WESTBOURNE	.47		.58				.28	1.28	1.54	1.06	.93	6.14	8.49
WHITE HOLLOW	.30		.88		.02	.03	.29	1.65	1.49	1.26	.93	6.85	8.39
WHITE PINE	.11		.51		.14	.05	.95	1.13	.32	.72	1.14	5.07	6.23
WEST VIRGINIA													
ATHENS CONCORD COLLEGE	.07	.03	.77		.05		.42	.98	1.85	.10	.71	4.98	7.50
BECKLEY V A HOSPITAL	.08		.75	T	T	.01	.13	.70	.85	.87	.21	3.60	6.54
BELVA 2 E	.21		.90			.32		.30	.90	1.12	.12	3.87	6.35
BLUEFIELD 1	T	.03	.43		T		.59	.98	3.05	.09	.94	6.11	10.06
BRANCHLAND	.12		1.15			.05		.30	.90	.71	.05	3.28	4.82
CABWAYLINGO ST FOREST		.18	.85		.03		.08	.62	1.13		.20	3.09	4.71
CHARLESTON WB AP	.05	.71	.22		.01		.01	.94	1.72	T	.18	3.84	5.78
CHARLESTON 1	.10		.96	T	T	T	T	.40	1.47	.52	.11	3.56	5.20
CLAY	.14	.03	.96			.06		.25	.96	1.36	.16	3.92	5.71
CLENDENIN 2 SW	.12		.97	T				.25	1.08	1.20	.20	3.82	5.56
CRESTON	.10		.83	.02	T	.03	T	.06	.55	.25	.16	2.00	3.53
FLAT TOP	.12	.80	.10		.03		.56	1.06	2.40	.11	1.03	6.21	9.00
GARY	.09		.72		.01		*	1.09	1.20	1.52	.22	4.85	7.25
HAMLIN	.09		1.05					.36	1.19	.42	.11	3.22	4.83
HICO	.08	T	.89	T	T	T	T	.51	.87	.92	.14	3.41	5.65
HOGSETT GALLIPOLIS DAM	.09		1.04			.05	T	.03	.66	.32	.22	2.41	3.62
HUNTINGTON 1	.10	.28	.88		.05			.66	.96		.07	3.00	4.55
HUNTINGTON WB CITY	.03	1.09	.06		.05		.03	.61	.80	.17	.11	2.95	4.53
IAEGER	.09		.68				.10	1.00	1.78	.95	.15	4.75	7.47
KERMIT	.15		1.10	.10		.05		.80	1.15	.71	.16	4.22	6.84
LOGAN	.15	T	.90	T		.05	.12	.67	1.18	.17	.16	3.40	5.82
LONDON LOCKS		T	.93	.03		.04	.04	.36	.76	1.18	.11	3.45	5.60
MADISON	.12		1.09	.02		.02	.04	.42	.93	.98	.11	3.73	5.78
MAN	.25	T	.95		T		.31	.98	1.31			3.80	6.35
MATOAKA			1.20					1.30	1.70	.12	.38	4.70	7.90
NAOMA 1 SE	.25		.95				.40	.44	.94	.98	.21	4.17	6.65
OAK HILL	.13	.01	.86	.02		.01	.16	.47	.84	.90	.23	3.63	6.01
PINEVILLE	.05	.05	.83	T		.01	.20	.60	1.50	1.06	.12	4.42	7.15
POINT PLEASANT 6 NNE		.32	.41		.07	.02		.40	.17	T	.12	1.51	2.70
PRINCETON	.08		.46	T		T	.21	.94	1.36	.95	.32	4.32	6.53
RAVENSWOOD DAM 22	.08	T	1.05			.06	T	.05	.53	.18	.17	2.12	3.39
RIPLEY	.10	.20	.13	.14	.05	T		.52	.39	T	.20	1.73	3.64
SPENCER	.12		.85	T		.02		.13	.65	.30	.18	2.25	3.49
WILLIAMSON	.32		1.19	.02		.01	.16	.72	1.24	-	-	3.66	-
WILLIAMSON 2	.11	T	1.40	.03		.01	.18	.60	1.23	.88	.17	4.61	7.53
WINFIELD LOCKS	.10		.89			.06		.10	.91	.56	.27	2.89	4.29

Table 2, cont'd. Precipitation Jan. 21-31, 1957

Station	Day of month											PCPN JAN. 21-31	TOTAL JAN. PCPN
	21	22	23	24	25	26	27	28	29	30	31		
VIRGINIA													
ABINGDON	.20		.64			.05	.35	1.14	2.31	1.26	.80	6.75	8.86
BIG KNOB	*		*		*	*	*	*	*	*	5.73		7.05
BIG STONE GAP	.23		1.31		.02	T	.40	1.07	2.52	1.22	.53	7.30	9.95
BLAND	.17		.39		T		.24	.50	1.75	1.50	.80	5.35	6.64
BRISTOL	.18	.80	.72		.18		.90	1.65	2.28	.50	1.50	8.71	11.51
BRISTOL TVA	.29		.76		.02	.11	.72	.92	2.19	1.25	.98	7.24	9.82
BURKES GARDEN	.42		.35		.04		.46	1.10	2.50	.15	1.17	6.19	9.27
CHILHOWIE 1 S	.20	T	.60		T	.08	.63	.85	1.74	1.30	.85	6.25	8.93
CLEVELAND	.20		.64				.42	1.08	1.78	1.45	.70	6.27	8.24
CLINCHCO	.15	T	.73	T		T	.36	.43	1.75	1.73	.17	5.32	7.36
CLINCHPORT	.33		.69			.11	.23	1.40	2.29	1.32	.90	7.27	9.99
DAMASCUS	.10	T	.61		T	.11	.37	1.14	2.43	1.66	.80	7.22	9.55
DANTE	.52		1.15				.45	.75	2.10	1.50	.75	7.22	9.58
DARWIN			.72				.69	1.67	-	-	-	3.08	-
DAVENPORT 2 NE	.15		.70				.46	.51	2.61	.84	.48	5.75	6.87
DUNBAR		.02	1.27				.39	.78	2.46	1.00	.53	6.45	8.45
DUNGANNON			1.14		.03	.02	.50	1.08	1.46	1.03	.80	6.06	8.02
GROSECLOSE	.19		.54				.24	.72	1.19	1.18	.80	4.86	7.07
HIGH KNOB	.19	.09	.80				.48	1.02	2.43	.60	.77	6.38	7.93
HOLSTON	.48		.50				.60	.85	1.73	1.00	.95	6.11	8.00
HONAKER	.24		.76				.32	1.01	2.34	1.19	.68	6.54	8.44
HONAKER 4 NW	.10		.89				.37	.82	2.00	1.47	.65	6.30	7.90
INDEPENDENCE	.60						.37	.88	.20	.60	.90	3.55	4.05
INDEPENDENCE 2	.13	T	.80	T	T	T	.05	.18	.90	.52	.55	3.13	3.75
JEWELL RIDGE	.20		.80				.45	.70	2.90	.70	.80	6.55	8.96
JONESVILLE 2 SSE	.24		.83		.07	.04	.31	1.48	2.12	1.22	.86	7.17	9.94
LOVES MILL			.68			.12	.50	.87	1.95	1.18	.90	6.20	8.67
MARION	.18		.55			.10	.31	1.11	1.70	1.20	.72	5.87	8.81
MENDOTA	.20		.65		.04	.31	.29	1.04	2.07	1.23	.85	6.68	8.92
NORTH BRISTOL SUBSTA	.23		.71			.13	.18	1.29	2.66	1.20	.72	7.12	8.90
OLINGER	.42		1.20		.11		.20	1.10	2.30	1.35	.51	7.19	10.44
PENNINGTON GAP 1 W	.32		.97		.11		.53	1.24	2.43	.54	.91	7.05	9.86
ROSE HILL	.30		.30	T	T	.40	.20	1.30	2.20	.65	.50	5.85	7.10
SALTVILLE	.17		.54	T		.07	.34	.94	2.12	1.28	.92	6.38	9.17
SALTVILLE 1 N	.18		.63		.01	.07	.35	1.00	2.02	1.23	.92	6.41	9.42
SPEEDWELL	.20		*				.17	.38	.80	.85	.65	3.05	3.85
SPRING CREEK 2	.30		.60				*	*	*	*	5.52	6.42	8.96
STACY	.03	T	.80				.40	.80	2.00		.40	4.43	7.14
SWORDS CREEK	.21		.71				.42	.96	2.43	1.45	.50	6.68	8.59
TAZEWELL	.24		.78		.02	.04	.36	.85	2.02	1.92	.33	6.56	9.00
TROUT DALE	.13	.02	.86				.10	1.01	2.05	1.53	.64	6.34	8.23
WALLACE	.18		.76			.10	.33	1.15	2.67	1.26	1.16	7.61	9.65
WISE 1 SE	.06	.03	.89		T	T	.60	1.32	2.38	.05	.61	5.94	8.02
WYTHEVILLE	.12		.43			.15	.38	1.00	.77	*	.01	3.46	5.10

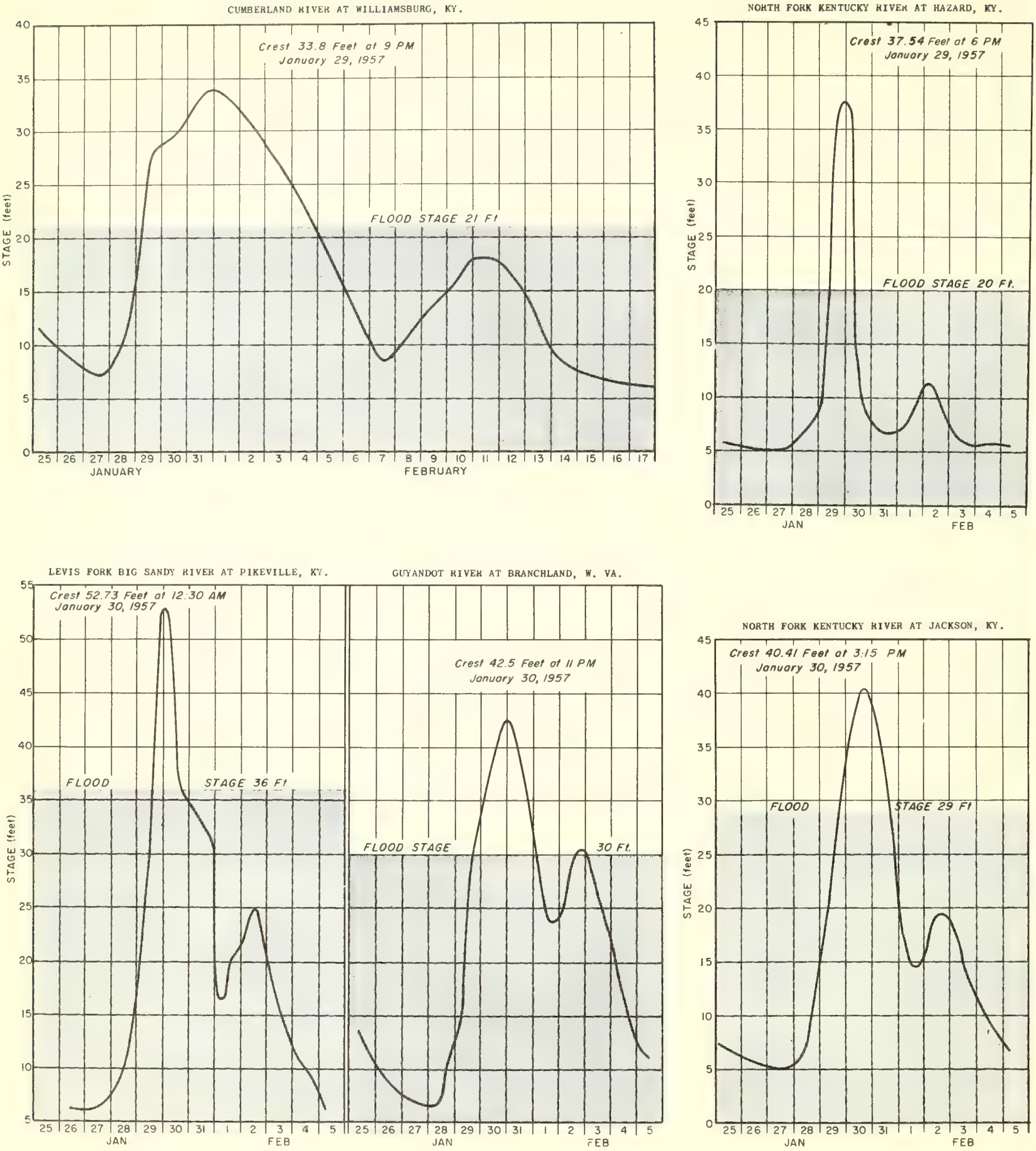

Fig. 1 River Stage Hydrographs, Jan. - Feb. 1957

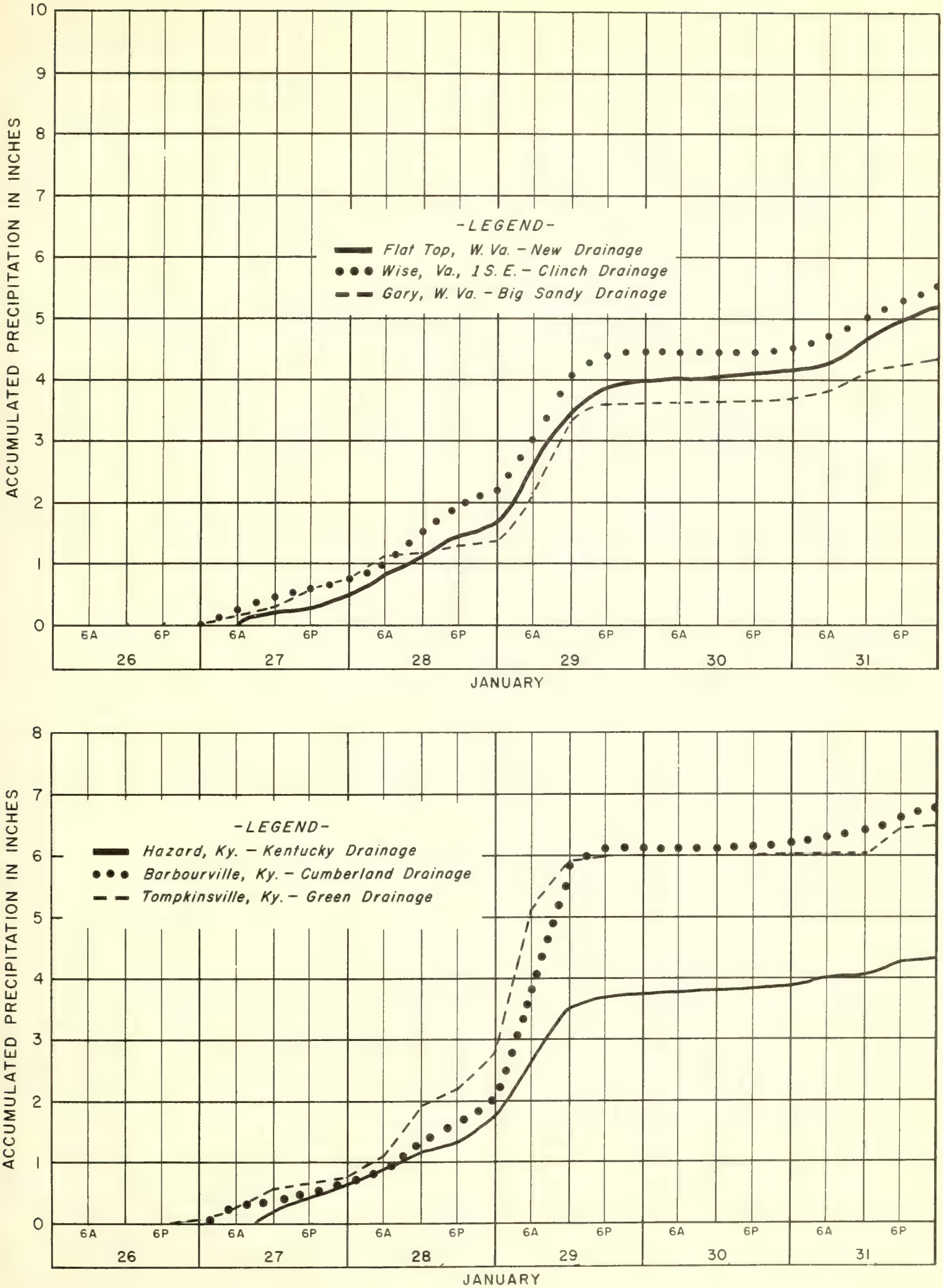

Fig. 2 Mass Rainfall Curves Jan. 26-31,1957

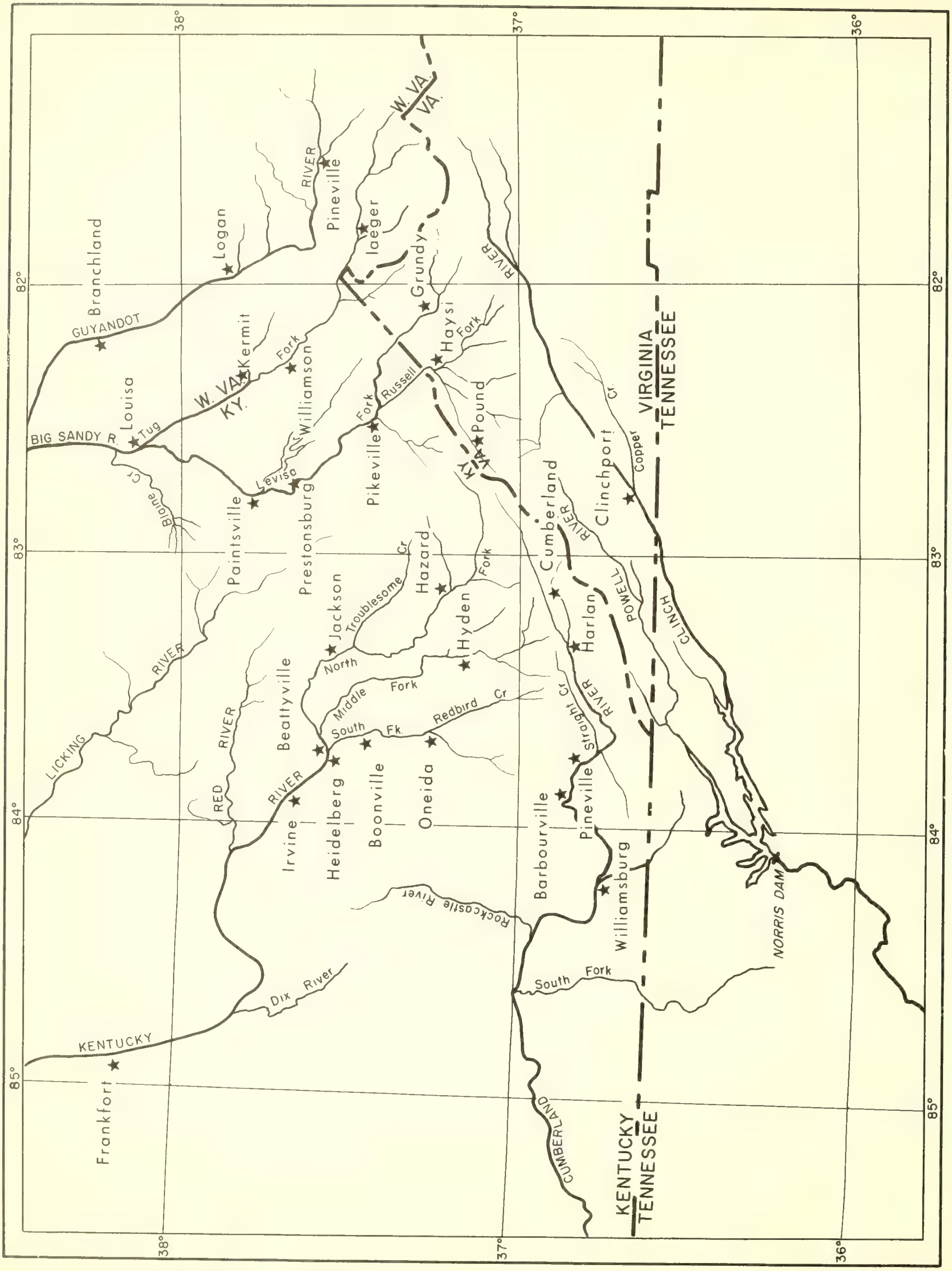

Figure 3 Locations of severe flooding

FLOOD STAGE DATA

(All dates in January unless otherwise specified)

River and station	Flood stage	Above flood stages -dates		Crest*	
		From–	To–	Stage	Date
ST. LAWRENCE DRAINAGE Lake Ontario	Ft.			Ft.	
Canaseraga Creek: Groveland, N.Y.	11	22	23	12.1	23
Oatka Creek. Garbutt, N.Y.	5	23	25	6.6	24
Black Creek: Churchville, N. Y.	5	23	26	6.4	24
Genesee: Scio, N. Y	8	23	23	9.1	23
ATLANTIC SLOPE DRAINAGE					
Chenango: Whitney Point, N. Y.	12	23	23	12.7	23
Chemung:					
Elmira, N. Y.	12	23	23	12.5	23
Chemung, N. Y.	12	23	23	14.0	23
Susquehanna: Conklin, N. Y.	11	23	23	E11.2	23
Ocmulgee: Abbeville, Ga.	11	1	4	13.1	1
EAST GULF OF MEXICO DRAINAGE					
Tombigbee: Lock No. 3, Whitefield, Ala.	33	9 30	10 1/	34.8 54.8	9 12
MISSISSIPPI SYSTEM Ohio Basin					
French Creek: Meadville, Pa.	57	23	25	59.1	24
Allegheny: Olean, N. Y.	10	23	24	12.2	23
Tygart:					
Elkins, W. Va.	17	30	30	18.1	30
Belington, W. Va.	14	30	30	14.6	30
Philippi, W. Va.	17	29	30	19.5	29
Cheat: Parsons, W. Va.	11	29	30	12.6	29
Elk:					
Sutton, W. Va.	30	29	30	31.3	29
Clay, W. Va.	18	29	30	22.6	30
Guyandot:					
Pineville, W. Va.	13	29	29	14.7	29
Logan, W. Va.	20	29	30	28.23	30
Branchland, W. Va.	30	29	Feb. 1	42.5	30
Tug Fork:					
Williamson, W. Va.	28	29	30	43.0	30
Kermit, W. Va.	38	29	31	45.95	30
Levisa Fork:					
Pikeville, Ky.	36	29	30	52.73	30
Prestonsburg, Ky.	38	29	30	48.0	30
Paintsville, Ky.	40	30	31	45.95	31
Big Sandy: Louisa, Ky.	45	30	Feb. 1	50.78	31
Paint Creek: Bourneville, Ohio	10	9	10	11.4	10
North Fork: Hazard, Ky.	20	29	30	37.54	29
Jackson, Ky.	29	29	31	40.41	30
Kentucky:					
Lock 14, Heidelberg, Ky.	30	30	31	35.0	30
Lock 10, Ford, Ky.	25	31	Feb. 4	33.65	Feb. 1
Lock 4, Frankfort, Ky.	31	Feb. 2	Feb. 5	35.2	Feb. 3
MISSISSIPPI SYSTEM (Cont'd.) Ohio Basin (Cont'd.)	Ft.			Ft.	
Barren: Bowling Green, Ky.	28	24 29	25 1/	28.95 42.3	24 31
Rough: Dundee, Ky.	25	25	26	25.4	26
Green:					
Munfordville, Ky.	28	30	1/	----	--
Lock 6, Brownsville, Ky.	28	30	1/	----	--
Lock 4, Woodbury, Ky.	33	24 29	27 1/	---- ----	-- --
Lock 2, Calhoun, Ky.	23	29	1/	----	--
Cumberland:					
Pineville, Ky.	1002	29	31	1005.5	30
Williamsburg, Ky.	21	29	Feb. 4	33.8	31
Nashville, Tenn.	40	29	Feb. 3	41.6	30
Clarksville, Tenn.	46	29	Feb. 6	51.5	30
Pigeon River:					
Sevierville, Tenn.	8	31	Feb. 1	14.8	Feb. 1
Mineral Springs, Tenn.	6	31	Feb. 1	6.07 6.40	Feb. 1 Feb. 1
First Creek: Knoxville, Tenn. (Fifth Avenue Gage)	5	28 31 Feb. 9	29 Feb. 2 Feb. 10	5.78 6.92 6.25	28 Feb. 1 Feb. 9
Tuckaseegee: Bryson City, N. C.	9	31	31	11.1	31
South Chickamauga Creek:					
Chickamauga, (nr.) Tenn.	10	31	Feb. 6	16.68	Feb. 2
Elk:					
Fayetteville (nr.), Tenn.	18	30	Feb. 6	26.54	Feb. 2
Fayetteville, Tenn.	659	28	Feb. 6	660.8 667.9	28 Feb. 2
Duck:					
Shelbyville, (nr.) Tenn.	21	28 31	29 Feb. 2	24.26 27.04	28 Feb. 1
Shelbyville, Tenn.	719	28 31	29 Feb. 22	722.9 725.35	28 Feb. 1
Columbia, Tenn.	32	29	Feb. 4	40.48	Feb. 2
Tennessee:					
Chattanooga, Tenn.	651	Feb. 1	Feb. 6	653.36	Feb. 2
Whitesburg, Ala.	560	29	Feb. 20	572.93	Feb. 2
Florence, Ala.	419	30	Feb. 14	427.32	Feb. 4
Savannah, Tenn.	380	31	Feb. 15	392.41	Feb. 6
Gilbertsville, Ky.	320	29	Feb. 25	337.55	Feb. 10

* Provisional
E Estimated
1/ Continued at end of month

RAWINSONDE DATA

Average monthly values

JANUARY 1957

ALBANY, N. Y. (1010 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	86	-9.0	75	269	2.7
1,000	31	162	-8.8	66	246	4.7
950	31	563	-9.2	63	269	12.4
900	31	977	-10.9	61	281	19.0
850	31	1,415	-11.9	52	284	24.7
800	31	1,878	-12.6	49	280	28.4
750	31	2,375	-13.7	51	281	33.2
700	31	2,892	-15.3	51	279	38.1
650	31	3,456	-17.5	48	277	43.1
600	31	4,046	-20.3	47	274	47.4
550	31	4,688	-23.8	44	274	54.0
500	31	5,376	-27.8	44	274	61.8
450	31	6,136	-32.6	43	272	67.8
400	31	6,947	-37.7		273	77.9
350	31	7,855	-43.4		273	80.4
300	31	8,877	-49.7		274	78.9
250	31	10,054	-54.3		272	83.5
200	30	11,472	-56.2		276	81.0
175	30	12,320	-56.0		278	82.8
150	29	13,290	-55.6		275	74.8
125	29	14,450	-56.1		276	70.1
100	27	15,866	-57.7		276	56.9
80	26	17,266	-58.1		276	54.0
60	23	19,073	-58.1		277	47.6
50	23	20,219	-58.5		269	44.1
40	20	21,638	-58.5		272	43.5
30	15	23,429	-57.2		272	51.7
20						
15						

ALBUQUERQUE, N. MEX. (838 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,619	5.4	50	312	0.4
1,000	31	146				
950	31	582				
900	31	1,031				
850	31	1,498				
800	31	1,995	4.4	45	273	8.2
750	31	2,524	.7	50	262	14.4
700	31	3,068	-3.0	55	256	20.0
650	31	3,653	-7.0	54	254	24.1
600	31	4,270	-10.5	46	262	30.1
550	31	4,937	-14.2	44	267	39.6
500	31	5,652	-18.6	44	268	41.6
450	31	6,439	-23.8	44	271	43.7
400	31	7,280	-29.2	42		
350	31	8,221	-35.6	45		
300	31	9,274	-43.5			
250	31	10,474	-52.2			
200	31	11,892	-58.3			
175	31	12,731	-58.5			
150	31	13,699	-59.0			
125	30	14,828	-61.5			
100	26	16,212	-64.8			
80	24	17,563	-65.7			
60	17	19,331	-63.2			
50	14	20,459	-62.3			
40	12	21,851	-60.3			
30	8	23,732	-58.1			
20						
15						

AMARILLO, TEX. (893 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,099	2.0	51	182	5.6
1,000	31	161				
950	31	587				
900	31	1,026				
850	31	1,493	3.9	46	232	14.2
800	31	1,987	4.5	43	255	23.7
750	31	2,518	2.2	40	261	26.2
700	31	3,064	-1.0	39	269	26.0
650	31	3,657	-4.3	38	272	30.3
600	31	4,278	-7.9		271	37.1
550	30	4,946	-12.3	37	267	44.1
500	30	5,669	-17.1	40	266	50.1
450	30	6,459	-22.4	41	266	58.5
400	30	7,307	-28.2	44	262	64.7
350	30	8,251	-34.9	48	263	71.5
300	29	9,305	-43.0		263	82.6
250	29	10,507	-52.6		262	93.2
200	29	11,921	-59.7		262	93.0
175	29	12,753	-60.3		264	88.6
150	29	13,713	-60.4		264	81.8
125	26	14,844	-62.1		268	64.7
100	24	16,214	-64.1		269	48.2
80	22	17,588	-64.2		276	32.2
60	18	19,361	-62.3		286	18.1
50	18	20,490	-61.0		290	11.3
40	17	21,872	-61.4		284	13.2
30	16	23,677	-59.1		320	6.6
20	15	26,233	-59.2		44	13.8
15	9	28,057	-59.5			

ANCHORAGE, ALASKA (1021 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	30	-8.0	72	3	0.8
1,000	31	190	-6.9	70	7	3.3
950	31	600	-3.8	60	106	1.4
900	31	1,019	-4.9	54	188	2.1
850	31	1,467	-5.9	53	245	3.3
800	31	1,941	-7.0	48	260	6.4
750	31	2,448	-8.7	46	266	11.1
700	31	2,975	-11.0	42	271	14.0
650	31	3,549	-13.7	37	276	17.5
600	31	4,145	-17.1	35	271	21.0
550	31	4,793	-21.4		270	23.5
500	31	5,488	-25.8	34	267	24.9
450	31	6,248	-31.2	36	269	26.4
400	31	7,067	-37.1		263	30.5
350	31	7,975	-44.0		279	31.1
300	31	8,991	-51.1		273	31.9
250	31	10,157	-57.0			
200	31	11,554	-59.7			
175	31	12,390	-57.3			
150	31	13,366	-56.1			
125	30	14,529	-55.3			
100	30	15,947	-56.3			
80	30	17,362	-56.5			
60	26	19,192	-56.7			
50	24	20,350	-58.1			
40	21	21,778	-57.8			
30	13	23,608	-58.5			
20						
15						

ANNETTE, ALASKA (1020 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	37	-1.1	72	50	3.7
1,000	31	191	-1.0	62	45	4.5
950	31	600	-2.7	56	34	6.0
900	31	1,026	-4.0	52	19	6.4
850	31	1,476	-5.2	47	11	8.9
800	31	1,951	-6.7	43	342	12.8
750	31	2,455	-8.8	41	337	14.2
700	31	2,984	-11.6	40	350	12.6
650	31	3,554	-15.2		353	13.6
600	31	4,148	-18.9	41	349	16.3
550	31	4,796	-23.0	42	344	17.7
500	31	5,483	-27.5	41	336	19.2
450	31	6,242	-32.7	41	341	21.4
400	31	7,054	-38.0		335	20.4
350	31	7,959	-44.5		327	24.9
300	31	8,974	-50.7		332	26.4
250	31	10,144	-55.8		317	28.4
200	30	11,549	-55.6		316	29.9
175	30	12,400	-54.5		315	30.3
150	29	13,395	-53.3		300	28.2
125	29	14,565	-53.8		301	34.0
100	28	16,005	-54.5		303	33.2
80	27	17,423	-55.0			
60	23	19,281	-54.5			
50	20	20,507	-54.4			
40	19	21,920	-56.7			
30	15	23,750	-59.1			
20						
15						

ATHENS, GA. (993 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	246	6.8	77	281	1.6
1,000	31	191				
950	31	618	6.8	63	257	6.8
900	31	1,057	6.1	59	245	13.6
850	31	1,525	5.1	57	260	20.0
800	31	2,019	3.5	54	266	25.6
750	31	2,548	1.7	53	268	31.7
700	31	3,095	-.5	49	269	35.7
650	30	3,694	-3.3	52	269	41.0
600	30	4,319	-6.8	52	267	49.0
550	30	4,994	-10.5	44	270	55.4
500	30	5,721	-15.0	45	270	62.4
450	30	6,517	-20.3	44	268	68.0
400	30	7,372	-26.4	47	269	72.8
350	30	8,322	-33.6	40	270	80.6
300	29	9,381	-42.0		271	85.9
250	29	10,588	-51.5		271	91.5
200	29	12,008	-59.3		273	95.6
175	28	12,841	-61.6		270	91.1
150	27	13,790	-62.6		271	85.9
125	26	14,909	-64.2		272	72.6
100	23	16,262	-67.0		274	70.7
80	18	17,606	-66.3		275	50.3
60	14	19,355	-63.1			
50	12	20,489	-61.1			
40	11	21,881	-60.1			
30	9	23,667	-59.3			
20						

BARROW, ALASKA (1021 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	8	-21.0	70	168	2.1
1,000	31	163	-17.3	72	205	3.1
950	31	558	-14.4	70	263	6.8
900	31	960	-14.7	67	280	8.0
850	31	1,392	-15.5	64	278	9.1
800	31	1,849	-17.1	61	283	13.0
750	31	2,340	-18.6	55	279	15.2
700	31	2,844	-20.6	52	278	15.3
650	31	3,398	-23.6	52	276	19.6
600	31	3,970	-26.9	53	272	20.6
550	31	4,600	-30.5	53	267	22.1
500	31	5,265	-34.4	57	273	25.8
450	31	6,005	-39.3		272	28.7
400	31	6,792	-44.4		266	31.1
350	31	7,674	-49.9		272	29.9
300	31	8,668	-55.5		272	35.4
250	31	9,814	-60.5		271	43.1
200	29	11,184	-62.9			
175	28	11,996	-61.0			
150	28	12,952	-60.9			
125	28	14,082	-61.7			
100	24	15,451	-62.1			
80	19	16,811	-62.2			
60	16	18,579	-64.4			
50	10	19,737	-64.5			
40	7	21,165	-62.6			
30						
20						

BARTER ISLAND, ALASKA (1022 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	15	-21.6	64	252	8.9
1,000	31	176	-17.6	64	268	11.5
950	31	564	-15.2	65	275	15.7
900	31	970	-14.8	62	278	17.3
850	31	1,402	-15.3	57	279	19.0
800	31	1,859	-17.0	56	283	21.2
750	31	2,346	-19.0	55	289	21.4
700	31	2,852	-21.5	53	292	23.7
650	31	3,401	-24.2	50	294	25.8
600	31	3,975	-27.2	51	295	31.1
550	30	4,596	-31.2	48	294	33.6
500	29	5,261	-35.3		294	36.1
450	29	5,995	-39.7		293	41.4
400	28	6,795	-44.7		296	44.1
350	28	7,675	-50.7		297	49.3
300	28	8,662	-56.7		297	52.3
250	27	9,788	-61.5		299	55.4
200	27	11,165	-61.9		295	50.9
175	26	11,998	-61.4		293	52.6
150	26	12,950	-61.8		291	56.1
125	24	14,079	-61.9		290	48.2
100	23	15,446	-62.7		288	60.6
80	23	16,815	-63.4		288	69.5
60	21	18,552	-65.4		291	67.4
50	21	19,654	-66.7		290	68.4
40	18	20,992	-68.5		291	71.3
30	10	22,811	-68.3			
20	5	25,306	-69.3			

BETHEL, ALASKA (1018 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	4	-7.6	88	73	1.9
1,000	31	145	-3.6	79	70	4.7
950	31	556	-2.8	69	135	6.4
900	31	980	-2.8	63	180	6.6
850	31	1,433	-3.8	61	212	8.9
800	31	1,910	-5.2	56	220	14.6
750	31	2,421	-7.4	48	224	16.1
700	31	2,950	-9.9	46	230	17.1
650	31	3,523	-12.9	44	233	20.4
600	31	4,124	-16.7	42	242	19.0
550	31	4,775	-20.7	40	245	22.5
500	31	5,470	-25.8	43	250	23.3
450	31	6,231	-31.3	46	249	22.9
400	31	7,049	-37.2		239	25.1
350	31	7,959	-43.6		243	25.8
300	31	8,978	-50.4		258	29.7
250	31	10,149	-56.4		257	34.2
200	31	11,555	-58.2		257	35.4
175	25	12,403	-55.7			
150	22	13,390	-53.6			
125	20	14,560	-53.7			
100	12	15,968	-51.8			
80	11	17,395	-52.4			
60	[illegible]	19,260	-52.9			
50	7	20,461	-51.9			
40						
30						
20						

BISMARCK, N. DAK. (960 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	505	-15.7	76	307	3.5
1,000	31	197				
950	31	593	-15.8	70	294	5.6
900	31	996	-14.5	67	301	11.7
850	31	1,430	-13.8	60	309	13.6
800	31	1,890	-13.8	56	306	16.7
750	31	2,390	-14.7	53	300	22.3
700	31	2,901	-16.3	52	293	26.2
650	31	3,465	-18.9	49	290	29.9
600	31	4,047	-22.0	50	286	34.2
550	31	4,690	-25.9	50	285	35.5
500	31	5,366	-30.4	48	280	38.5
450	31	6,118	-35.6	45	281	38.3
400	31	6,917	-41.3		279	38.9
350	31	7,811	-47.4		281	36.3
300	31	8,816	-53.1			
250	31	9,980	-56.2			
200	31	11,398	-54.9			
175	31	12,254	-53.5			
150	30	13,243	-54.0			
125	30	14,410	-55.0			
100	30	15,830	-56.2			
80	29	17,254	-57.4			
60	25	19,102	-58.2			
50	23	20,260	-58.0			
40	15	21,705	-58.4			
30	8	23,502	-59.8			
20						

BOISE, IDAHO (919 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	868	-6.2	81	202	1.2
1,000	31	200				
950	31	612				
900	31	1,032	-5.1	74	157	1.9
850	31	1,481	-5.4	68	169	2.7
800	31	1,956	-6.7	63	220	5.1
750	31	2,463	-9.3	59	266	8.0
700	31	2,988	-12.0	55	282	12.2
650	31	3,559	-15.2	52	283	15.0
600	31	4,151	-18.9	47	281	17.3
550	31	4,800	-22.9	46	276	20.0
500	31	5,486	-27.4	41	275	21.2
450	31	6,248	-32.7		277	22.1
400	31	7,055	-38.3		278	23.7
350	31	7,959	-44.2		289	17.9
300	31	8,977	-50.1		287	16.3
250	31	10,153	-53.6		291	22.1
200	31	11,586	-52.1		291	31.9
175	31	12,449	-51.9		288	32.1
150	31	13,445	-52.3		287	30.3
125	29	14,621	-54.0		285	31.3
100	26	16,044	-55.4			
80	25	17,458	-56.5			
60	22	19,262	-58.2			
50	20	20,410	-59.3			
40	17	21,804	-60.6			
30	10	23,697	-59.0			
20						

BROWNSVILLE, TEX. (1019 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	7	17.6	89	130	6.0
1,000	31	166	17.8	84	144	10.5
950	31	614	16.9	78	163	14.8
900	31	1,066	15.9	1	171	13.8
850	31	1,551	14.3	56	182	13.8
800	31	2,061	13.0	42	196	12.0
750	31	2,606	10.5	39	219	10.3
700	31	3,173	7.3	34	232	10.3
650	31	3,785	3.1	35	238	12.4
600	30	4,421	-1.3	32	234	15.5
550	30	5,109	-5.7		242	18.5
500	30	5,849	-10.6		242	20.4
450	30	6,661	-16.4		241	23.5
400	29	7,529	-22.8		252	27.0
350	29	8,492	-30.2		244	27.2
300	29	9,568	-38.6		244	23.7
250	29	10,792	-48.4		261	22.9
200	28	12,224	-58.1		261	21.4
175	26	13,058	-61.4		254	29.3
150	23	14,008	-65.1		256	33.2
125	22	15,106	-68.6		249	28.7
100	21	16,424	-72.7			
80	17	17,710	-73.9			
60	16	19,397	-68.5			
50	15	20,502	-64.7			
40	14	21,873	-61.2			
30	11	23,662	-59.3			
20	6	26,211	-55.3			

BUFFALO, N. Y. (998 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	182	-7.2	79	249	7.0
1,000	31	162			240	7.8
950	31	565	-8.4	71	250	15.2
900	31	980	-10.5	68	263	19.4
850	31	1,419	-12.0	65	269	22.1
800	31	1,882	-12.9	63	273	24.1
750	30	2,375	-14.6	58	271	28.0
700	30	2,889	-16.3	56	269	32.1
650	30	3,450	-18.6	52	272	38.3
600	30	4,037	-21.4	49	272	43.1
550	30	4,678	-24.8	45	270	50.7
500	30	5,361	-28.6	43	269	59.4
450	30	6,115	-33.2		270	68.6
400	30	6,928	-38.5		269	75.8
350	30	7,833	-44.5		268	84.1
300	30	8,852	-50.0		272	85.1
250	30	10,031	-54.2		270	82.4
200	29	11,457	-55.2		271	72.1
175	27	12,304	-54.6		271	72.6
150	25	13,283	-54.8		271	75.0
125	24	14,451	-56.0		271	64.7
100	22	15,863	-57.4		269	63.5
80	19	17,255	-58.2			
60	16	19,073	-58.1			
50	14	20,240	-57.6			
40	11	21,671	-58.0			
30	10	23,449	-59.1			
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BURRWOOD, LA. (1022 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	3	16.4	90	105	1.9
1,000	31	188	16.7	80	126	1.9
950	31	626	14.7	75	226	4.5
900	31	1,081	13.0	68	243	8.7
850	31	1,560	11.0	63	251	10.7
800	31	2,065	9.2	52	245	16.1
750	31	2,601	7.3	42	254	17.5
700	31	3,162	4.3	39	258	21.6
650	31	3,769	1.1	32	262	22.5
600	31	4,401	-2.5	29	265	24.9
550	31	5,086	-6.9	27	263	29.3
500	31	5,821	-11.8		265	33.4
450	31	6,628	-17.5	29	265	33.8
400	31	7,490	-24.2	30	265	37.5
350	31	8,449	-31.4		268	41.2
300	30	9,518	-40.2		268	44.9
250	30	10,734	-50.2		266	43.7
200	29	12,160	-59.0			
175	27	12,992	-62.5			
150	26	13,938	-65.0			
125	26	15,041	-68.0			
100	26	16,371	-70.6			
80	25	17,692	-71.6			
60	25	19,406	-66.3			
50	23	20,522	-62.7			
40	23	21,907	-59.5			
30	20	23,708	-57.8			
20	13	26,268	-51.5			

CARIBOU, ME. (993 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	191	-17.4	64	288	4.3
1,000	31	136				
950	31	525	-16.5	64	286	12.0
900	31	926	-17.2	66	296	17.9
850	31	1,354	-17.4	61	294	21.2
800	31	1,807	-18.8	59	288	23.1
750	31	2,295	-20.3	56	285	26.6
700	31	2,796	-21.9	53	281	30.5
650	30	3,350	-24.5	53	278	36.3
600	30	3,918	-27.3	54	274	38.3
550	30	4,547	-30.8	53	274	45.6
500	29	5,210	-34.9	53	274	50.1
450	28	5,955	-39.1		276	55.7
400	28	6,740	-44.2		277	59.1
350	27	7,625	-49.0		276	65.5
300	26	8,625	-53.0		275	76.1
250	25	9,793	-54.0		273	75.0
200	24	11,204	-53.6		271	75.6
175	23	12,063	-53.7		271	73.8
150	23	13,053	-53.6		268	78.9
125	23	14,223	-54.4		271	77.5
100	21	15,656	-55.5		268	71.3
80	20	17,079	-56.8		264	66.2
60	18	18,891	-58.8		264	73.2
50	14	20,030	-59.9		261	72.8
40	13	21,403	-59.6		268	81.4
30	8	23,165	-61.0			
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These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

RAWINSONDE DATA

Average monthly values

CHARLESTON, S. C. (1022 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	13	8.8	81	320	1.0
1,000	31	192	10.7	69	360	.8
950	31	624	10.5	66	238	7.6
900	31	1,070	9.2	63	251	14.0
850	31	1,542	7.6	55	259	18.6
800	31	2,041	5.9	49	265	22.3
750	31	2,578	4.4	44	268	27.4
700	31	3,128	1.6	44	274	31.5
650	31	3,729	- 1.8	43	276	34.0
600	31	4,355	- 5.4	43	277	42.2
550	31	5,038	- 9.2	37	275	44.7
500	31	5,765	-13.7	39	273	46.0
450	31	6,567	-19.3	43		
400	31	7,424	-25.4	41		
350	31	8,378	-32.6	38		
300	31	9,446	-40.9			
250	31	10,660	-50.5			
200	31	12,085	-58.8			
175	30	12,912	-61.3			
150	30	13,864	-63.0			
125	29	14,980	-64.8			
100	28	16,334	-67.4			
80	25	17,669	-67.5			
60	24	19,419	-63.8			
50	23	20,541	-62.2			
40	23	21,926	-60.1			
30	20	23,730	-58.7			
20	12	26,307	-54.3			
15	5	28,105	-52.5			

COLD BAY, ALASKA (1013 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	15	2.2	90	167	10.5
1,000	31	127			168	6.8
950	31	546	1.8	76	171	9.3
900	31	977	1.1	67	189	8.4
850	31	1,435	- .2	62	197	7.4
800	31	1,919	- 2.0	54	203	12.2
750	31	2,437	- 4.2	50	209	12.4
700	31	2,971	- 7.0	50	206	14.4
650	31	3,554	-10.7	52	201	17.5
600	31	4,156	-14.6	48	206	15.2
550	31	4,816	-19.0	45	200	14.2
500	31	5,512	-24.0	45	195	20.6
450	31	6,282	-29.4	45	191	22.7
400	31	7,103	-35.3	44	198	21.4
350	31	8,020	-41.8		191	28.6
300	31	9,047	-48.9		193	33.4
250	30	10,230	-55.4		211	28.0
200	30	11,645	-55.8		239	21.4
175	30	12,498	-53.8		232	27.2
150	30	13,491	-52.2		235	28.9
125	30	14,670	-52.4		237	33.4
100	28	16,115	-53.1			
80	28	17,552	-53.0			
60	27	19,407	-54.1			
50	27	20,574	-54.9			
40	26	22,001	-55.8			
30	18	23,808	-57.8			
20	7	26,359	-59.5			
15						

COLUMBIA, MO. (994 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	238	- 3.4	74	313	1.7
1,000	31	190				
950	31	600	- 4.3	66	278	5.1
900	31	1,022	- 4.1	66	274	9.7
850	31	1,473	- 3.1	60	270	15.2
800	31	1,952	- 3.4	56	273	21.0
750	31	2,465	- 4.2	57	274	28.0
700	31	3,003	- 6.6	53	275	34.8
650	31	3,579	- 9.7	50	274	39.8
600	31	4,192	-13.3	46	272	47.6
550	31	4,848	-17.2	41	269	54.6
500	31	5,558	-21.4	40	270	60.2
450	31	6,332	-26.3	42	270	70.1
400	31	7,169	-31.9	42	268	78.7
350	30	8,097	-38.3		272	91.1
300	30	9,140	-45.6		271	100.6
250	30	10,334	-52.9		270	106.8
200	29	11,765	-57.7		271	101.8
175	29	12,608	-57.0		271	86.8
150	29	13,581	-58.0		272	81.6
125	28	14,728	-59.0		274	66.4
100	28	16,119	-61.1		275	56.9
80	28	17,500	-61.7		279	45.1
60	27	19,273	-61.7		283	30.9
50	24	20,417	-60.6		282	27.8
40	22	21,803	-60.0		286	23.7
30	14	23,601	-58.9		281	23.1
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15						

DAYTON, OHIO (987 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	297	- 3.7	74	254	1.7
1,000	31	188				
950	31	595	- 5.0	74	248	8.0
900	31	1,017	- 6.1	67	253	14.6
850	31	1,464	- 6.1	64	261	21.8
800	31	1,939	- 6.4	59	271	26.8
750	31	2,446	- 7.5	57	276	30.7
700	31	2,977	- 9.7	53	276	36.1
650	31	3,550	-12.2	52	277	43.5
600	31	4,154	-15.3	49	277	51.3
550	31	4,807	-18.7	48	277	57.5
500	31	5,511	-23.1	45	274	63.9
450	31	6,282	-28.4	45	271	71.9
400	31	7,109	-33.9	46	270	79.1
350	30	8,036	-39.8		271	90.1
300	30	9,073	-46.2		273	100.4
250	30	10,264	-53.0		270	109.8
200	28	11,684	-56.6		271	102.0
175	27	12,525	-56.9		271	96.2
150	25	13,496	-56.5		276	90.9
125	22	14,645	-57.8		276	73.2
100	20	16,042	-59.9		277	62.2
80	19	17,435	-60.7		276	49.1
60	16	19,244	-59.4		281	47.4
50	15	20,383	-59.0		282	47.2
40	12	21,781	-58.4			
30	5	23,630	-57.3			
20						
15						

DENVER, COLO. (836 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	1,608	- 6.0	68	216	0.6
1,000	31	172				
950	31	594				
900	31	1,021				
850	31	1,477				
800	31	1,957	- 3.3	51	327	1.2
750	31	2,472	- 4.7	50	279	6.2
700	31	3,008	- 6.8	48	273	14.8
650	31	3,583	-10.5	47	277	23.3
600	31	4,194	-14.6	46	280	29.3
550	31	4,847	-18.6	42	282	36.9
500	31	5,551	-23.5	38	278	41.8
450	31	6,319	-28.9	37	276	49.3
400	31	7,145	-34.8		275	57.9
350	30	8,059	-41.2		271	68.6
300	30	9,089	-48.0		269	81.2
250	30	10,274	-53.5		264	90.9
200	28	11,701	-55.2		269	80.8
175	28	12,552	-55.4		269	75.2
150	28	13,532	-56.0		270	71.3
125	28	14,686	-57.7		269	62.9
100	26	16,080	-59.9		270	59.8
80	23	17,461	-60.8		275	46.8
60	20	19,250	-61.3		273	43.5
50	19	20,370	-61.6		275	38.1
40	15	21,732	-61.0		272	42.9
30	12	23,519	-60.0		276	41.0
20	7	26,116	-58.6			
15						

DODGE CITY, KANS. (928 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	792	- 4.1	68	73	3.5
1,000	31	192				
950	31	603				
900	31	1,031	- 3.3	61	74	3.3
850	31	1,484	- 1.5	54	289	3.9
800	31	1,969	.1	48	270	13.6
750	31	2,491	- 1.3	44	264	23.9
700	31	3,032	- 4.4	42	265	27.0
650	31	3,615	- 8.0	41	270	28.7
600	31	4,229	-11.9	40	270	35.0
550	31	4,891	-15.5	35	269	42.2
500	31	5,603	-19.9		268	46.8
450	31	6,383	-24.9		274	52.1
400	31	7,224	-30.5		273	59.8
350	31	8,158	-37.5		269	60.4
300	31	9,204	-44.9			
250	31	10,400	-52.9			
200	30	11,818	-58.4			
175	30	12,656	-57.9			
150	30	13,626	-58.0			
125	29	14,771	-59.7			
100	29	16,158	-61.2			
80	24	17,547	-62.9			
60	23	19,314	-61.8			
50	22	20,446	-60.7			
40	18	21,853	-59.4			
30	14	23,679	-58.8			
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EL PASO, TEX. (883 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	1,195	10.2	50	298	1.9
1,000	31	144				
950	31	585				
900	31	1,038				
850	31	1,514	10.7	40	278	5.8
800	31	2,017	7.8	41	250	14.0
750	31	2,553	4.7	44	245	22.3
700	31	3,105	1.3	42	249	26.0
650	31	3,705	- 2.0	37	253	27.2
600	31	4,330	- 5.9	39	255	34.4
550	31	5,006	- 9.9	37	258	36.9
500	31	5,735	-14.9	39	258	42.2
450	31	6,534	-19.9	39	259	35.5
400	31	7,388	-26.1	38		
350	31	8,340	-33.1	35		
300	31	9,405	-41.3			
250	31	10,616	-50.4			
200	30	12,039	-59.4			
175	28	12,874	-60.8			
150	24	13,822	-61.8			
125	23	14,938	-64.0			
100	21	16,300	-66.6			
80	15	17,629	-68.1			
60	14	19,376	-63.1			
50	14	20,504	-60.8			
40	13	21,894	-60.6			
30	9	23,693	-58.5			
20	5	26,262	-58.3			

ELY, NEV. (806 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	1,908	- 6.1	72	194	4.9
1,000	31	181				
950	31	602				
900	31	1,034				
850	31	1,489				
800	31	1,970			192	5.8
750	31	2,486	- 5.1	58	212	4.9
700	31	3,017	- 8.3	59	246	9.1
650	31	3,593	-12.1	56	258	14.2
600	31	4,196	-15.7	52	261	18.3
550	31	4,851	-19.6	43	260	21.6
500	31	5,548	-24.0	39	261	27.0
450	31	6,320	-29.1		260	31.3
400	31	7,141	-34.5		260	31.9
350	31	8,061	-40.8		272	23.9
300	30	9,100	-47.7		256	22.9
250	30	10,287	-53.0		260	29.7
200	28	11,722	-53.2			
175	28	12,583	-53.0			
150	28	13,574	-54.0			
125	28	14,739	-55.9			
100	28	16,154	-57.3			
80	26	17,565	-58.0			
60	22	19,389	-60.9			
50	18	20,550	-58.3			
40	15	21,976	-57.7			
30	8	23,795	-58.2			
20						

FAIRBANKS, ALASKA (1009 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	135	-16.4	76	290	0.6
1,000	31	204			152	1.0
950	31	603	- 9.9	66	251	1.9
900	31	1,015	- 8.7	66	226	6.2
850	31	1,458	- 8.8	64	227	8.7
800	31	1,926	-10.2	62	242	12.6
750	31	2,426	-12.5	58	245	12.4
700	31	2,946	-14.6	53	257	15.3
650	31	3,509	-17.3	52	271	15.9
600	31	4,100	-20.5	50	286	17.3
550	31	4,742	-24.2	50	293	20.6
500	31	5,427	-28.9	49	289	22.1
450	31	6,179	-34.3	46	282	25.3
400	31	6,986	-40.2		274	30.5
350	31	7,884	-46.8		268	34.8
300	31	8,889	-53.6		292	34.6
250	30	10,040	-59.1		287	38.5
200	29	11,425	-60.7			
175	28	12,251	-58.6			
150	27	13,216	-57.6			
125	27	14,366	-57.8			
100	24	15,768	-58.0			
80	24	17,170	-58.7			
60	21	18,984	-59.6			
50	17	20,152	-60.2			
40	11	21,654	-58.4			
30						
20						

FLINT, MICH. (992 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	27	234	- 7.9	67	229	5.2
1,000	27	170				
950	27	568	- 9.5	73	253	12.6
900	27	984	-10.9	75	268	18.6
850	27	1,423	-11.4	72	280	21.4
800	27	1,886	-12.2	63	283	23.9
750	27	2,384	-13.1	56	277	27.8
700	27	2,903	-15.1	51	275	33.8
650	27	3,465	-17.5	46	276	38.9
600	27	4,056	-20.7	45	276	46.2
550	27	4,700	-24.0		273	53.2
500	27	5,385	-28.1		274	63.1
450	27	6,139	-33.0		271	70.5
400	27	6,952	-38.5		272	80.6
350	27	7,858	-44.2		273	89.9
300	26	8,888	-49.6		275	96.5
250	26	10,066	-54.3		276	95.8
200	26	11,486	-55.8		275	94.2
175	26	12,337	-55.0		274	92.7
150	26	13,319	-56.0		276	90.9
125	24	14,473	-57.7		277	79.4
100	24	15,874	-59.4		275	70.7
80	23	17,268	-60.2		276	59.8
60	22	19,063	-60.4		277	55.7
50	21	20,186	-60.8		275	51.7
40	19	21,596	-60.3			
30	16	23,419	-58.8			
20						

FORT WORTH, TEX. (1001 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	178	6.8	73	360	2.5
1,000	31	181			1	4.9
950	31	607	5.9	68	185	2.9
900	31	1,047	8.3	66	234	10.3
850	31	1,520	9.2	57	251	16.5
800	31	2,021	7.3	54	256	21.6
750	31	2,557	4.8	50	259	25.4
700	31	3,110	1.9	45	256	28.7
650	31	3,707	- 1.3	41	258	33.2
600	31	4,338	- 5.0	39	261	38.9
550	31	5,017	- 9.4	37	262	44.9
500	31	5,745	-14.6	43	261	49.3
450	31	6,542	-20.2	44	261	54.6
400	31	7,396	-26.5	48	262	60.2
350	31	8,345	-33.5	50	262	67.8
300	31	9,406	-41.9		261	75.8
250	30	10,618	-51.4		261	82.4
200	28	12,033	-60.2		261	83.3
175	26	12,859	-62.2		259	80.0
150	25	13,810	-62.8		258	77.1
125	24	14,926	-64.8		261	68.6
100	20	16,287	-67.8		266	53.6
80	17	17,630	-67.8		270	35.0
60	15	19,375	-64.0		275	16.1
50	13	20,513	-61.3		292	7.0
40	9	21,884	-60.0			
30	7	23,685	-58.7			

GLASGOW, MONT. (938 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	695	-16.1	84	326	1.6
1,000	31	205				
950	31	595				
900	31	1,005	-13.3	69	300	8.5
850	31	1,440	-13.0	63	302	14.0
800	31	1,902	-13.0	59	297	18.3
750	31	2,399	-14.4	60	300	18.3
700	31	2,913	-16.4	58	298	19.6
650	31	3,474	-19.0	57	294	21.6
600	31	4,060	-22.1	55	294	26.2
550	31	4,697	-26.2	54	296	27.8
500	31	5,377	-30.8	53	297	30.9
450	31	6,123	-35.7	51	292	34.4
400	31	6,926	-41.2		293	32.8
350	31	7,821	-47.2		297	28.0
300	31	8,827	-52.7		298	27.4
250	31	9,991	-56.0		286	32.2
200	30	11,418	-54.3		287	37.5
175	30	12,276	-52.9		293	39.8
150	30	13,270	-52.7			
125	29	14,434	-53.9			
100	27	15,873	-55.2			
80	26	17,307	-56.2			
60	22	19,171	-56.5			
50	20	20,342	-56.9			
40	15	21,760	-57.2			
30	6	23,670	-56.3			

GRAND JUNCTION, COLO. (852 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	1,474	- 3.3	77	107	2.1
1,000	31	189				
950	31	607				
900	31	1,039				
850	31	1,494			97	2.3
800	31	1,977	- 2.1	62	185	3.1
750	31	2,491	- 4.6	61	215	7.8
700	31	3,027	- 8.2	63	234	13.6
650	31	3,602	-11.7	60	248	19.4
600	31	4,208	-14.8	54	260	25.1
550	31	4,866	-19.0	47	260	28.4
500	31	5,564	-23.8	45	264	35.0
450	31	6,336	-28.8	46	269	40.4
400	31	7,158	-34.6	42	275	39.4
350	31	8,078	-40.8		285	38.5
300	31	9,110	-47.9		302	38.5
250	31	10,292	-54.5			
200	31	11,712	-55.3			
175	31	12,563	-54.9			
150	31	13,547	-55.3			
125	31	14,704	-57.3			
100	30	16,103	-59.4			
80	29	17,500	-60.9			
60	24	19,303	-60.4			
50	21	20,454	-59.9			
40	13	21,881	-58.2			
30	7	23,622	-59.8			

GREAT FALLS, MONT. (889 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	1,123	-13.1	70	245	9.3
1,000	31	210				
950	31	609				
900	31	1,023				
850	31	1,462	-11.4	57	265	11.7
800	31	1,926	-12.8	58	279	10.9
750	31	2,428	-13.2	61	278	14.4
700	31	2,941	-15.2	62	290	18.1
650	31	3,507	-17.7	55	295	20.6
600	31	4,093	-20.9	52	297	22.3
550	31	4,734	-24.8	49	299	26.0
500	31	5,417	-28.8	46	297	28.0
450	31	6,169	-34.3		299	29.9
400	31	6,975	-40.2		298	32.6
350	31	7,873	-46.9		299	33.6
300	31	8,880	-52.3		296	39.0
250	31	10,047	-55.9		295	39.8
200	30	11,469	-54.1		292	42.3
175	30	12,328	-52.6		295	44.3
150	29	13,321	-52.7		292	43.7
125	28	14,490	-54.1		295	42.9
100	28	15,918	-55.1		297	42.9
80	27	17,336	-56.0		300	49.0
60	26	19,153	-58.0		310	43.7
50	24	20,320	-58.7		312	44.3
40	17	21,743	-59.9		318	39.8
30	11	23,710	-58.9			

GREEN BAY, WIS. (994 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	210	-11.8	69	294	5.4
1,000	31	163				
950	31	560	-11.9	62	292	11.7
900	31	970	-12.5	59	303	14.6
850	31	1,406	-12.6	49	301	15.7
800	31	1,869	-13.0	41	292	19.6
750	31	2,366	-14.8	41	287	24.3
700	31	2,879	-16.8	44	283	30.7
650	31	3,443	-19.0	43	276	34.8
600	31	4,025	-21.9	44	274	40.2
550	31	4,666	-25.4	42	271	39.4
500	31	5,345	-29.5	40	267	42.3
450	31	6,098	-34.6	39	271	38.1
400	31	6,902	-40.1		270	42.7
350	31	7,802	-45.5		267	51.3
300	31	8,817	-50.2		279	49.0
250	31	9,995	-53.8			
200	31	11,425	-53.6			
175	31	12,285	-53.0			
150	31	13,277	-53.7			
125	30	14,449	-54.5			
100	29	15,875	-56.5			
80	27	17,297	-57.2			
60	25	19,107	-58.2			
50	22	20,253	-58.4			
40	18	21,677	-57.3			
30	13	23,530	-57.7			

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

RAWINSONDE DATA

Average monthly values

JANUARY 1957

GREENSBORO, N. C.
(991 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	273	3.7	73	250	1.0
1,000	31	194				
950	31	614	4.2	61	245	7.6
900	31	1,052	3.0	60	259	13.8
850	31	1,515	2.0	58	263	19.4
800	31	2,003	.3	53	267	24.3
750	31	2,527	- 1.1	50	269	29.5
700	31	3,067	- 3.1	50	269	34.6
650	31	3,655	- 6.0	46	271	39.8
600	31	4,275	- 9.0	47	268	43.9
550	31	4,943	-13.0	44	269	49.1
500	31	5,664	-17.1	40	274	52.8
450	30	6,454	-22.2	42		
400	30	7,299	-28.1	46		
350	30	8,242	-34.9	47		
300	30	9,298	-43.0			
250	30	10,500	-51.8			
200	30	11,921	-57.6			
175	29	12,763	-59.1			
150	29	13,724	-60.4			
125	29	14,854	-62.1			
100	27	16,216	-63.8			
80	26	17,588	-63.5			
60	23	19,355	-61.9			
50	21	20,479	-61.0			
40	20	21,868	-60.0			
30	14	23,672	-58.7			
20						

HATTERAS, N. C.
(1023 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	3	7.3	78	347	4.5
1,000	31	186	7.8	71	337	4.9
950	31	614	7.0	64	282	8.4
900	31	1,052	5.0	63	269	16.3
850	31	1,518	3.2	60	268	21.6
800	31	2,008	1.4	53	268	26.6
750	31	2,533	- .2	44	268	31.5
700	31	3,076	- 2.3	40	269	38.3
650	30	3,666	- 5.3	47	269	45.1
600	30	4,287	- 8.6	49	270	49.9
550	30	4,958	-12.8	45	270	54.6
500	30	5,677	-16.9	41	272	63.5
450	30	6,470	-21.8		272	71.5
400	30	7,317	-27.7	40	273	76.3
350	30	8,262	-34.8	41	277	83.1
300	30	9,319	-42.8		279	87.8
250	30	10,523	-51.5		278	88.2
200	28	11,954	-57.7		280	89.2
175	28	12,792	-59.6		276	88.0
150	27	13,748	-60.7		275	79.6
125	25	14,884	-63.1		277	76.9
100	24	16,245	-64.1		276	58.3
80	23	17,607	-64.5		274	47.6
60	20	19,376	-62.2			
50	18	20,509	-60.6		270	35.0
40	17	21,907	-59.0		266	22.9
30	13	23,722	-58.4			
20	5	26,325	-57.1			

HILO, T. H.
(1014 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	9	23.4	71	125	5.8
1,000	31	130	22.2	71	120	6.4
950	31	575	18.8	75	135	8.5
900	31	1,037	15.5	79	143	8.0
850	31	1,520	12.3	81	144	6.8
800	31	2,027	9.9	73	128	7.0
750	31	2,573	7.9	54	127	6.4
700	31	3,128	5.4	39	125	3.5
650	31	3,735	2.6		134	1.6
600	31	4,374	- .7		235	2.5
550	31	5,064	- 4.6		264	5.2
500	31	5,808	- 9.7		263	7.6
450	31	6,619	-15.5		275	12.4
400	31	7,490	-22.0		276	18.8
350	31	8,457	-29.3		289	22.5
300	31	9,538	-37.3		287	31.9
250	31	10,772	-45.5		294	43.1
200	31	12,231	-53.9		293	54.4
175	29	13,078	-58.1		298	47.8
150	29	14,034	-63.6		300	36.9
125	28	15,139	-69.1		309	30.1
100	23	16,453	-74.1		338	16.1
80	16	17,744	-73.8			
60	12	19,438	-67.1			
50	12	20,546	-63.7			
40	10	21,924	-59.7			
30						
20						

INTERNAT. FALLS, MINN.
(975 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	360	-19.4	56	244	5.8
1,000	30	168				
950	30	551	-18.3	61	267	9.9
900	30	954	-18.8	61	290	15.9
850	30	1,380	-18.8	59	296	18.1
800	30	1,832	-18.3	54	298	21.0
750	30	2,319	-19.2	50	297	25.6
700	30	2,824	-20.9	48	293	29.7
650	30	3,378	-23.2	44	292	33.8
600	30	3,951	-26.1	43	291	38.1
550	30	4,575	-29.5	41	291	44.3
500	30	5,250	-33.6		291	48.0
450	30	5,989	-38.5		287	52.1
400	29	6,785	-43.4		288	57.3
350	29	7,672	-48.6		289	59.2
300	27	8,681	-53.1		282	67.4
250	26	9,840	-55.1		282	70.7
200	21	11,268	-53.7		280	69.0
175	18	12,141	-52.8		280	67.6
150	16	13,122	-53.6		275	70.1
125	16	14,291	-54.3		274	72.5
100	12	15,717	-54.5		283	71.1
80	9	17,179	-53.8			
60	6	19,063	-54.4			
50	5	20,326	-52.8			
40						
30						
20						

JACKSON, MISS.
(1011 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	101	9.7	78	125	1.6
1,000	31	189	10.3	74	147	2.3
950	31	623	9.3	77	209	9.7
900	31	1,064	9.6	68	244	14.8
850	31	1,537	8.5	57	259	19.8
800	31	2,037	6.5	57	259	23.1
750	31	2,571	4.3	55	261	28.4
700	31	3,123	1.9	45	263	34.2
650	31	3,725	- 1.3	41	265	36.7
600	31	4,351	- 4.9	41	265	42.9
550	31	5,035	- 8.9	39	265	45.8
500	31	5,761	-13.5	36	264	50.9
450	31	6,563	-19.0	39	263	55.7
400	31	7,420	-25.1	44	263	57.7
350	31	8,374	-32.3	44	263	65.7
300	29	9,448	-40.3		262	69.5
250	29	10,662	-50.3		263	73.8
200	29	12,083	-59.7		267	78.1
175	29	12,910	-62.8		264	77.7
150	28	13,855	-63.8		266	78.5
125	27	14,966	-66.2		265	74.6
100	24	16,313	-68.7		265	58.3
80	22	17,638	-68.9		261	44.5
60	21	19,378	-64.9		263	31.5
50	21	20,498	-61.8		257	30.3
40	20	21,880	-60.2		252	27.0
30	19	23,674	-59.0		253	34.8
20	8	26,262	-54.3			

JACKSONVILLE, FLA.
(1023 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	6	13.8	83	328	2.1
1,000	31	200	14.7	73	286	2.7
950	31	637	13.2	72	248	9.3
900	31	1,087	11.2	69	250	11.8
850	31	1,563	9.7	57	257	14.0
800	31	2,065	7.8	50	263	18.1
750	31	2,597	6.3	36	270	23.1
700	31	3,159	3.2	38	272	26.6
650	31	3,759	.2	34	271	31.5
600	31	4,393	- 3.4	32	272	35.4
550	31	5,076	- 7.8	32	272	39.4
500	31	5,810	-12.7	33	271	43.9
450	31	6,610	-18.3		273	45.5
400	31	7,473	-24.9		274	50.3
350	31	8,430	-32.1		273	55.2
300	31	9,499	-40.7		274	59.4
250	31	10,713	-50.4		275	63.9
200	31	12,137	-59.1		274	66.0
175	30	12,970	-62.3		275	68.4
150	30	13,915	-64.6		274	67.8
125	30	15,020	-67.5		273	65.5
100	29	16,356	-70.4		274	56.3
80	25	17,675	-70.4		271	44.5
60	21	19,399	-65.1		276	21.6
50	20	20,515	-62.7		267	14.2
40	15	21,893	-59.9		271	13.8
30	14	23,696	-58.8		274	11.1
20	5	26,255	-55.9			

KING SALMON, ALASKA
(1020 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	15	- 5.1	84	82	2.3
1,000	31	172			80	4.7
950	31	583	- .8	64	152	7.4
900	31	1,012	- 1.6	62	185	8.5
850	31	1,466	- 2.6	62	194	10.5
800	31	1,946	- 4.2	53	206	11.8
750	31	2,455	- 6.3	50	222	14.2
700	31	2,990	- 8.8	50	231	16.1
650	31	3,561	-12.0	46	229	19.2
600	30	4,170	-15.7	48	230	20.2
550	30	4,819	-20.1	47	238	22.3
500	30	5,520	-25.2	50	234	26.4
450	30	6,279	-31.0	49	234	30.5
400	30	7,101	-37.1		233	33.0
350	30	8,009	-44.0		233	31.5
300	30	9,026	-50.9		247	41.4
250	29	10,206	-57.6		243	45.3
200	29	11,599	-60.3		247	39.4
175	28	12,431	-56.3		249	37.7
150	28	13,411	-55.3		259	41.4
125	27	14,579	-55.6		261	40.0
100	25	16,010	-56.1		262	42.9
80	23	17,422	-56.9		266	46.2
60	21	19,244	-57.8		267	50.3
50	18	20,405	-57.0		270	50.9
40	14	21,838	-57.6		276	53.0
30	8	23,642	-60.4			
20						

KOTZEBUE, ALASKA
(1021 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	5	-14.4	81	122	7.0
1,000	31	162	-11.5	72	130	7.2
950	31	561	- 9.7	71	189	5.8
900	31	973	-10.4	70	218	6.8
850	31	1,413	-11.0	66	246	7.6
800	31	1,878	-11.9	61	247	8.2
750	31	2,376	-13.4	55	246	11.5
700	31	2,894	-15.6	52	246	13.2
650	31	3,455	-18.0	50	238	18.1
600	31	4,043	-21.2	49	238	17.1
550	31	4,679	-25.7	48	238	21.2
500	30	5,372	-29.8	51	238	24.1
450	28	6,117	-34.9	54	240	31.1
400	28	6,925	-40.6		240	32.6
350	27	7,813	-47.5		239	30.7
300	27	8,814	-54.1		243	35.5
250	27	9,966	-59.1		244	33.4
200	27	11,353	-61.1		237	36.1
175	27	12,183	-59.5		241	48.0
150	23	13,135	-58.0			
125	23	14,280	-58.4			
100	21	15,684	-58.6			
80	14	17,096	-58.8			
60	12	18,919	-58.8			
50	[illegible]	20,077	-57.7			
40	6	21,488	-58.4			
30						
20						

LAKE CHARLES, LA.
(1021 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	5	13.3	87	93	2.3
1,000	31	182	13.3	79	110	3.7
950	31	621	13.3	76	198	7.6
900	31	1,070	12.5	71	221	10.9
850	31	1,549	10.9	62	247	13.0
800	31	2,053	9.3	52	254	17.5
750	31	2,593	7.3	45	259	22.5
700	31	3,152	4.7	40	264	26.4
650	31	3,755	1.1	39	268	30.5
600	31	4,391	- 2.8	36	269	35.9
550	31	5,073	- 7.1	34	272	40.2
500	30	5,809	-11.9		275	44.9
450	29	6,610	-17.8		268	54.2
400	29	7,474	-24.1	39	271	51.7
350	29	8,433	-31.1			
300	29	9,505	-39.6			
250	29	10,723	-49.8			
200	28	12,143	-58.7			
175	28	12,973	-62.4			
150	28	13,919	-63.6			
125	28	15,028	-66.6			
100	27	16,368	-69.3			
80	26	17,693	-69.9			
60	24	19,418	-66.0			
50	22	20,525	-63.1			
40	20	21,902	-60.5			
30	17	23,697	-58.6			
20	8	26,247	-53.1			

LANDER, WYO.
(826 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	1,696	- 9.3	59	252	1.9
1,000	31	185				
950	31	597				
900	31	1,023				
850	31	1,472				
800	31	1,945	- 7.0	50	252	1.4
750	31	2,454	- 7.8	44	274	5.8
700	31	2,981	-10.8	40	282	14.2
650	31	3,550	-14.0	40	285	21.4
600	31	4,151	-17.5	38	280	25.4
550	31	4,797	-21.9	38	278	28.6
500	31	5,491	-26.8	39	273	31.3
450	31	6,247	-32.2	37	271	35.5
400	31	7,063	-37.8		269	40.0
350	31	7,972	-43.3		271	40.4
300	31	8,995	-49.5		273	41.6
250	31	10,174	-54.4		273	42.7
200	31	11,603	-53.7			
175	31	12,465	-52.6			
150	30	13,458	-53.4			
125	30	14,628	-54.9			
100	30	16,051	-55.9			
80	30	17,467	-57.1			
60	27	19,281	-58.8			
50	24	20,418	-59.7			
40	17	21,879	-59.0			
30	6	23,663	-60.7			
20						

LAS VEGAS, NEV.
(940 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	660	7.7	46	231	6.2
1,000	31	142				
950	31	571				
900	31	1,016	7.4	43	220	6.4
850	31	1,484	3.8	48	230	7.0
800	31	1,973	.3	53	226	8.9
750	31	2,493	- 2.9	53	229	11.8
700	31	3,032	- 5.2	44	237	15.9
650	31	3,615	- 8.0	37	249	19.2
600	31	4,228	-11.9		256	24.5
550	31	4,891	-16.3	39	255	30.5
500	31	5,599	-21.2		256	34.0
450	31	6,379	-26.2		254	40.8
400	31	7,211	-32.1		252	46.6
350	31	8,140	-38.7		252	51.3
300	31	9,182	-45.9		253	59.1
250	31	10,374	-53.1		254	65.5
200	30	11,798	-55.5		255	63.5
175	28	12,641	-55.0		258	55.0
150	26	13,615	-55.8		258	50.9
125	26	14,769	-58.3		262	46.0
100	23	16,164	-60.4		268	38.7
80	23	17,548	-62.2		275	29.3
60	20	19,334	-61.3		295	19.2
50	19	20,466	-61.2		328	15.2
40	19	21,851	-61.1		330	14.4
30	10	23,667	-60.2		336	12.2
20						

LITTLE ROCK, ARK.
(1013 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	79	4.8	73	79	2.5
1,000	31	184	3.8	67	79	3.1
950	31	610	3.7	68	205	4.7
900	31	1,041	4.8	66	242	9.9
850	31	1,508	4.6	61	262	17.3
800	31	2,002	4.0	55	273	24.3
750	31	2,532	2.0	52	272	30.5
700	31	3,079	- .6	47	271	37.1
650	31	3,674	- 3.7	48	269	44.1
600	31	4,297	- 7.0	44	271	46.4
550	31	4,972	-10.9	43	272	51.3
500	31	5,696	-15.7	43	275	56.3
450	31	6,491	-20.9	40	278	58.1
400	31	7,342	-26.9	41		
350	31	8,292	-33.9	39		
300	31	9,354	-41.9			
250	31	10,564	-51.2			
200	31	11,987	-58.8			
175	31	12,820	-61.1			
150	31	13,775	-61.4			
125	30	14,898	-62.9			
100	25	16,270	-64.3			
80	22	17,625	-63.9			
60	20	19,407	-61.2			
50	19	20,541	-60.3			
40	17	21,936	-58.9			
30	10	23,733	-57.7			
20						

McGRATH, ALASKA
(1012 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	103	-14.8	78	301	0.6
1,000	31	194			58	1.0
950	31	590	- 9.0	78	146	3.9
900	31	1,010	- 5.9	70	172	8.9
850	31	1,457	- 6.1	62	196	11.3
800	31	1,931	- 6.8	57	222	10.7
750	31	2,434	- 8.8	52	230	12.2
700	31	2,964	-11.5	47	242	12.4
650	30	3,530	-14.7	48	251	14.8
600	30	4,127	-18.3	47	266	15.3
550	30	4,769	-22.3	46	263	19.4
500	30	5,464	-27.1	48	271	24.3
450	30	6,220	-32.4	47	273	28.7
400	30	7,035	-38.5		265	31.9
350	30	7,940	-41.5		264	26.8
300	30	8,953	-51.6		264	26.0
250	30	10,117	-57.4		274	35.9
200	30	11,514	-59.6		270	38.3
175	29	12,341	-58.3		267	43.9
150	27	13,301	-55.9		271	45.6
125	27	14,459	-55.9			
100	27	15,875	-56.1			
80	25	17,288	-56.5			
60	24	19,117	-57.4			
50	21	20,292	-57.7			
40	17	21,678	-58.6			
30	10	23,498	-59.5			
20						

MAZATLAN, MEXICO
(1012 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	14	22.6	78		
1,000	31	116	21.7	75		
950	31	573	24.0	41		
900	31	1,034	22.1	37		
850	31	1,528	19.1	35		
800	31	2,045	15.3	37		
750	31	2,594	11.2	40		
700	31	3,161	6.9	42		
650	31	3,772	2.8	41		
600	31	4,409	- 1.1	40		
550	31	5,102	- 5.6			
500	31	5,838	-10.4			
450	31	6,648	-16.1			
400	31	7,517	-22.5			
350	31	8,483	-29.9			
300	29	9,563	-38.2			
250	27	10,796	-47.7			
200	22	12,243	-57.9			
175	21	13,080	-61.6			
150	18	14,024	-64.7			
125	12	15,127	-68.9			
100	10	16,450	-73.0			
80	8	17,761	-73.7			
60	7	19,459	-69.4			
50	7	20,560	-64.5			
40	6	21,941	-60.4			
30	5	23,726	-59.2			
20						

MEDFORD, OREG.
(971 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	401	2.0	77	191	0.6
1,000	31	161				
950	31	581	2.5	67	192	1.6
900	31	1,012	.8	64	192	3.1
850	31	1,469	- 1.4	60	196	3.3
800	30	1,953	- 4.3	58	224	3.9
750	30	2,465	- 7.0	58	250	6.8
700	30	2,995	- 9.6	49	283	9.3
650	30	3,570	-13.1	39	303	11.3
600	30	4,169	-16.9		310	16.7
550	30	4,822	-20.9	36	296	15.5
500	30	5,514	-25.5	35	301	18.5
450	30	6,277	-30.4		295	21.2
400	30	7,098	-36.1		294	23.1
350	30	8,011	-42.5		275	28.7
300	30	9,035	-48.7		285	31.3
250	30	10,219	-52.8			
200	30	11,656	-51.9			
175	30	12,522	-50.8			
150	30	13,522	-51.9			
125	30	14,698	-53.2			
100	30	16,127	-55.0			
80	29	17,548	-55.4			
60	28	19,387	-56.2			
50	27	20,544	-56.9			
40	22	21,962	-57.3			
30	15	23,805	-58.2			
20	6	26,404	-59.7			

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

RAWINSONDE DATA

Average monthly values

JANUARY 1957

MIAMI, FLA.
(1022 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	4	20.2	78	60	2.1
1,000--	31	195	19.6	74	94	4.3
950----	31	636	16.8	73	93	4.9
900----	31	1,095	13.9	72	97	4.3
850----	31	1,575	11.9	57	117	2.5
800----	31	2,082	10.5	42	232	1.4
750----	31	2,621	8.2	30	245	3.9
700----	31	3,184	5.6	26	254	5.8
650----	31	3,792	2.3		260	8.0
600----	31	4,428	- 1.7		268	11.5
550----	30	5,113	- 6.1		276	15.2
500----	30	5,854	-11.0		277	19.4
450----	30	6,657	-16.7		277	22.9
400----	30	7,529	-23.4		278	25.4
350----	30	8,490	-31.0		275	29.7
300----	30	9,562	-39.7		277	27.0
250----	30	10,780	-49.1		282	33.6
200----	30	12,211	-57.9		277	39.8
175----	30	13,044	-61.3		279	43.3
150----	30	13,990	-65.4		279	44.7
125----	26	15,092	-68.9		279	36.3
100----	25	16,406	-72.8		285	31.7
80-----	24	17,707	-73.8		284	16.9
60-----	20	19,412	-66.8		315	2.3
50-----	18	20,520	-62.4		194	2.9
40-----	16	21,900	-59.7		154	3.1
30-----	15	23,704	-57.0			
20-----	7	26,321	-50.8			

MIDLAND, TEX.
(919 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	871	8.2	58	153	2.5
1,000--	31	162				
950----	31	592				
900----	31	1,042	9.3	50	189	5.1
850----	31	1,515	9.8	47	223	14.0
800----	31	2,019	8.9	41	240	18.6
750----	31	2,557	6.2	39	253	21.4
700----	31	3,112	3.0	37	258	24.7
650----	31	3,711	- .8	38	262	29.1
600----	31	4,343	- 4.8	41	261	33.8
550----	31	5,023	- 9.0	43	259	38.9
500----	31	5,752	-14.0	42	257	42.9
450----	31	6,550	-19.4	43	259	45.8
400----	31	7,409	-25.4	44	261	48.2
350----	31	8,362	-32.5	44	264	48.0
300----	31	9,429	-40.8			
250----	31	10,641	-50.4			
200----	31	12,065	-59.1			
175----	31	12,894	-61.5			
150----	29	13,844	-61.5			
125----	25	14,969	-64.3			
100----	23	16,321	-66.8			
80-----	18	17,665	-67.4			
60-----	11	19,403	-63.5			
50-----	11	20,527	-60.9			
40-----	10	21,915	-59.6			
30-----	8	23,721	-58.5			
20-----						

MONTGOMERY, ALA.
(1016 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	61	10.5	80	176	1.7
1,000--	31	194	11.1	69	170	3.9
950----	31	625	9.6	67	226	10.3
900----	31	1,070	9.2	59	248	15.2
850----	31	1,544	8.4	52	260	20.6
800----	31	2,043	6.6	53	265	25.3
750----	31	2,577	4.1	50	269	28.9
700----	31	3,129	1.7	45	268	33.4
650----	31	3,728	- 1.4	46	267	37.5
600----	30	4,356	- 4.8	38	271	42.0
550----	29	5,045	- 8.8	37	270	46.6
500----	29	5,775	-13.2	38	270	50.3
450----	28	6,574	-18.7	40	271	55.7
400----	27	7,435	-24.9	41	270	59.4
350----	27	8,392	-32.0		272	64.9
300----	26	9,467	-40.3		271	69.5
250----	25	10,689	-50.1		273	76.3
200----	25	12,113	-58.9		275	76.9
175----	25	12,943	-62.3		271	81.2
150----	25	13,892	-63.0		272	74.0
125----	25	15,007	-65.8		271	69.0
100----	24	16,354	-68.0		272	60.8
80-----	22	17,686	-69.3		275	42.9
60-----	20	19,421	-65.3		274	25.6
50-----	19	20,534	-63.0		275	18.6
40-----	19	21,912	-61.2		268	20.0
30-----	15	23,695	-59.1		265	25.6
20-----						

NANTUCKET, MASS.
(1019 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	14	- 2.5	72	310	5.4
1,000--	31	160	- 2.2	64	294	9.1
950----	31	568	- 4.3	66	286	14.8
900----	31	989	- 7.0	63	276	16.9
850----	31	1,433	- 9.8	54	275	20.6
800----	31	1,903	- 9.0	41	268	29.3
750----	31	2,406	-10.4		270	32.8
700----	31	2,931	-12.0	42	273	35.7
650----	31	3,501	-14.9	43	276	36.7
600----	31	4,096	-18.0	43	273	35.4
550----	31	4,746	-21.4	43	275	44.1
500----	31	5,439	-25.5	47		
450----	31	6,205	-30.3	46		
400----	31	7,024	-35.8			
350----	31	7,939	-42.0			
300----	31	8,966	-48.4			
250----	31	10,149	-53.6			
200----	30	11,573	-55.9			
175----	27	12,420	-55.1			
150----	27	13,403	-55.4			
125----	26	14,559	-56.9			
100----	25	15,964	-58.6			
80-----	22	17,365	-60.1			
60-----	17	19,183	-59.1			
50-----	15	20,324	-59.3			
40-----	11	21,747	-58.3			
30-----	10	23,557	-56.0			
20-----						

NASHVILLE, TENN.
(1002 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	177	3.9	78	309	1.4
1,000--	31	192			16	.8
950----	31	613	2.1	67	235	6.8
900----	31	1,044	1.6	66	249	11.8
850----	31	1,505	1.8	59	263	18.3
800----	31	1,993	1.1	55	270	24.9
750----	31	2,516	- .8	54	273	30.1
700----	31	3,059	- 3.6	53	272	33.8
650----	31	3,644	- 6.5	50	276	37.5
600----	31	4,263	-10.0	52	280	40.2
550----	30	4,927	-13.7	45	277	45.3
500----	30	5,645	-17.9	43	275	53.0
450----	30	6,434	-23.1	46	268	56.3
400----	30	7,277	-28.6	44		
350----	30	8,220	-35.4	45		
300----	30	9,276	-43.0			
250----	30	10,479	-51.8			
200----	29	11,905	-58.1			
175----	27	12,740	-59.9			
150----	27	13,699	-60.7			
125----	25	14,824	-61.7			
100----	23	16,201	-63.7			
80-----	18	17,566	-63.1			
60-----	13	19,355	-61.1			
50-----	13	20,490	-59.7			
40-----	10	21,884	-58.5			
30-----	8	23,723	-57.9			
20-----						

N.Y. INT. AP, IDLEWILD
(1022 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	5	- 1.9	60	278	7.2
1,000--	31	174	- 2.0	60	284	10.9
950----	31	582	- 4.6	61	288	14.2
900----	31	1,004	- 6.6	60	286	15.9
850----	31	1,449	- 7.5	53	285	21.4
800----	31	1,921	- 8.0	47	281	26.2
750----	31	2,426	- 9.6	46	279	31.5
700----	31	2,951	-11.2	43	273	36.9
650----	31	3,522	-13.8	45	273	43.7
600----	31	4,122	-16.8	46	275	49.7
550----	31	4,773	-20.4	48	275	56.3
500----	31	5,470	-24.5	50	275	63.5
450----	31	6,234	-29.6	52	275	69.0
400----	31	7,059	-35.2	55	274	78.3
350----	31	7,977	-41.1		275	85.1
300----	31	9,008	-47.9		279	90.1
250----	30	10,190	-53.3		281	90.1
200----	29	11,607	-56.2		279	88.4
175----	29	12,455	-55.8		282	84.9
150----	29	13,434	-56.0		281	78.9
125----	25	14,587	-57.1		280	66.4
100----	24	15,983	-58.8		281	63.7
80-----	20	17,386	-59.6		280	51.3
60-----	16	19,171	-60.3		280	40.8
50-----	13	20,312	-58.8		278	50.1
40-----	12	21,714	-59.6		274	42.0
30-----	10	23,490	-59.3			
20-----						
15-----						

NOME, ALASKA
(1019 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	7	- 9.8	85	107	3.5
1,000--	31	155	- 7.8	76	163	3.1
950----	31	558	- 7.2	72	209	3.7
900----	31	975	- 7.8	71	218	3.7
850----	31	1,418	- 8.5	64	220	5.6
800----	31	1,888	- 9.6	57	236	8.0
750----	31	2,389	-11.4	53	236	10.5
700----	31	2,911	-13.3	50	240	11.7
650----	31	3,472	-16.1	49	242	15.0
600----	31	4,071	-19.3	48	249	17.1
550----	31	4,715	-23.6	50	247	20.6
500----	31	5,402	-28.1	51	249	18.6
450----	31	6,156	-33.4	49	250	23.3
400----	31	6,966	-39.3		259	27.6
350----	31	7,867	-45.3		258	31.1
300----	31	8,880	-51.7		254	36.5
250----	31	10,045	-57.2		245	42.2
200----	31	11,445	-58.7			
175----	30	12,283	-56.9			
150----	30	13,262	-55.5			
125----	30	14,423	-55.5			
100----	28	15,844	-55.8			
80-----	26	17,263	-56.2			
60-----	22	19,093	-56.4			
50-----	19	20,263	-57.3			
40-----	14	21,751	-56.5			
30-----	11	23,592	-57.9			
20-----						
15-----						

NORFOLK, VA.
(1023 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	9	3.4	75	354	1.6
1,000--	31	194	3.5	68	284	2.9
950----	31	614	2.3	66	274	9.5
900----	31	1,046	1.2	65	273	16.1
850----	31	1,504	.0	59	271	21.6
800----	31	1,989	- 1.3	53	270	26.6
750----	31	2,511	- 3.1	47	270	32.2
700----	31	3,046	- 5.6	50	269	39.4
650----	31	3,630	- 8.0	51	270	47.0
600----	29	4,245	-11.2	52	272	52.8
550----	29	4,912	-15.0	50	272	60.0
500----	29	5,623	-19.2	50	271	68.8
450----	29	6,408	-24.0	48	271	75.8
400----	29	7,249	-29.9	52	269	85.9
350----	29	8,187	-36.8	57	270	94.4
300----	29	9,235	-44.8		272	99.3
250----	29	10,430	-53.4		274	109.8
200----	28	11,848	-58.2		274	110.3
175----	26	12,695	-59.9		276	99.7
150----	26	13,654	-60.9		275	88.6
125----	25	14,784	-62.4		274	78.7
100----	25	16,155	-63.9		274	67.8
80-----	18	17,518	-63.0		267	54.4
60-----	13	19,271	-62.7		269	48.6
50-----	11	20,404	-60.8		269	41.4
40-----	10	21,802	-59.9			
30-----	5	23,665	-55.9			
20-----						
15-----						

NORTH PLATTE, NEBR.
(920 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	848	- 9.0	69	39	1.4
1,000--	31	194				
950----	31	599				
900----	31	1,019	- 7.3	61	333	1.6
850----	31	1,464	- 6.7	54	288	8.5
800----	31	1,939	- 6.0	50	296	13.4
750----	31	2,446	- 7.1	49	298	19.2
700----	31	2,979	- 9.3	49	295	24.1
650----	31	3,553	-12.2	49	290	30.3
600----	31	4,157	-15.8	49	282	34.8
550----	31	4,809	-20.2	48	282	40.4
500----	31	5,505	-25.2	43	275	44.9
450----	31	6,272	-30.2	39	269	52.6
400----	31	7,091	-35.4	39	270	55.4
350----	31	8,009	-41.4			
300----	31	9,039	-47.8			
250----	31	10,226	-52.8			
200----	31	11,655	-54.5			
175----	31	12,510	-54.2			
150----	31	13,497	-54.6			
125----	30	14,655	-56.2			
100----	29	16,066	-57.2			
80-----	27	17,487	-58.0			
60-----	24	19,286	-58.9			
50-----	22	20,431	-59.0			
40-----	19	21,837	-58.3			
30-----	14	23,637	-58.7			
20-----						
15-----						

OAKLAND, CALIF.
(1018 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	6	8.4	75	314	0.6
1,000--	31	151	9.0	66	280	.6
950----	31	576	6.4	63	97	.4
900----	31	1,016	3.7	63	201	1.2
850----	31	1,478	1.3	57	238	3.5
800----	31	1,964	- 1.0	54	257	5.8
750----	31	2,484	- 3.7	50	268	8.7
700----	31	3,019	- 6.5	45	280	10.1
650----	30	3,604	- 9.9	42	288	13.4
600----	30	4,208	-13.1	34	293	16.3
550----	30	4,871	-17.4	34	293	20.6
500----	30	5,574	-22.0	36	293	23.5
450----	30	6,349	-27.9	37	290	27.6
400----	30	7,175	-33.9		287	31.5
350----	30	8,098	-40.5		287	38.7
300----	30	9,134	-47.1		285	45.6
250----	29	10,322	-52.9		284	45.1
200----	28	11,751	-53.3		280	38.7
175----	28	12,611	-53.2		278	36.9
150----	28	13,603	-53.7		278	35.7
125----	28	14,769	-56.0		283	28.4
100----	27	16,183	-58.4		291	21.8
80-----	25	17,592	-58.7		315	13.6
60-----	24	19,405	-58.3		17	11.8
50-----	23	20,561	-58.5		33	15.7
40-----	20	21,962	-59.3		42	19.2
30-----	19	23,755	-60.1		38	20.8
20-----	13	26,265	-61.2		27	12.4
15-----	7	27,978	-59.3			

OKLAHOMA CITY, OKLA.
(975 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	391	0.1	81	40	1.9
1,000--	31	187				
950----	31	605	.5	69	30	1.7
900----	31	1,035	2.0	63	280	4.7
850----	31	1,498	4.1	53	267	12.0
800----	31	1,992	4.3	45	264	19.4
750----	31	2,520	2.1	43	265	25.8
700----	31	3,069	- 1.0	39	264	31.7
650----	31	3,663	- 4.2	37	265	35.2
600----	31	4,284	- 7.6	33	267	41.2
550----	31	4,957	-11.7		269	43.5
500----	31	5,678	-16.3		266	51.5
450----	31	6,473	-21.7	38	263	49.5
400----	31	7,319	-27.7	41		
350----	31	8,263	-34.7	45		
300----	31	9,320	-42.6			
250----	31	10,523	-51.8			
200----	31	11,939	-59.2			
175----	29	12,768	-59.7			
150----	26	13,726	-60.1			
125----	24	14,852	-61.5			
100----	21	16,217	-64.0			
80-----	17	17,574	-64.1			
60-----	9	19,362	-60.6			
50-----	8	20,496	-59.6			
40-----	7	21,892	-58.7			
30-----						

OMAHA, NEBR.
(973 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	403	- 9.1	73	284	2.1
1,000--	31	192				
950----	31	596	- 8.6	64	293	5.4
900----	31	1,009	- 8.3	60	298	9.5
850----	31	1,453	- 7.1	52	287	11.5
800----	31	1,926	- 7.2	47	292	16.3
750----	31	2,432	- 8.5	46	292	22.0
700----	31	2,962	-10.2	43	289	27.0
650----	31	3,534	-13.1	43	280	32.2
600----	30	4,132	-16.4	44	278	39.6
550----	30	4,784	-20.4	45	276	45.5
500----	30	5,480	-25.1	46	277	49.7
450----	30	6,248	-30.3	42	272	57.3
400----	30	7,066	-35.9	43	273	64.9
350----	30	7,982	-41.7		270	75.4
300----	29	9,012	-48.3		269	83.7
250----	29	10,195	-53.9		268	92.1
200----	29	11,618	-55.9		270	87.4
175----	28	12,468	-55.7		270	87.0
150----	27	13,452	-55.4		275	69.5
125----	27	14,610	-56.8		276	67.2
100----	27	16,018	-58.4		279	55.9
80-----	24	17,405	-59.4		279	47.8
60-----	22	19,212	-59.9		284	44.3
50-----	20	20,348	-59.7		287	37.7
40-----	17	21,755	-59.4		299	28.9
30-----	13	23,563	-60.1			

PEORIA, ILL.
(998 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	201	- 6.5	75	256	3.7
1,000--	31	185			246	4.1
950----	31	592	- 7.4	67	277	8.9
900----	31	1,008	- 6.7	61	273	12.8
850----	31	1,454	- 7.0	60	275	16.5
800----	31	1,927	- 7.3	56	275	20.2
750----	31	2,436	- 8.5	52	278	27.6
700----	31	2,962	-10.3	51	276	34.2
650----	31	3,533	-12.8	51	276	42.9
600----	31	4,138	-16.0	47	273	51.5
550----	31	4,793	-20.0	47	270	57.3
500----	31	5,488	-24.6	47	273	57.9
450----	31	6,258	-29.3	42	273	63.9
400----	31	7,080	-35.0		274	70.3
350----	31	7,998	-41.0		276	70.5
300----	31	9,030	-47.3		281	72.8
250----	30	10,213	-53.4		279	82.9
200----	30	11,634	-56.2			
175----	30	12,482	-55.7			
150----	30	13,462	-56.2			
125----	30	14,614	-57.9			
100----	28	16,018	-59.1			
80-----	26	17,418	-59.6			
60-----	23	19,217	-58.7			
50-----	20	20,361	-58.9			
40-----	17	21,777	-59.0			
30-----	11	23,577	-58.4			

PHOENIX, ARIZ.
(977 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	341	13.2	66	360	0.4
1,000--	31	144				
950----	31	582	14.0	50	93	.6
900----	31	1,033	11.2	48	188	3.5
850----	31	1,507	7.8	52	211	7.6
800----	31	2,004	4.3	54	217	12.0
750----	31	2,537	1.2	51	228	16.7
700----	31	3,078	- 1.8	42	242	19.4
650----	31	3,669	- 5.1	38	250	23.1
600----	31	4,289	- 8.6	38	255	27.6
550----	31	4,965	-12.9	41	256	32.6
500----	31	5,679	-17.6	43	258	35.0
450----	31	6,469	-22.8	45	268	36.7
400----	31	7,314	-29.0	47	267	42.7
350----	31	8,255	-35.6	47		
300----	31	9,311	-43.0			
250----	31	10,517	-51.0			
200----	31	11,944	-56.8			
175----	30	12,793	-57.0			
150----	30	13,766	-58.5			
125----	30	14,905	-60.6			
100----	26	16,268	-63.0			
80-----	26	17,636	-63.8			
60-----	23	19,410	-62.1			
50-----	21	20,536	-61.1			
40-----	18	21,918	-60.6			
30-----	13	23,715	-58.8			

PITTSBURGH, PA.
(979 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	353	- 4.0	73	246	4.7
1,000--	31	184				
950----	31	591	- 4.9	70	245	10.7
900----	31	1,013	- 6.6	68	256	16.5
850----	31	1,458	- 7.9	65	261	21.2
800----	31	1,929	- 8.7	61	265	27.0
750----	31	2,433	- 9.4	56	269	33.6
700----	31	2,960	-11.0	52	272	38.9
650----	31	3,530	-13.7	50	273	47.2
600----	31	4,132	-16.6	52	274	53.6
550----	30	4,779	-20.1	49	274	59.4
500----	29	5,476	-24.5		272	70.1
450----	29	6,240	-29.6		270	74.4
400----	29	7,065	-35.3	49	271	80.2
350----	29	7,982	-41.3		274	84.5
300----	29	9,013	-47.6		273	90.9
250----	29	10,198	-53.6		276	89.5
200----	27	11,617	-56.4		270	88.8
175----	24	12,466	-56.6		274	85.7
150----	23	13,446	-57.4			
125----	18	14,592	-58.0			
100----	14	15,964	-60.5			
80-----	11	17,310	-61.9			
60-----	5	19,094	-61.4			
50-----						
40-----						
30-----						

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

RAWINSONDE DATA

Average monthly values

PORTLAND, ME. (1017 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	20	-10.1	70	298	5.1
1,000	31	151	-8.1	58	282	8.2
950	31	550	-9.2	57	281	11.8
900	31	965	-10.8	57	273	15.3
850	31	1,403	-12.1	56	276	19.2
800	31	1,866	-12.7	48	279	24.5
750	31	2,366	-13.7	42	276	31.3
700	31	2,880	-15.8	43	274	35.2
650	31	3,443	-18.3	44	273	41.0
600	31	4,029	-21.5	42	271	46.4
550	31	4,666	-25.3		270	52.3
500	30	5,355	-29.3	41	271	61.4
450	30	6,107	-33.6		273	71.7
400	30	6,920	-38.5		271	79.3
350	30	7,826	-44.1		270	87.4
300	29	8,845	-49.8		269	91.7
250	29	10,024	-53.6		273	82.0
200	29	11,453	-54.8		273	82.8
175	29	12,306	-54.7		273	80.8
150	29	13,292	-54.7		270	68.2
125	29	14,455	-55.7		267	72.5
100	29	15,871	-57.4		266	59.6
80	27	17,272	-58.3		266	60.6
60	24	19,074	-59.1		267	61.4
50	20	20,217	-58.4		267	52.4
40	13	21,582	-59.1			
30	8	23,371	-57.6			
20						

RAPID CITY, S. DAK. (906 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	966	-12.1	74	4	4.7
1,000	31	197				
950	31	598				
900	31	1,013			346	4.3
850	31	1,454	-8.5	54	296	8.9
800	31	1,923	-9.5	53	299	14.6
750	31	2,427	-11.2	53	302	19.2
700	31	2,947	-13.2	53	294	24.5
650	31	3,516	-16.3		290	27.2
600	31	4,107	-19.8	47	286	30.9
550	31	4,748	-24.0	45	285	33.0
500	31	5,435	-28.6	46	281	36.9
450	31	6,190	-33.9	43	279	42.5
400	31	6,996	-39.8		280	46.8
350	30	7,900	-45.5		280	51.9
300	30	8,914	-51.1		278	61.8
250	29	10,086	-55.1		274	67.4
200	29	11,506	-55.0		272	69.7
175	28	12,360	-54.0		272	69.2
150	25	13,337	-55.0		278	66.0
125	21	14,472	-56.6		279	63.7
100	18	15,850	-59.2		282	70.3
80	11	17,246	-59.2		282	61.8
60	6	19,037	-57.7			
50						
40						
30						
20						

ST. CLOUD, MINN. (982 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	316	-14.5	63	279	4.3
1,000	31	177				
950	31	569	-14.0	64	293	9.5
900	31	976	-14.3	60	302	13.2
850	31	1,410	-13.9	55	307	16.9
800	31	1,870	-14.0	52	298	20.2
750	31	2,366	-14.5	45	291	24.3
700	31	2,880	-16.5	42	288	28.4
650	31	3,440	-19.2	41	283	33.6
600	31	4,026	-22.4	41	281	39.0
550	31	4,661	-26.1	43	277	41.4
500	31	5,344	-30.4	42	273	37.5
450	31	6,090	-35.3	42	279	45.3
400	31	6,897	-40.7		275	43.1
350	31	7,794	-46.5		267	46.8
300	31	8,804	-51.8			
250	31	9,975	-55.2			
200	31	11,401	-53.7			
175	31	12,259	-53.6			
150	31	13,248	-53.8			
125	30	14,418	-55.3			
100	30	15,836	-56.5			
80	27	17,260	-57.7			
60	22	19,092	-58.6			
50	20	20,263	-58.7			
40	16	21,688	-58.0			
30	11	23,535	-57.7			
20						

ST. PAUL IS., ALASKA (1012 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	10	-1.0	92	76	6.0
1,000	31	106			95	7.8
950	31	518	-1.6	86	117	8.2
900	31	945	-1.7	80	139	7.6
850	31	1,399	-2.8	69	140	7.6
800	31	1,878	-4.8	58	156	8.9
750	31	2,386	-6.9	51	175	10.1
700	31	2,919	-9.7	49	182	12.0
650	31	3,488	-13.0	47	196	12.0
600	31	4,093	-16.6	46	212	13.4
550	31	4,740	-20.6	43	221	15.3
500	31	5,438	-25.4	41	219	18.6
450	31	6,199	-30.8	42	221	18.8
400	31	7,019	-37.2	42	221	22.1
350	31	7,927	-43.7		199	24.5
300	31	8,946	-50.2		204	25.8
250	31	10,118	-55.5		210	31.3
200	28	11,523	-54.7		218	39.2
175	27	12,377	-52.0		223	40.4
150	25	13,380	-50.8		226	42.7
125	24	14,565	-50.7		231	44.9
100	23	16,013	-51.3		237	40.4
80	21	17,461	-51.1			
60	14	19,306	-51.7			
50	9	20,473	-50.6			
40						
30						
20						

SALEM, OREG. (1012 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	61	1.2	81	193	0.6
1,000	31	157	.9	75	35	.8
950	31	569	.8	72	220	2.5
900	31	1,003	-.6	70	229	4.7
850	31	1,458	-2.6	67	237	5.4
800	31	1,937	-4.8	60	259	6.6
750	31	2,442	-7.7	57	277	8.4
700	31	2,976	-10.7	52	280	9.3
650	31	3,543	-14.4	51	297	10.7
600	31	4,144	-18.1	50	303	15.3
550	31	4,788	-22.2	45	313	18.3
500	31	5,482	-26.9	43	315	22.0
450	31	6,242	-31.8	39	317	25.6
400	30	7,061	-37.3		321	31.3
350	30	7,970	-43.3		327	36.5
300	30	8,994	-48.8		317	34.4
250	29	10,169	-53.1		303	34.8
200	28	11,611	-51.6		298	31.5
175	28	12,479	-50.5		298	32.6
150	28	13,482	-50.9		297	31.3
125	27	14,664	-53.1		304	32.4
100	26	16,092	-54.3		307	29.7
80	25	17,516	-55.1		316	27.2
60	20	19,398	-55.7		333	24.1
50	19	20,566	-56.0		347	26.0
40	12	22,000	-57.7			
30	10	23,800	-60.4			
20	5	26,222	-63.4			

SALT LAKE CITY, UTAH (872 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	1,288	-3.6	80	196	1.9
1,000	31	187				
950	31	602				
900	31	1,035				
850	31	1,490	-2.2	68	180	4.1
800	31	1,970	-3.7	65	192	7.0
750	31	2,484	-6.5	62	223	9.5
700	31	3,013	-9.9	58	251	11.7
650	31	3,588	-13.3	56	257	16.3
600	31	4,186	-17.0	53	261	20.2
550	31	4,836	-21.3	54	263	23.9
500	31	5,529	-25.9	48	265	30.5
450	30	6,295	-30.7	45	262	38.7
400	30	7,112	-36.1		263	45.8
350	30	8,026	-42.1		261	55.9
300	30	9,053	-49.0		262	60.0
250	30	10,232	-54.5		265	54.2
200	30	11,659	-53.8		264	49.1
175	30	12,518	-53.2		268	49.7
150	30	13,507	-54.3		269	44.5
125	30	14,671	-55.7		270	42.0
100	29	16,084	-58.0		278	36.3
80	27	17,497	-58.6		287	30.7
60	24	19,311	-58.7		301	24.1
50	21	20,459	-58.5		310	22.0
40	18	21,883	-58.7		320	17.5
30	11	23,778	-57.0			
20						
15						

SAN ANTONIO, TEX. (992 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	243	12.2	64	52	4.7
1,000	31	174				
950	31	613	11.9	64	121	5.6
900	31	1,059	12.9	62	182	9.1
850	31	1,538	11.8	53	200	12.6
800	31	2,044	10.6	44	223	15.7
750	31	2,589	8.0	38	241	17.7
700	31	3,146	5.4	33	251	21.4
650	31	3,753	1.6	33	253	27.2
600	31	4,388	-2.4	32	257	31.5
550	31	5,071	-7.2	35	256	35.9
500	31	5,807	-12.4	36	257	40.2
450	31	6,611	-18.1	40	256	43.3
400	31	7,472	-24.4	45	262	48.6
350	31	8,430	-31.7	42	267	44.7
300	31	9,500	-39.9		266	46.4
250	31	10,716	-49.9			
200	30	12,140	-59.1			
175	29	12,970	-62.4			
150	27	13,915	-63.3			
125	27	15,024	-66.8			
100	26	16,363	-70.4			
80	24	17,681	-71.3			
60	18	19,391	-67.0			
50	16	20,497	-63.8			
40	15	21,871	-60.9			
30	12	23,653	-59 6			
20						
15						

SAN DIEGO, CALIF. (1003 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	124	11.5	85	96	0.8
1,000	31	145			99	1.4
950	31	578	10.0	65	198	4.7
900	31	1,021	7.2	64	205	5.6
850	31	1,489	4.5	58	212	7.6
800	31	1,982	2.6	51	229	10.1
750	31	2,512	.3	45	252	14.8
700	31	3,053	-2.5	39	258	20.2
650	31	3,645	-6.0	43	251	24.3
600	31	4,260	-9.5		252	28.7
550	31	4,934	-13.7		251	34.8
500	31	5,646	-18.4	35	252	40.2
450	31	6,438	-23.4	38	252	45.6
400	31	7,277	-29.1		251	50.9
350	31	8,218	-35.7		247	60.0
300	31	9,272	-43.4		246	68.4
250	31	10,475	-51.7		249	68.8
200	30	11,902	-56.1		252	66.2
175	30	12,748	-56.8		251	65.3
150	30	13,722	-57.5		254	54.2
125	30	14,866	-60.2		256	48.0
100	28	16,242	-62.3		264	32.4
80	28	17,617	-63.0		271	20.8
60	26	19,388	-62.4		311	9.9
50	23	20,512	-60.8		353	6.0
40	22	21,895	-60.9		346	8.2
30	21	23,684	-60.5		357	7.6
20	14	26,236	-59.2		29	4.5
15	7	28,010	-58.9			

SAN JUAN, P. R. (1019 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	6	22.9	82	88	7.4
1,000	31	174	23.0	75	87	13.4
950	31	621	19.8	79	84	19.2
900	31	1,084	16.5	79	86	19.0
850	31	1,569	13.6	75	86	19.2
800	31	2,078	10.8	69	82	18.6
750	31	2,614	8.9	46	82	18.6
700	31	3,184	7.2	25	83	16.5
650	31	3,799	4.6		83	15.3
600	31	4,437	1.0		82	14.0
550	31	5,130	-3.2		68	12.0
500	31	5,878	-8.0		57	12.4
450	31	6,696	-14.0		48	11.5
400	31	7,570	-20.9		35	9.5
350	31	8,540	-29.0		352	8.4
300	30	9,620	-37.5		313	16.5
250	30	10,852	-46.3		283	26.4
200	30	12,302	-55.9		275	34.0
175	30	13,140	-61.2		276	32.4
150	30	14,082	-66.9		280	28.7
125	29	15,169	-72.0		283	21.4
100	24	16,462	-76.1		331	10.9
80	21	17,748	-76.5		28	6.8
60	17	19,439	-67.2		95	9.1
50	17	20,549	-63.5		94	8.4
40	15	21,925	-60.2		88	6.2
30	15	23,738	-56.1		110	5.2
20	6	26,363	-48.0			
15						

SANTA MARIA, CALIF. (1009 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	74	9.2	80	114	1.7
1,000	31	149	9.7	75	96	1.7
950	31	574	8.4	65	90	2.5
900	31	1,019	6.1	60	96	1.9
850	31	1,485	3.3	56	173	1.2
800	31	1,974	1.1	43	277	4.3
750	31	2,498	-.9	37	281	9.7
700	31	3,039	-3.7	38	278	14.4
650	31	3,624	-7.0	38	272	16.3
600	31	4,240	-11.0	37	271	18.3
550	31	4,906	-15.3	38	270	21.0
500	31	5,617	-19.9	36	277	22.3
450	31	6,399	-25.3	35	281	24.7
400	31	7,235	-31.4	35	288	26.4
350	31	8,167	-37.9		280	27.4
300	31	9,212	-45.1		281	30.7
250	31	10,409	-52.0		274	30.5
200	30	11,835	-54.3		268	36.9
175	30	12,691	-54.1		268	32.6
150	30	13,678	-54.9		263	34.6
125	29	14,840	-57.6		264	28.7
100	29	16,239	-60.2		271	21.8
80	28	17,625	-60.6		287	13.0
60	27	19,423	-60.0		356	8.2
50	25	20,556	-59.9		29	11.7
40	23	21,968	-59.2		37	17.1
30	18	23,764	-59.1			
20	7	26,315	-59.0			
15						

SANTA MONICA, CALIF. (1013 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	38	12.3	70	348	1.2
1,000	31	150	12.2	65	349	.8
950	31	579	9.9	61	157	2.7
900	31	1,025	6.9	61	130	4.7
850	31	1,492	3.9	57	169	4.9
800	31	1,983	1.7	49	216	6.6
750	31	2,512	-.4	42	246	10.7
700	31	3,051	-3.4	41	257	16.1
650	31	3,638	-6.8	41	261	20.8
600	31	4,254	-10.8	40	260	25.6
550	31	4,922	-15.3	34	259	30.3
500	31	5,631	-19.9	36	260	34.4
450	31	6,414	-25.2	39	261	37.7
400	31	7,251	-31.0	39	262	42.0
350	31	8,183	-37.8		261	40.2
300	31	9,227	-45.0		261	42.3
250	31	10,422	-52.5		266	41.2
200	30	11,841	-55.8		265	42.2
175	30	12,690	-55.6		268	39.0
150	30	13,667	-56.8		261	37.9
125	30	14,814	-59.5		268	34.8
100	30	16,198	-61.9		274	25.4
80	29	17,571	-62.4		291	15.5
60	26	19,348	-61.5		333	7.4
50	22	20,493	-59.9		11	10.3
40	20	21,880	-60.4		42	14.0
30	17	23,679	-59.8		52	14.8
20	10	26,252	-57.7			
15						
10						

S. STE. MARIE, MICH. (990 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	221	-11.8	86	282	4.1
1,000	31	145				
950	31	536	-12.5	69	267	12.0
900	31	948	-14.5	71	276	18.1
850	31	1,379	-16.5	71	283	19.8
800	31	1,834	-17.6	62	282	23.7
750	31	2,321	-18.6	58	284	28.9
700	31	2,828	-20.7	54	281	34.0
650	31	3,379	-22.5	50	279	39.6
600	31	3,958	-25.3	48	277	44.1
550	31	4,584	-28.8	47	273	49.3
500	31	5,261	-32.7	44	275	56.9
450	30	5,994	-37.3		275	62.9
400	29	6,792	-42.7		275	70.7
350	29	7,681	-48.2		269	74.2
300	29	8,682	-53.3		268	81.8
250	29	9,848	-54.7		270	90.5
200	29	11,274	-54.4		272	86.6
175	28	12,139	-54.1		272	83.1
150	26	13,124	-54.9		270	80.6
125	22	14,298	-55.7		270	81.2
100	21	15,711	-57.4		272	79.8
80	15	17,157	-57.9		272	73.2
60	11	19,006	-57.0			
50	6	20,258	-55.1			
40	5	21,678	-55.8			
30						
20						
15						
10						

SEATTLE, WASH. (1005 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	124	0.6	80	86	6.4
1,000	31	161			48	4.9
950	31	576	-.6	68	190	3.3
900	31	1,003	-2.6	70	206	6.6
850	31	1,455	-4.4	69	224	5.8
800	31	1,930	-6.8	66	256	7.6
750	31	2,437	-9.3	57	278	7.8
700	31	2,962	-12.6	51	293	8.9
650	31	3,532	-16.0	48	298	10.5
600	31	4,122	-19.5	45	299	12.8
550	31	4,767	-23.4	42	311	15.0
500	31	5,454	-28.3		308	19.6
450	31	6,209	-33.7		311	23.7
400	31	7,018	-39.1		314	27.4
350	31	7,920	-45.3		314	30.1
300	30	8,936	-50.3		327	33.6
250	29	10,120	-54.5		326	35.9
200	29	11,546	-53.5		317	35.2
175	29	12,405	-52.7		316	35.5
150	28	13,401	-52.6		312	35.7
125	26	14,575	-53.9		315	39.0
100	24	15,989	-55.0		312	40.8
80	23	17,400	-56.2		318	41.6
60	22	19,207	-58.0		314	46.4
50	21	20,392	-59.6		317	47.2
40	21	21,719	-61.4		317	50.3
30	21	23,492	-62.9		317	55.6
20	17	26,022	-64.0		322	54.4
15	13	27,763	-66.3		320	63.5
10	10	30,290	-63.8			

SHREVEPORT, LA. (1013 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	76	8.8	73	92	1.6
1,000	31	178	8.5	72	104	1.9
950	31	610	8.3	73	203	8.9
900	31	1,050	9.0	68	236	16.1
850	31	1,523	8.4	60	253	19.8
800	31	2,023	6.6	56	258	24.9
750	31	2,556	4.4	51	258	28.4
700	31	3,110	1.9	47	260	32.6
650	31	3,710	-1.4	47	263	38.7
600	31	4,338	-5.2	42	264	42.5
550	31	5,016	-9.4	39	263	46.4
500	31	5,746	-14.2	38	261	50.1
450	31	6,545	-19.9	43	264	56.7
400	31	7,400	-26.0	46	263	62.7
350	31	8,351	-32.8	45	265	70.1
300	31	9,415	-41.3		265	72.8
250	31	10,623	-51.5		267	77.3
200	31	12,036	-60.3		266	81.4
175	31	12,861	-63.1		263	81.4
150	27	13,804	-64.2		265	74.8
125	26	14,905	-66.7		265	67.6
100	24	16,243	-68.9		265	56.7
80	21	17,574	-68.9		273	34.8
60	20	19,312	-65.6		274	21.4
50	19	20,421	-63.2		277	11.7
40	17	21,802	-61.6		283	10.3
30	15	23,590	-59.8		288	9.9
20	5	26,130	-59.5			
15						
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SPOKANE, WASH. (935 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	722	-8.8	78	151	1.7
1,000	31	194				
950	31	598				
900	31	1,016	-7.9	73	149	4.9
850	31	1,459	-8.1	68	202	5.2
800	31	1,930	-9.1	65	244	8.0
750	31	2,434	-11.1	64	271	10.3
700	31	2,954	-13.8	63	279	13.0
650	31	3,523	-16.8	56	285	15.5
600	31	4,110	-20.2	52	292	18.1
550	31	4,750	-24.3	49	300	18.8
500	31	5,436	-29.2	49	297	18.8
450	31	6,187	-34.5	50	305	20.0
400	31	6,993	-40.0		310	21.6
350	31	7,893	-45.6		320	24.1
300	31	8,905	-51.3		315	24.5
250	31	10,077	-54.8		304	31.5
200	30	11,504	-53.3		305	36.5
175	30	12,366	-51.9		302	37.5
150	30	13,363	-52.3		303	40.4
125	29	14,545	-53.5		303	42.0
100	28	15,978	-54.3		305	40.4
80	26	17,415	-54.3		316	40.2
60	23	19,246	-56.0		321	41.0
50	22	20,422	-56.8		326	44.1
40	19	21,871	-57.7		331	43.9
30	14	23,806	-57.8		346	34.0
20	11	26,421	-59.4		348	29.9
15	8	28,227	-61.8			
10						

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

RAWINSONDE DATA

Average monthly values

Standard pressure surface (mb.)	SWAN ISLAND, W. I. (1017 MB.)						TAMPA, FLA. (1023 MB.)					
					Wind						Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	10	25.1	79	75	8.0	31	7	16.3	85	33	1.4
1,000--	31	155	24.0	79	67	12.8	31	203	16.8	75	3	1.0
950----	31	599	20.4	84	71	17.3	31	643	15.0	69	219	1.4
900----	31	1,068	17.3	79	80	17.7	31	1,096	12.9	72	244	5.4
850----	31	1,554	14.3	73	87	16.9	31	1,574	10.4	64	255	9.1
800----	31	2,064	11.4	67	95	15.2	31	2,078	9.0	44	258	12.0
750----	31	2,602	9.7	47	95	16.9	31	2,620	7.1	35	265	13.8
700----	31	3,173	7.2	39	92	17.9	31	3,175	4.6		268	16.3
650----	31	3,786	4.2		93	18.5	31	3,786	1.4		267	20.4
600----	31	4,426	1.0		92	17.3	31	4,415	- 2.6		269	22.0
550----	31	5,119	- 2.9		96	16.7	31	5,105	- 7.2	26	268	25.4
500----	29	5,868	- 7.7		95	11.8	31	5,835	-12.1		270	27.2
450----	29	6,684	-13.6		109	6.4	31	6,644	-17.8		272	29.7
400----	28	7,564	-20.6		184	2.9	31	7,502	-24.5		271	37.1
350----	28	8,536	-28.2		223	5.2	30	8,462	-31.9		271	37.5
300----	28	9,620	-36.9		235	12.4	30	9,531	-40.8		268	39.6
250----	28	10,853	-46.8		228	18.8	30	10,745	-50.5		276	40.0
200----	27	12,297	-56.6		229	20.6	30	12,168	-59.3		274	49.0
175----	26	13,138	-61.1		234	21.2	30	12,997	-62.7		273	53.2
150----	26	14,083	-65.7		238	18.1	30	13,939	-66.0		273	52.8
125----	25	15,173	-71.5		241	11.5	29	15,040	-68.9		272	51.5
100----	23	16,469	-76.8		117	4.3	29	16,361	-72.8		268	39.0
80-----	19	17,749	-77.2		104	13.4	29	17,666	-73.4		275	29.7
60-----	18	19,435	-67.0		84	13.4	27	19,372	-67.5		269	9.7
50-----	15	20,550	-63.1		81	13.0	26	20,483	-63.3		269	8.2
40-----	13	21,940	-59.6		94	15.3	23	21,866	-60.8		245	4.5
30-----	11	23,758	-55.3				21	23,668	-58.1		241	7.0
20-----							13	26,254	-53.1			

Standard pressure surface (mb.)	TATOOSH ISLAND, WASH. (1014 MB.)						TOPEKA, KANS. (991 MB.)					
					Wind						Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	31	3.0	78	101	11.3	31	270	- 4.8	70	346	1.4
1,000--	31	145	2.2	73	97	10.7	31	198				
950----	31	560	- .2	72	95	6.2	31	605	- 5.5	63	323	3.3
900----	31	989	- 2.1	69	168	1.4	31	1,027	- 5.3	60	286	6.2
850----	31	1,441	- 3.7	63	256	2.7	31	1,476	- 3.9	55	285	12.0
800----	31	1,918	- 6.0	60	287	4.9	31	1,955	- 3.9	56	285	17.1
750----	31	2,422	- 8.6	57	307	8.4	31	2,470	- 4.6	54	279	22.9
700----	31	2,952	-11.5	55	319	10.5	31	3,005	- 6.7	50	275	30.7
650----	31	3,518	-14.7	50	325	12.4	31	3,585	-10.0	50	272	35.7
600----	31	4,118	-18.5	45	316	11.3	31	4,193	-13.6	46	275	41.2
550----	31	4,759	-22.9	44	316	12.6	31	4,852	-17.7	41	275	45.6
500----	31	5,451	-27.8	42	323	12.0	31	5,556	-21.9	39	274	54.8
450----	31	6,203	-33.0	42	323	15.7	31	6,332	-27.0	38	272	66.2
400----	31	7,018	-38.4		328	22.0	31	7,163	-32.3	38	272	75.0
350----	31	7,923	-44.5		322	20.8	30	8,093	-38.9		272	83.7
300----	31	8,941	-49.8		316	24.3	30	9,132	-46.4		268	96.5
250----	31	10,121	-53.7		317	25.4	30	10,320	-53.8		270	103.7
200----	31	11,554	-53.1		312	28.2	30	11,734	-57.9		270	106.3
175----	31	12,416	-51.9		307	30.3	30	12,573	-57.9		273	97.7
150----	31	13,415	-51.5		307	28.4	30	13,544	-58.1		272	84.5
125----	31	14,595	-52.5		313	26.8	30	14,687	-59.2		273	70.7
100----	30	16,032	-53.6		319	28.9	29	16,074	-61.4		274	60.8
80-----	30	17,464	-54.2		325	30.9	29	17,450	-62.6		280	53.0
60-----	28	19,293	-56.0		328	32.2	22	19,239	-61.3		286	42.5
50-----	26	20,464	-56.3		328	33.6	20	20,370	-60.8		291	28.9
40-----	24	21,901	-57.5		342	33.6	18	21,772	-59.8		298	26.0
30-----	18	23,773	-58.2		326	30.1	6	23,629	-58.9			
20-----												

Standard pressure surface (mb.)	TUCSON, ARIZ. (927 MB.)					
					Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	781	13.0	53	202	1.2
1,000--	31	138				
950----	31	576				
900----	31	1,032	12.8	45	213	2.1
850----	31	1,509	9.4	48	214	7.6
800----	31	2,009	5.8	50	217	12.4
750----	31	2,541	2.5	46	231	15.2
700----	31	3,088	- .8	43	241	20.0
650----	31	3,678	- 4.0	37	247	24.5
600----	31	4,304	- 7.5	37	254	30.1
550----	31	4,978	-11.6	40	253	36.1
500----	31	5,701	-16.2	39	255	44.9
450----	31	6,495	-21.6	43	253	51.7
400----	31	7,344	-27.3	46	251	58.9
350----	31	8,292	-33.7	40	251	67.6
300----	31	9,355	-41.6		252	73.4
250----	29	10,562	-50.4		253	79.4
200----	29	11,990	-58.2		253	78.1
175----	28	12,823	-59.0		255	70.7
150----	26	13,790	-59.6		253	61.0
125----	26	14,922	-62.2		257	52.6
100----	24	16,284	-64.8		261	42.5
80-----	24	17,641	-65.4		262	27.6
60-----	23	19,390	-64.2		291	14.0
50-----	23	20,510	-62.5		312	9.3
40-----	21	21,879	-61.6		331	8.9
30-----	17	23,674	-60.2		309	9.7
20-----						

Standard pressure surface (mb.)	WASHINGTON, D. C. (1012 MB.)						WINNEMUCCA, NEV. (869 MB.)						YAKUTAT, ALASKA (1024 MB.)					
					Wind						Wind						Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	88	- 0.2	64	280	1.7	31	1,310	- 4.4	74	80	1.0	30	12	- 3.5	89	94	3.9
1,000--	31	187	- .3	60	235	3.9	31	183					30	199	- .5	72	79	3.3
950----	31	598	- 1.9	61	267	11.5	31	599					30	611	- 2.0	65	311	.8
900----	31	1,025	- 3.2	59	269	17.1	31	1,027					30	1,037	- 3.6	64	285	2.7
850----	31	1,476	- 4.4	56	273	22.7	31	1,483	- 1.9	57	130	2.1	30	1,487	- 4.9	60	284	7.6
800----	31	1,953	- 5.2	52	274	28.7	31	1,963	- 4.4	52	210	3.9	30	1,962	- 6.9	58	287	10.7
750----	31	2,466	- 6.0	44	275	35.2	31	2,475	- 6.8	49	251	7.6	30	2,472	- 8.8	50	289	12.2
700----	31	2,997	- 7.9	44	274	40.6	31	3,004	-10.0	55	265	11.5	30	2,996	-11.1	41	306	14.4
650----	31	3,576	-10.7	48	275	44.9	31	3,579	-13.6	54	268	15.0	30	3,568	-14.5	38	313	19.0
600----	30	4,180	-14.1	50	278	47.8	31	4,176	-17.2	50	274	17.3	30	4,163	-17.9	36	308	21.2
550----	30	4,838	-17.7	50	279	57.1	31	4,829	-21.5	48	277	18.5	30	4,814	-21.9	39	312	23.9
500----	30	5,543	-21.9	50	278	62.7	31	5,518	-26.4	43	271	22.1	30	5,503	-26.3	38	316	26.8
450----	30	6,320	-27.0	50	280	70.7	31	6,284	-31.4	40	278	25.1	30	6,264	-31.7	37	321	31.3
400----	30	7,149	-32.6	48	279	76.5	31	7,097	-36.7	40	280	28.7	30	7,079	-37.4		319	33.8
350----	30	8,076	-39.0		281	83.9	31	8,009	-42.8		272	33.8	30	7,987	-43.8		318	40.2
300----	30	9,116	-46.4		277	88.4	30	9,038	-48.7		273	39.4	30	9,006	-50.4		320	37.3
250----	30	10,306	-53.5				27	10,219	-52.7		270	46.4	30	10,175	-56.3		322	45.8
200----	30	11,726	-57.1				25	11,652	-52.8		268	42.2	30	11,578	-59.1		320	47.8
175----	30	12,568	-57.8				25	12,516	-51.9		271	41.8	29	12,424	-57.3		309	48.0
150----	30	13,539	-58.1				25	13,513	-52.7		276	35.7	29	13,402	-55.0		303	53.2
125----	29	14,676	-59.7				25	14,685	-54.5		283	38.7	29	14,564	-55.3		301	58.3
100----	28	16,065	-60.3				22	16,097	-56.2		297	29.9	29	15,986	-55.4			
80-----	26	17,444	-60.8				22	17,510	-57.3		309	27.2	28	17,414	-56.9			
60-----	24	19,237	-60.5				20	19,319	-58.4		335	23.5	24	19,261	-57.1			
50-----	24	20,374	-59.5				19	20,464	-58.7		336	27.8	20	20,413	-57.8			
40-----	22	21,776	-59.7				19	21,861	-60.1		353	25.1	13	21,857	-58.0			
30-----	21	23,572	-59.5				12	23,696	-61.1				9	23,704	-60.7			
20-----	7	26,093	-58.5															

Note: All observations scheduled at 0300, G.C.T. except at Mazatlan, Merida and Veracruz, where they are taken near 0200, G.C.T. "Number of observations" refers to those of dynamic height only. Temperature, humidity or wind data may be missing for one or more pressure surfaces of some observations. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Relative humidity data are not published for standard pressure surfaces having less than 16 actual observations.

Relative humidity data beginning with October 1, 1948, were computed and expressed in these tables on the basis of vapor-pressure over water. Upper air values of relative humidity at levels with temperatures less than 0°C, have formerly been computed and expressed on the basis of the vapor-pressure over ice. All relative humidity observations are obtained by electric hygrometer and have been adjusted to compensate for the value occurring below the operating range of the humidity element.

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

SOLAR RADIATION DATA

Solar radiation intensities, tabulated in langleys per minute on a surface normal to the direction of the sun.

JANUARY 1957

MADISON, WIS.

Date	Sun's zenith distance A.M. 78.7°	75.7°	70.7°	60.0°	0.0°	P.M. 60.0°	70.7°	75.7°	78.7°
	Air mass 5.0	4.0	3.0	2.0	Noon	2.0	3.0	4.0	5.0
Jan.									
1------	S1.04	S1.13	S1.28	----	S1.33	----	S1.25	S1.09	S0.98
7------	S1.00	S1.12	S1.25	----	----	----	----	----	----
10-----	S1.00	S1.13	1.24	----	1.36	----	1.28	Ac 45°	----
16-----	.91	1.04	Cu	----	----	----	----	----	----
19-----	I .86	I .98	M1.14	----	Ci	----	----	----	----
23-----	----	----	----	----	1.42	----	Ci	----	----
29-----	----	M.90	----	----	----	----	----	----	----
30-----	----	I1.05	S1.16	----	S1.36	----	Ci	----	----
31-----	----	----	----	----	S1.31	----	----	----	----
Averages	.96	1.05	1.21	----	1.36	----	1.27	1.09	.98

BLUE HILL, MASS.

Date	Sun's zenith distance A.M. 78.7°	75.7°	70.7°	60.0°	0.0°	P.M. 60.0°	70.7°	75.7°	78.7°
	Air mass 4.86	3.89	2.92	1.94	Noon	1.94	2.92	3.89	4.86
Jan.									
1------	0.96	1.10	1.22	----	1.31	----	1.22	1.10	0.99
2------	.84	.96	1.09	----	1.17	----	1.13	1.00	.90
3------	.98	1.10	1.21	----	1.33	----	1.22	1.13	1.04
5------	----	.99	1.13	----	----	----	----	----	----
8------	K.62	K.74	K.94	----	K1.15	----	K1.04	K.94	K.83
11-----	1.04	1.14	1.23	----	1.33	----	1.20	1.05	.94
13-----	----	----	----	----	----	----	1.10	1.03	.94
14-----	1.01	1.12	1.24	----	1.34	----	1.13	1.03	.96
15-----	.93	1.08	----	----	----	----	----	----	----
17-----	.95	1.15	1.25	----	----	----	----	----	----
18-----	K.69	K.83	K1.00	----	K1.17	----	K1.00	----	----
19-----	----	----	1.05	----	1.19	----	1.01	----	----
23-----	----	----	----	----	----	----	1.15	1.03	.92
24-----	.96	1.07	1.17	----	1.30	----	----	1.02	.85
26-----	H.58	H.73	H.88	----	H1.08	----	1.09	.94	.79
30-----	----	----	----	----	1.16	----	----	----	----
Averages	.87	1.00	1.12	----	1.23	----	1.02	1.03	.92

WASHINGTON, D. C. (WBCO)

Date	Sun's zenith distance A.M. 78.7°	75.7°	70.7°	60.0°	0.0°	P.M. 60.0°	70.7°	75.7°	78.7°
	Air mass 4.96	3.97	2.98	1.99	Noon	1.99	2.98	3.97	4.96
Jan.									
3-----	SK0.79	SK0.92	SK1.08	----	SK1.26	----	SK1.04	SK0.86	SK0.69
10----	----	----	----	----	----	----	----	SK.94	SK.86
15----	SH.74	SH.82	----	----	----	----	----	----	----
16----	----	----	----	SK1.15	SK1.21	SK1.18	SK.87	SK.67	
17----	----	----	----	----	----	----	----	S.86	S.73
18----	----	SK.83	SK1.02	----	SK1.29	----	----	SK.99	SK.86
19----	SK.76	----	SK1.08	SK1.26	SK1.27	SK1.26	SK1.10	SK.93	SK.81

CLOUDY ALL OTHER DAYS

TABLE MOUNTAIN, CALIF.

Date	Sun's zenith distance A.M. 78.7°	75.7°	70.7°	60.0°	0.0°	P.M. 60.0°	70.7°	75.7°	78.7°
	Air mass 5.0	4.0	3.0	2.0	*0.75	2.0	3.0	4.0	5.0
Jan.									
9-----	----	----	----	MH1.56	----	----	----	----	----
15----	----	----	----	SH1.57	----	----	----	----	----
31----	----	----	----	%1.49	----	----	----	----	----

ALBUQUERQUE, N. MEX.

Date	Sun's zenith distance A.M. 78.7°	75.7°	70.7°	60.0°	0.0°	P.M. 60.0°	70.7°	75.7°	78.7°
	Air mass 5.0	4.0	3.0	2.0	Noon	2.0	3.0	4.0	5.0

Recorder Inoperative during January 1957

*	Extrapolated	SK	Slight smoke
I	Intense haze - indeterminable	SH	Slight haze
M	Moderate haze - indeterminable	K	Smoke
S	Slight haze - indeterminable	H	Haze
%	Blowing Snow	MH	Moderate haze

Langley is the unit used to denote one gram calorie per dquare centimeter. An explanation of the formula used in computing the air mass values for each station listed in Table 30 appears in Monthly Weather Review, volume 75, No. 3, March 1947, p. 47.

SOLAR RADIATION DATA

JANUARY 1957

Daily totals and average daily totals by weeks of solar and sky radiation, plus the radiation reflected from the ground, as received on a vertical surface facing south at Blue Hill, Mass. during the month

								Avg								Avg								Avg
Date	1	2	3	4	5	6	7		8	9	10	11	12	13	14		15	16	17	18	19	20	21	
Langleys	598	556	589	133	514	380	43	402	524	55	11	615	381	376	599	366	521	64	591	529	576	241	67	370
Date	22	23	24	25	26	27	28		29	30	31	1	2	3	4									
Langleys	54	164	557	25	518	315	59	242	15	434	43	102	408	73	74	164								

Daily totals and average daily totals by weeks of diffuse (sky) radiation as received on a horizontal surface at Blue Hill, Mass. during the month

								Avg								Avg								Avg
Date	1	2	3	4	5	6	7		8	9	10	11	12	13	14		15	16	17	18	19	20	21	
Langleys	50	55	43	84	54	85	67	62	62	72	24	46	91	81	51	61	65	92	60	63	59	142	97	83
Date	22	23	24	25	26	27	28		29	30	31	1	2	3	4									
Langleys	76	39	49	65	74	88	104	71	27	93	85	129	134	114	101	98								

Note: Langley is the unit used to denote one gram calorie per square centimeter

NET RADIATION

Net radiation in langleys per day (midnight to midnight) at Raleigh, N. C., during the month

JANUARY 1957

Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langleys	-11	6	33	*52	*9	*29	100	*69	*-26	**	**	77	65	55	*3	29	-5	41	44	89	*117	*77	*40	*63	*4	*62	*10	105	*84	*26	*10	43

* Estimated values owing to occurrence of rain during period. While rain is falling, radiation is assumed to be zero.

** Radiometer inoperative.

The measurement is made with a Beckman and Whitley net exchange radiometer over a plot of alfalfa. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the North Carolina State College at Raleigh. The instrument with which they were measured has not been checked by the Weather Bureau.

SOLAR RADIATION DATA

Table 33.--Daily totals and weekly averages of solar radiation (direct and diffuse) received on a horizontal surface, tabulated in langleys.

	Aklavik, MacKenzie	Albuquerque, N.Mex.	Annette, Alaska	Astoria, Oreg.	Atlanta, Ga.	Barrow, Alaska	Bethel, Alaska	Bismarck, N. Dak.	Blue Hill, Mass.	Boise, Idaho	Boston, Mass.	Canton Island Pacific Area	Caribou, Me.	Charleston, S. C.	China Lake, Calif.	Cleveland, Ohio	Columbia, Mo.	Davis, Calif.	Dodge City, Kans.	E. Lansing, Mich.	Edmonton, Alberta	El Paso, Tex.	Ely, Nev.	Fort Worth, Tex.	Fresno, Calif.	Gainesville, Fla.	Glasgow, Mont.	Grand Junction, Colo.	Grand Lake, Colo.	Great Falls, Mont.	Greensboro, N. C.	Griffin, Ga.	Hatteras, N. C.	Indianapolis, Ind.	Ithaca, N. Y.	Lake Charles, La.	Lander, Wyo.
1957																																					
Jan. 1------	---	146	35	89	327	---	5	61	243	184	233	688	170	308	219	183	256	195	289	183	61	116	(225)	270	121	225	99	235	287	102	158	370	(281)	239	152	262	234
Jan. 2------	---	285	18	119	349	---	10	60	237	189	208	557	172	332	325	168	246	168	175	189	37	347	256	(194)	236	361	73	163	186	42	258	403	324	221	182	252	219
Jan. 3------	---	120	40	81	322	---	6	90	241	151	221	663	177	311	307	176	221	221	263	84	106	56	124	191	174	341	135	230	266	183	200	381	295	96	189	95	227
Jan. 4------	---	295	54	151	73	---	4	142	109	168	112	---	80	170	165	42	52	118	91	71	110	365	241	312	106	322	61	179	160	114	83	102	265	92	29	256	240
Jan. 5------	---	302	35	190	112	---	51	157	226	---	204	663	166	232	193	131	249	87	64	151	78	260	171	57	206	347	131	145	67	148	193	149	59	229	175	196	243
Jan. 6------	---	310	23	57	190	---	12	166	201	---	121	669	(203)	134	302	88	70	233	301	91	70	307	237	200	280	331	134	226	284	89	31	249	226	47	158	113	238
Jan. 7------	---	173	33	42	338	---	6	142	66	---	71	---	96	327	87	76	139	163	170	100	(61)	329	170	279	92	251	76	186	174	144	219	380	266	240	74	273	234
Average-------	---	233	34	104	245	---	13	117	189	173	167	648	(152)	259	228	123	176	169	193	124	(75)	254	(203)	(215)	174	311	101	195	203	117	163	291	(245)	166	137	207	234
Jan. 8------	---	87	119	118	304	---	38	---	226	---	207	668	140	306	362	147	23	202	66	95	---	213	278	241	149	361	---	174	158	140	191	375	309	38	195	208	185
Jan. 9------	---	247	112	37	131	---	33	(204)	78	---	84	680	108	300	350	52	16	258	137	74	(108)	187	296	235	220	301	196	246	145	225	63	176	35	7	57	251	251
Jan. 10------	---	46	103	120	303	---	7	199	33	---	11	---	90	156	301	171	255	243	143	232	(66)	159	286	363	319	291	144	184	266	159	240	328	208	136	64	299	193
Jan. 11------	---	244	105	51	100	---	14	170	255	---	237	684	197	156	242	268	158	70	---	232	(107)	358	190	170	147	274	123	175	275	128	125	155	185	225	194	276	235
Jan. 12------	0	270	104	160	322	---	36	147	208	---	186	660	122	130	43	87	141	33	206	76	---	362	138	311	66	116	96	155	229	211	199	267	84	103	69	92	188
Jan. 13------	0	112	105	48	315	---	23	232	186	---	204	662	144	308	289	206	102	155	190	166	---	339	129	338	300	75	239	149	87	240	227	340	288	75	162	174	149
Jan. 14------	0	260	96	182	269	---	30	156	262	---	236	677	153	274	361	290	154	240	201	241	(80)	361	273	106	351	---	117	184	153	95	274	232	98	290	244	180	139
Average-------	---	181	106	102	249	---	26	(185)	178	---	166	672	136	233	278	175	121	172	157	160	(85)	283	227	252	222	236	152	181	188	171	188	253	173	125	141	212	191
Jan. 15------	0	334	105	96	24	---	28	163	252	---	222	699	235	20	370	127	165	227	---	186	(110)	339	216	88	361	---	205	294	273	---	40	26	87	150	239	85	126
Jan. 16------	0	358	105	215	191	---	27	103	104	---	73	698	95	36	367	244	266	236	354	233	66	394	316	170	285	289	153	294	256	99	131	---	85	309	123	42	239
Jan. 17------	2	366	43	199	365	---	54	187	266	---	232	684	176	129	382	230	197	262	318	194	109	425	312	394	155	142	196	297	287	224	67	286	16	263	186	384	277
Jan. 18------	1	319	23	195	402	---	70	214	253	---	217	640	206	380	385	240	274	---	---	218	81	392	314	377	79	216	225	301	321	229	285	329	376	---	229	399	292
Jan. 19------	0	338	122	29	389	---	49	213	258	---	229	589	195	380	373	304	190	54	201	247	(65)	460	256	62	223	121	173	305	311	182	293	321	389	271	236	270	312
Jan. 20------	1	335	100	98	178	---	47	85	182	---	166	659	185	267	121	85	52	228	324	57	(67)	419	102	337	109	342	83	114	235	100	228	183	244	---	91	179	134
Jan. 21------	3	119	133	85	172	---	69	208	102	---	132	637	103	151	391	136	192	288	201	33	117	354	277	(105)	178	384	220	204	286	163	241	120	228	---	142	230	297
Average-------	1	310	90	131	246	---	49	168	203	---	181	658	171	195	341	195	191	216	280	167	(88)	398	256	(219)	199	249	179	258	281	166	184	211	204	248	178	227	240
Jan. 22------	7	377	137	157	61	---	86	245	89	---	110	547	91	151	---	28	42	178	269	17	---	342	331	---	180	370	219	345	329	154	124	62	339	27	113	189	299
Jan. 23------	7	380	141	144	333	---	34	156	89	---	84	681	45	150	263	114	209	195	264	284	(142)	248	148	95	67	362	188	237	187	155	262	288	118	203	91	149	294
Jan. 24------	3	312	147	240	148	2	18	154	279	---	241	662	236	102	395	216	73	164	122	223	---	429	272	242	222	350	178	203	271	179	181	123	325	129	264	66	258
Jan. 25------	3	306	159	243	45	1	14	260	67	---	51	682	150	71	322	93	169	167	361	171	---	406	360	57	138	225	277	170	147	299	103	33	44	72	105	157	213
Jan. 26------	0	320	138	253	141	3	41	254	270	---	255	671	207	181	333	142	118	310	188	237	95	266	168	32	107	218	191	176	108	260	153	122	159	126	188	89	223
Jan. 27------	3	171	77	110	---	2	54	259	193	---	180	656	193	257	223	228	155	311	329	180	79	269	354	39	315	178	240	133	134	208	55	89	96	137	242	264	209
Jan. 28------	4	130	39	264	---	2	20	192	110	---	90	---	186	304	304	69	72	212	131	100	93	270	320	108	257	150	239	228	385	204	118	213	316	47	75	297	187
Average-------	4	285	120	202	146	1	38	217	157	---	144	650	158	174	307	127	120	220	238	173	(110)	319	279	95	184	265	219	213	223	208	142	133	200	106	154	173	240
Jan. 29------	9	269	54	68	---	4	75	280	31	---	11	642	114	323	180	75	116	301	311	131	99	329	374	149	356	158	272	322	223	237	196	193	343	120	27	234	345
Jan. 30------	14	403	60	53	---	3	88	172	258	---	233	672	293	85	418	248	92	318	81	264	68	274	372	40	331	221	178	299	297	---	130	146	37	18	275	139	304
Jan. 31------	8	419	169	60	---	4	90	214	89	---	86	---	245	373	419	97	89	298	316	215	(114)	---	354	125	322	230	171	340	156	135	52	196	224	70	66	337	321
Feb. 1------	5	422	170	99	---	3	66	244	142	---	127	700	271	335	434	70	246	240	378	114	(173)	409	357	151	314	179	203	293	---	170	51	220	370	52	91	184	321
Feb. 2------	12	316	148	179	---	6	73	278	273	---	244	655	216	58	453	252	229	325	208	165	139	430	342	253	97	298	211	353	---	214	295	95	(277)	274	311	131	329
Feb. 3------	8	134	116	48	---	14	54	199	121	---	107	655	149	251	462	118	29	336	98	89	(113)	407	386	(376)	339	240	169	271	---	186	59	214	264	60	77	224	305
Feb. 4------	8	121	154	72	---	8	58	277	113	---	111	659	181	385	461	216	141	326	228	298	170	(63)	383	72	324	246	250	334	---	270	122	251	304	181	62	325	351
Average-------	9	298	124	83	---	6	72	238	147	---	131	664	210	259	404	154	135	306	231	182	(125)	(318)	367	(167)	298	315	208	316	---	202	129	188	(260)	111	130	225	325

Note.--Langley is the unit used to denote one gram calorie per square centimeter.
Values in parentheses are interpolated.

Table 33.--Daily totals and weekly averages of solar radiation (direct and diffuse) received on a horizontal surface, tabulated in langleys. - Continued

JANUARY 1957

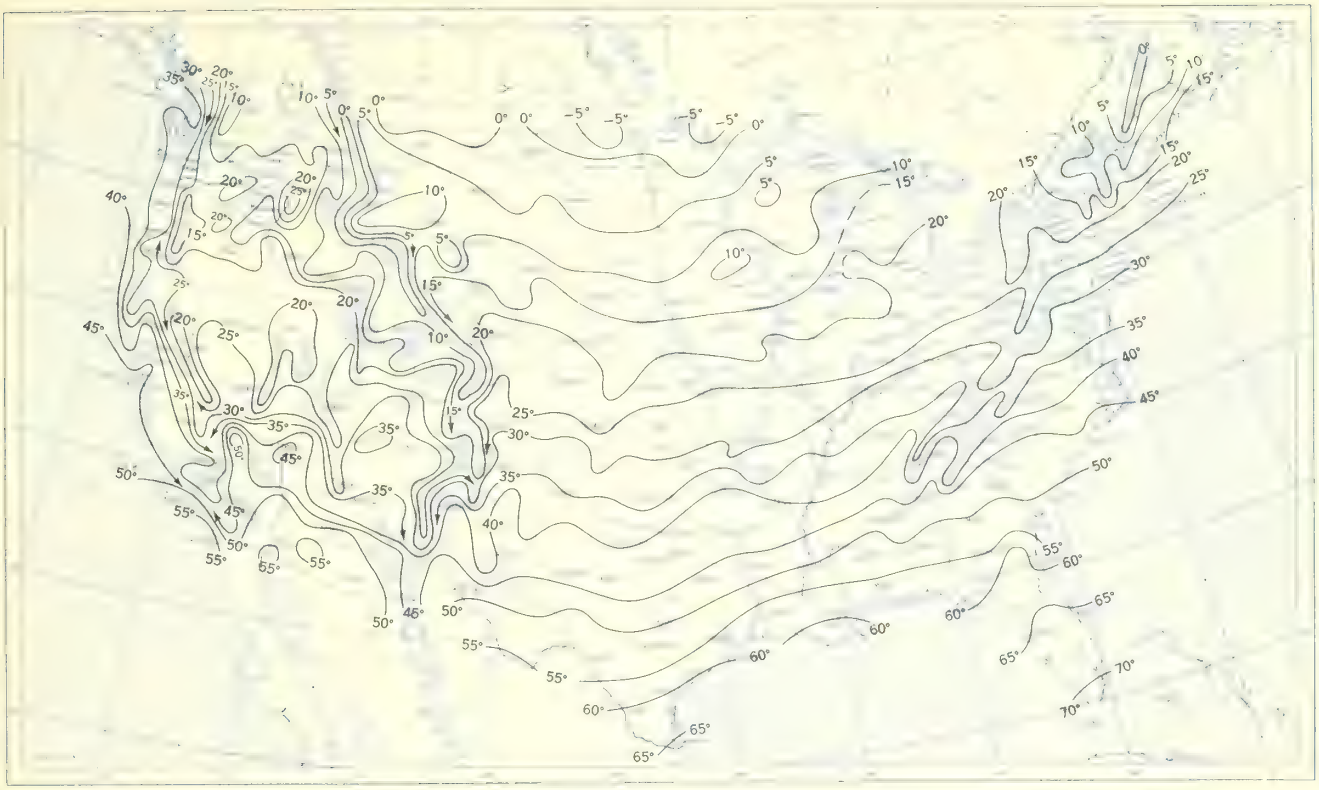
1957	Las Vegas, Nev.	Little Rock, Ark.	Madison, Wis.	Los Angeles, Calif. (urban)	Los Angeles, Calif.	Matanuska, Alaska	Medford, Oreg.	Miami, Fla.	Midland, Tex.	Nashville, Tenn.	Newport, R. I.	New York, N. Y.	Oak Ridge, Tenn.	Oklahoma City, Okla	Ottawa, Ontario	Phoenix, Ariz.	Portland, Me.	Prosser 4 NE, Wash.
Jan. 1------	87	242	191	193	195	2	20	410	221	206	247	163	253	287	208	153	228	30
Jan. 2------	295	216	192	298	273	12	52	401	274	257	236	202	305	155	210	252	226	78
Jan. 3------	286	158	52	258	259	5	55	365	156	168	248	224	186	257	179	53	220	26
Jan. 4------	168	31	183	56	93	0	66	305	338	25	150	128	16	55	96	261	98	32
Jan. 5------	187	229	163	193	236	10	21	402	312	60	210	137	115	46	214	269	209	90
Jan. 6------	254	36	167	299	274	24	93	412	217	32	196	143	52	195	187	275	218	63
Jan. 7------	93	206	197	57	55	22	---	396	283	211	90	111	254	260	95	78	82	134
Average-------	196	160	164	193	198	11	51	384	257	137	197	158	169	179	170	192	183	65
Jan. 8------	303	56	75	200	187	26	104	408	199	81	233	201	168	125	169	67	282	184
Jan. 9------	318	158	38	320	302	28	150	415	222	69	67	41	23	116	---	113	153	155
Jan. 10------	153	279	217	70	93	20	44	422	321	53	18	34	55	191	195	123	35	---
Jan. 11------	275	80	190	188	197	4	89	289	317	91	267	198	112	269	(193)	246	235	51
Jan. 12------	88	251	82	61	51	---	130	392	330	204	148	109	257	290	101	246	172	115
Jan. 13------	251	221	143	153	135	---	136	426	333	64	209	216	254	223	224	119	181	139
Jan. 14------	313	123	(216)	275	290	---	101	353	310	152	275	240	295	129	221	321	405	111
Average-------	243	167	(137)	181	179	19	108	386	290	102	174	149	166	192	(178)	176	209	126
Jan. 15------	331	57	228	302	295	---	129	388	338	53	249	161	16	220	147	342	242	94
Jan. 16------	340	151	237	304	307	---	208	362	338	242	89	62	140	209	75	346	88	242
Jan. 17------	352	309	211	313	317	---	213	396	381	299	---	216	319	338	150	358	252	238
Jan. 18------	338	294	---	328	326	58	203	221	239	293	253	168	349	343	192	257	232	170
Jan. 19------	312	213	219	317	308	63	12	335	340	286	276	226	330	53	230	345	235	47
Jan. 20------	79	34	34	64	55	76	124	126	375	46	199	157	114	345	107	321	179	---
Jan. 21------	301	80	14	330	373	52	188	265	342	257	155	23	281	123	37	263	203	---
Average-------	293	163	157	280	283	62	154	299	336	211	203	145	221	233	134	319	204	158
Jan. 22------	346	67	49	296	297	83	190	316	366	38	74	99	40	197	22	302	198	---
Jan. 23------	244	204	222	48	34	84	96	433	115	103	95	189	73	131	212	308	276	---
Jan. 24------	328	67	106	139	117	41	151	420	336	101	288	227	75	300	179	365	250	---
Jan. 25------	252	203	166	231	263	25	95	453	294	44	75	32	46	99	148	372	101	---
Jan. 26------	316	53	---	213	217	37	251	418	66	187	283	249	120	46	246	62	229	---
Jan. 27------	375	10	207	164	185	12	226	357	84	51	130	192	37	42	222	54	220	---
Jan. 28------	361	53	73	206	195	33	263	414	340	39	120	52	29	97	168	274	118	---
Average-------	317	94	137	185	187	45	182	401	229	81	152	148	60	130	171	248	199	---
Jan. 29------	151	50	266	77	79	9	138	369	109	45	38	14	46	146	158	307	70	---
Jan. 30------	396	92	284	312	299	76	---	388	74	91	291	252	90	67	249	258	255	---
Jan. 31------	391	15	257	353	370	129	---	380	138	55	72	28	33	176	130	402	136	---
Feb. 1------	390	75	183	350	326	91	72	496	436	55	115	24	19	189	224	409	176	---
Feb. 2------	356	200	110	287	238	120	172	463	400	321	238	257	367	222	205	268	287	---
Feb. 3------	398	146	147	394	378	80	283	(451)	384	192	129	56	40	215	87	227	139	---
Feb. 4------	405	47	304	399	370	114	194	416	246	70	110	139	53	62	201	295	224	---
Average-------	355	89	222	310	294	88	172	(423)	255	119	142	110	93	154	179	309	184	---

1957	Rapid City, S. Dak.	Riverside, Calif.	St. Cloud, Minn.	San Antonio, Tex.	Santa Maria, Calif.	S. Ste. Marie, Mich.	Sayville, N. Y.	Schenectady, N. Y.	Seabrook, N. J.	Seattle-Tacoma, Wash.	Spokane, Wash.	State College, Pa.	Tampa, Fla.	Toronto, Ontario	Tucson, Ariz.	Upton, N. Y.	Wake Island Pacific Area	Washington, D. C. (Silver Hill Obs.)	Winnipeg, Manitoba
Jan. 1------	90	190	184	282	254	105	225	173	203	16	20	197	369	216	178	223	310	244	141
Jan. 2------	86	309	148	151	196	136	218	172	201	22	26	183	368	194	298	206	320	256	64
Jan. 3------	221	316	54	---	277	(21)	267	180	213	93	49	186	375	96	171	246	248	230	127
Jan. 4------	82	98	197	331	108	174	195	76	148	103	14	154	384	71	358	190	410	182	143
Jan. 5------	246	204	92	317	183	---	182	173	---	148	20	151	374	204	289	184	394	116	87
Jan. 6------	225	268	200	61	271	103	144	169	---	65	20	137	363	84	264	127	438	172	81
Jan. 7------	213	35	129	139	115	82	156	107	---	23	87	79	257	86	154	151	391	178	87
Average-------	166	203	144	214	201	(104)	198	150	191	67	34	155	356	136	245	189	359	197	104
Jan. 8------	(119)	135	128	212	284	89	229	156	191	17	62	128	373	133	77	222	471	---	147
Jan. 9------	127	360	121	258	(318)	171	51	67	58	41	136	80	376	98	125	60	503	76	130
Jan. 10------	261	174	206	340	288	146	19	58	77	69	52	169	352	209	199	21	364	192	150
Jan. 11------	(237)	305	204	179	127	113	275	172	208	34	60	170	288	117	321	259	407	223	(162)
Jan. 12------	(159)	57	138	305	56	97	147	126	175	150	166	212	174	69	329	150	430	170	153
Jan. 13------	194	150	222	255	299	212	225	164	164	159	---	170	310	169	293	228	433	194	166
Jan. 14------	130	346	223	372	328	169	304	190	255	32	84	278	253	226	---	270	490	280	123
Average-------	(175)	218	177	274	(243)	143	179	133	161	72	94	173	304	146	224	173	443	189	(147)
Jan. 15------	(152)	356	215	104	334	127	241	200	167	157	184	160	312	99	---	246	437	128	152
Jan. 16------	(194)	380	151	135	300	205	95	85	198	180	199	198	339	163	365	87	467	246	107
Jan. 17------	(238)	387	172	358	337	217	254	195	190	179	216	252	69	199	366	242	476	142	159
Jan. 18------	258	392	161	291	352	212	255	141	239	158	203	166	346	217	277	225	386	304	173
Jan. 19------	(247)	367	217	79	341	228	301	165	268	34	71	244	410	234	383	265	491	309	134
Jan. 20------	(207)	128	139	182	137	42	222	113	195	156	106	174	356	78	388	208	282	227	120
Jan. 21------	(204)	389	35	76	361	20	61	130	64	82	197	176	61	28	135	80	508	134	136
Average-------	(214)	343	156	175	309	150	204	147	189	135	168	196	270	145	319	193	435	213	140
Jan. 22------	292	388	275	318	259	119	97	125	128	42	100	145	300	12	387	109	269	93	(193)
Jan. 23------	246	197	227	72	134	240	147	140	177	124	119	228	379	265	282	151	366	237	(193)
Jan. 24------	(223)	137	183	129	230	182	290	211	192	190	244	216	206	214	401	277	524	224	(202)
Jan. 25------	(321)	262	247	256	191	187	48	74	53	217	---	88	295	111	---	55	430	86	(201)
Jan. 26------	320	169	261	71	350	---	301	213	217	220	243	194	407	224	---	264	270	221	(172)
Jan. 27------	308	193	280	58	347	---	164	196	138	194	99	193	376	216	60	165	397	(104)	170
Jan. 28------	256	238	104	108	96	129	70	86	39	222	259	46	---	96	152	89	368	32	(204)
Average-------	(281)	226	225	145	230	171	159	149	135	173	177	159	327	163	257	159	375	(142)	(191)
Jan. 29------	329	109	298	83	341	---	19	46	22	64	122	63	424	76	314	32	417	31	(192)
Jan. 30------	306	388	273	110	381	---	261	200	197	35	124	215	404	271	190	277	527	141	162
Jan. 31------	236	418	233	69	388	244	41	90	34	36	112	47	429	157	326	58	528	32	(236)
Feb. 1------	224	436	203	435	399	212	45	129	30	118	196	41	361	74	427	61	539	33	(218)
Feb. 2------	311	331	190	390	282	239	315	250	227	100	149	305	402	267	366	293	511	236	(225)
Feb. 3------	(265)	406	309	179	417	231	---	143	73	34	225	41	349	76	129	109	552	98	(215)
Feb. 4------	(283)	447	286	402	416	297	170	60	102	38	151	72	457	197	139	146	552	161	(208)
Average-------	(279)	362	256	238	375	245	142	131	98	61	154	112	404	160	270	139	518	104	(208)

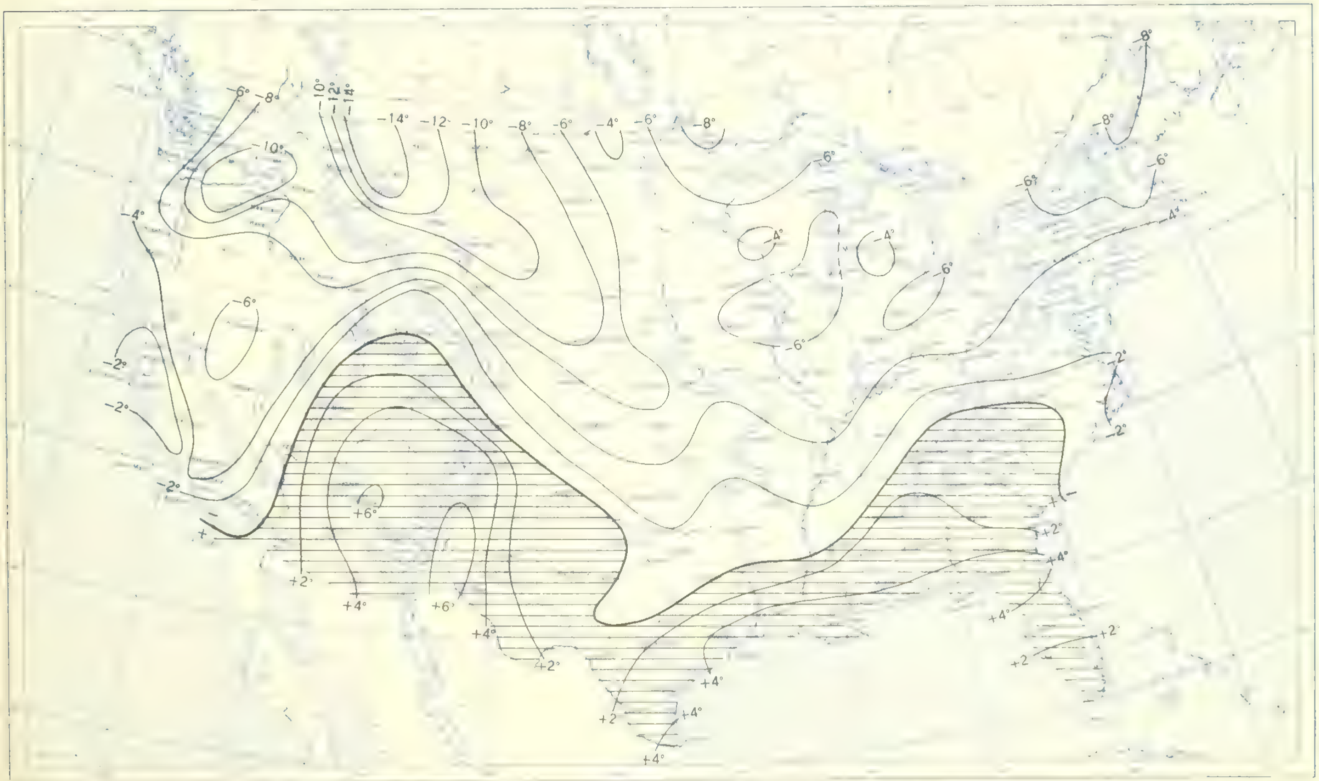
Note.--Langley is the unit used to denote one gram calorie per square centimeter.
Values in parentheses are interpolated.

NWRC, Asheville, N. C. --- 3/4/57 --- 1900

Chart I. A. Average Temperature (°F.) at Surface, January 1957.

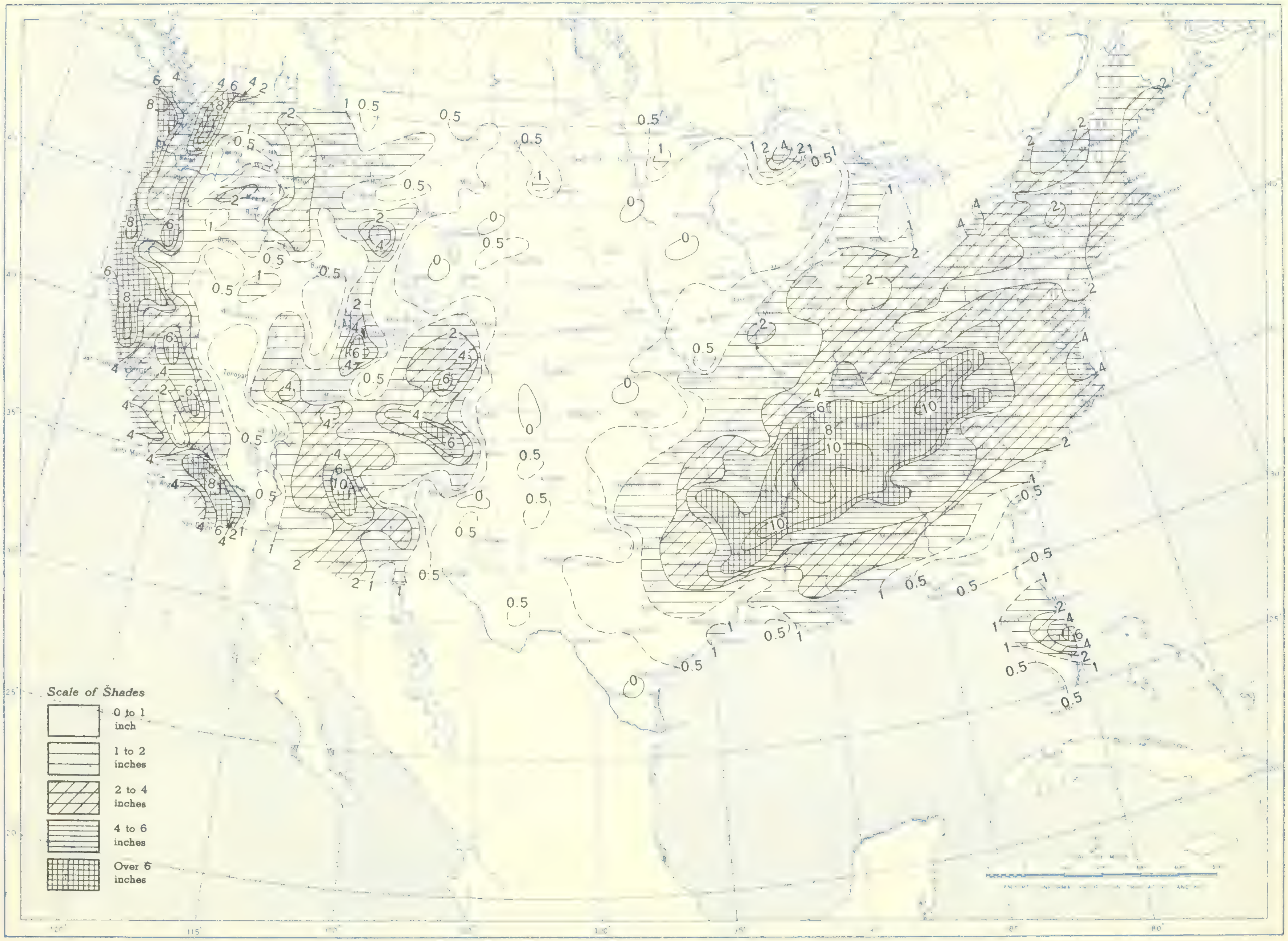


B. Departure of Average Temperature from Normal (°F.), January 1957.



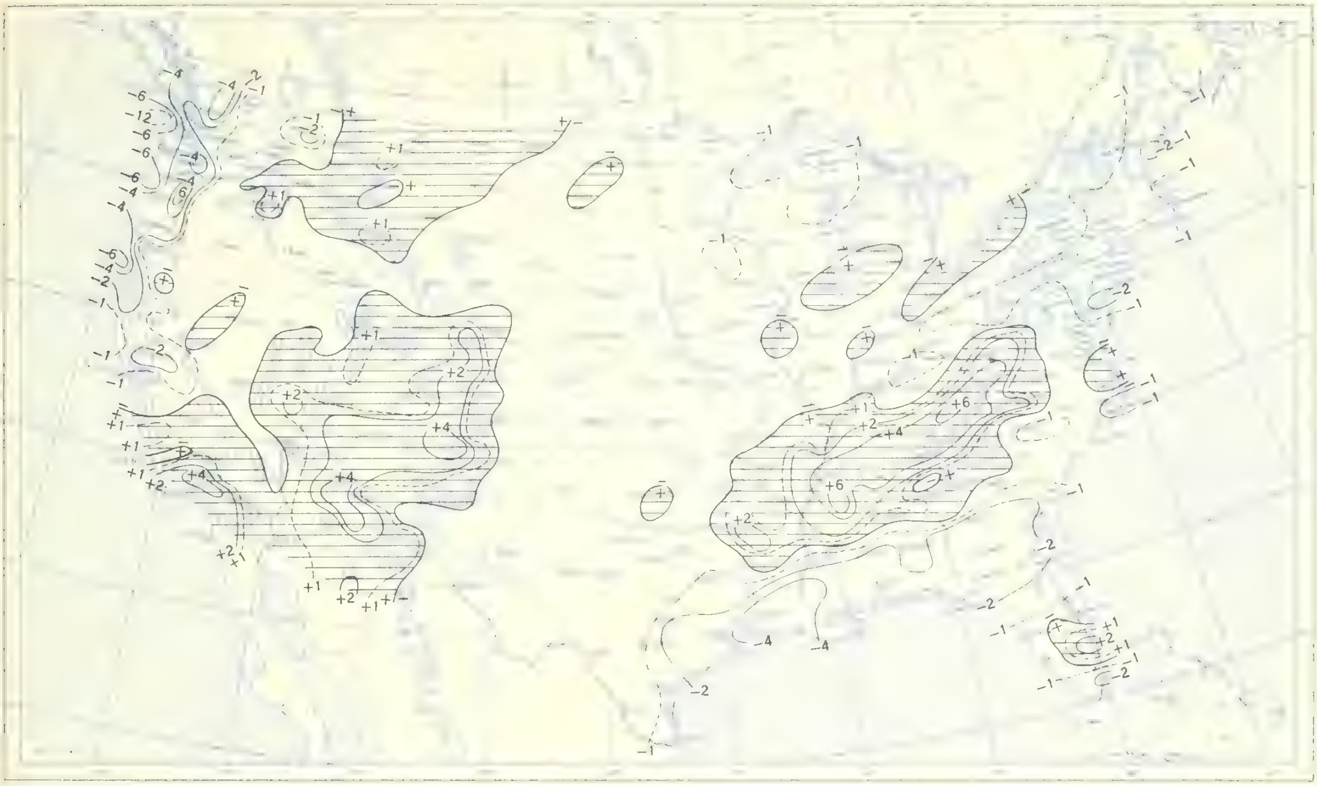
A. Based on reports from 800 Weather Bureau and cooperative stations. The monthly average is half the sum of the monthly average maximum and monthly average minimum, which are the average of the daily maxima and daily minima, respectively.
B. Normal average monthly temperatures are computed for Weather Bureau stations having at least 10 years of record.

Chart II. Total Precipitation (Inches), January 1957.

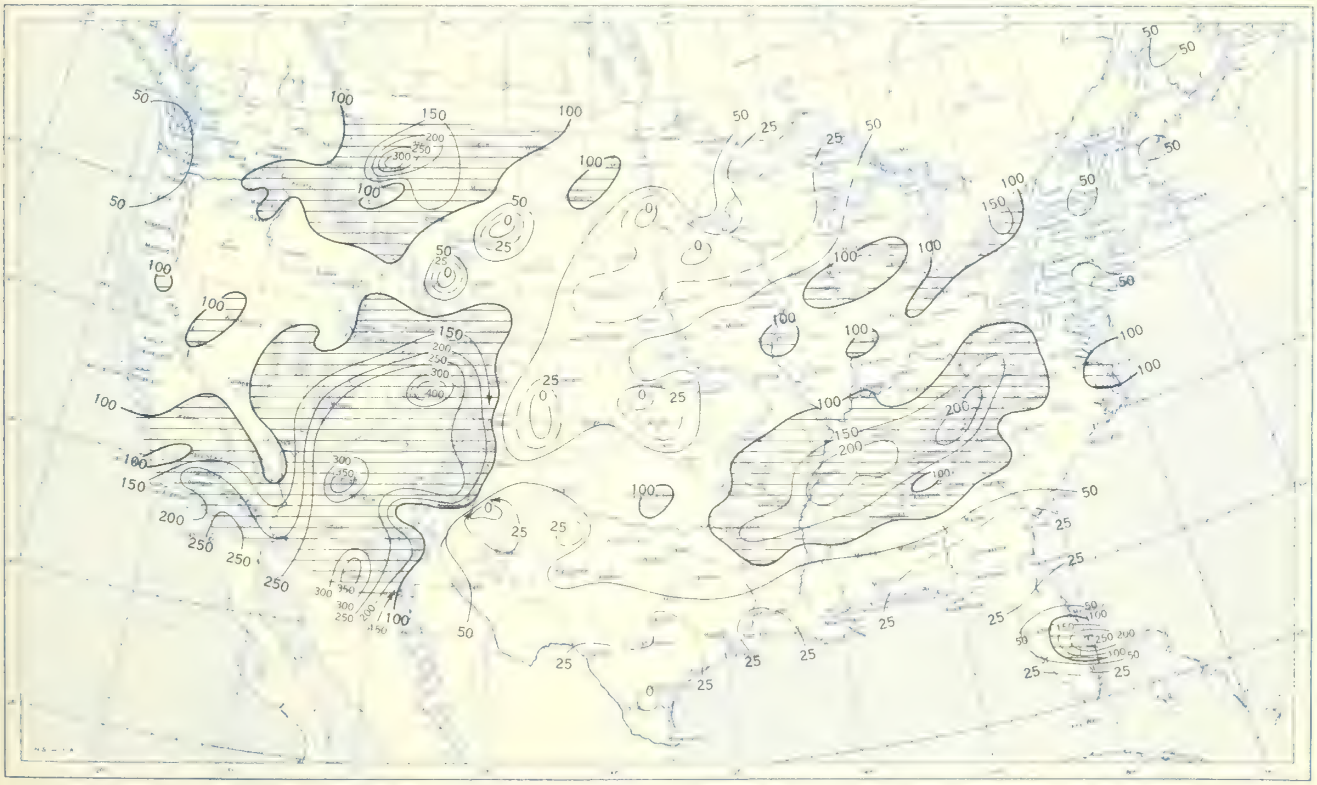


Based on daily precipitation records at 800 Weather Bureau and cooperative stations.

Chart III. A. Departure of Precipitation from Normal (Inches), January 1957.

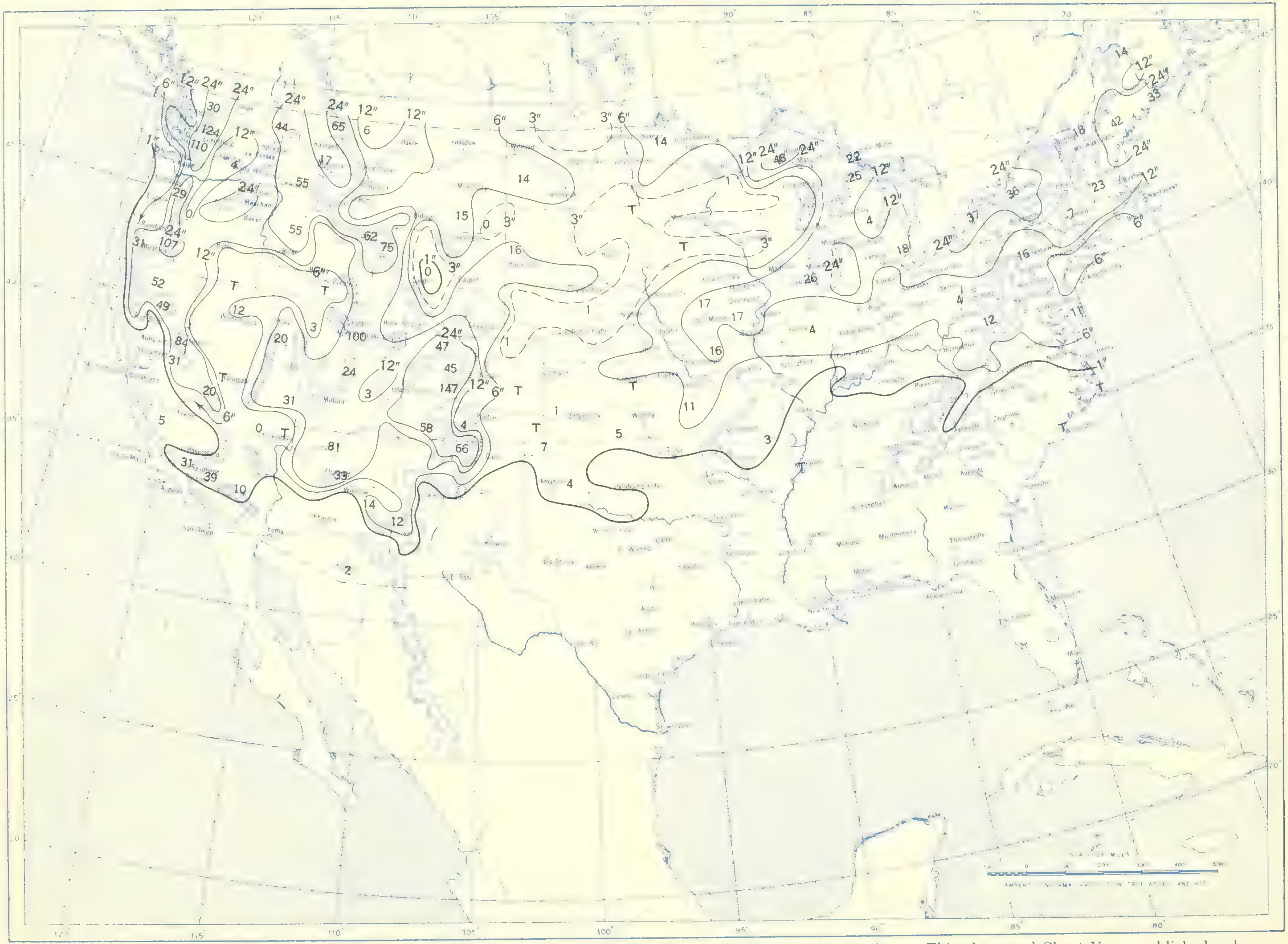


B. Percentage of Normal Precipitation, January 1957.



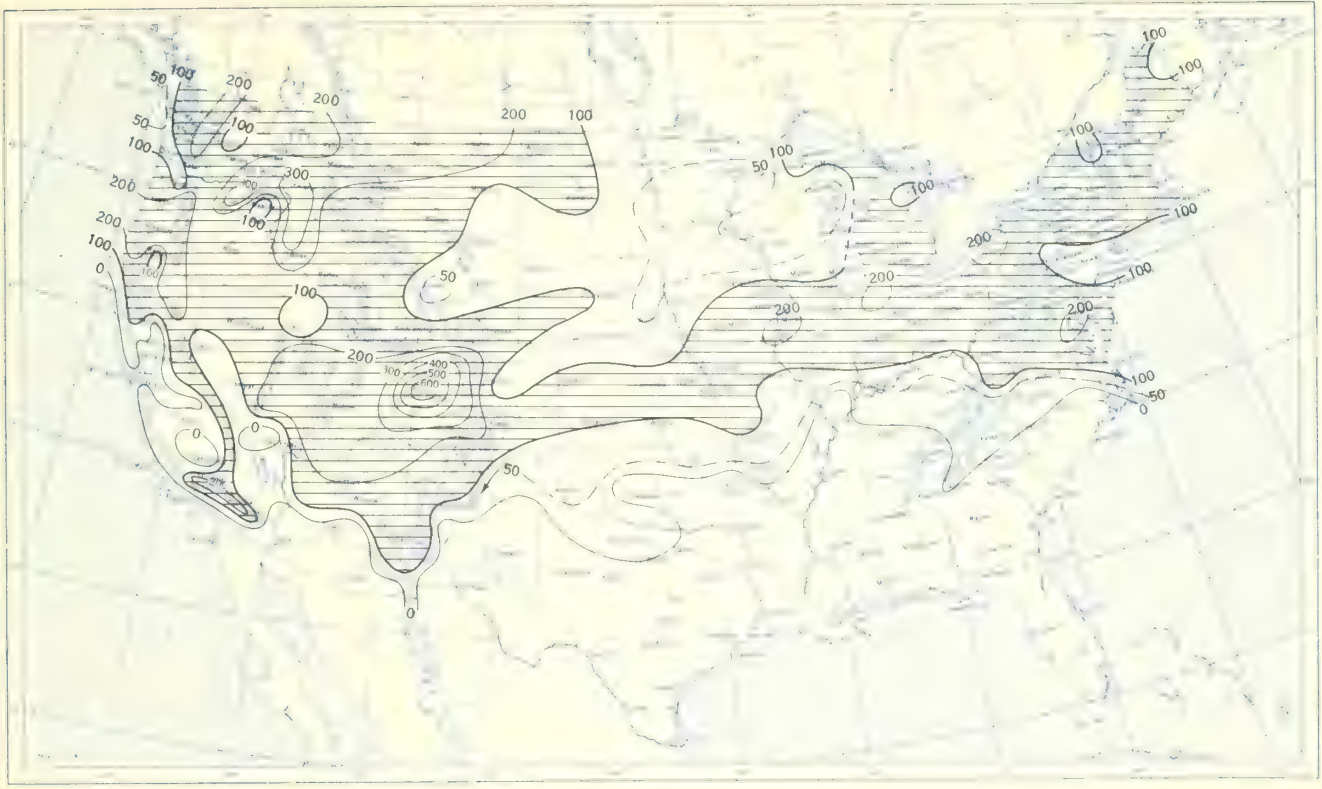
Normal monthly precipitation amounts are computed for stations having at least 10 years of record.

Chart IV. Total Snowfall (Inches), January 1957.

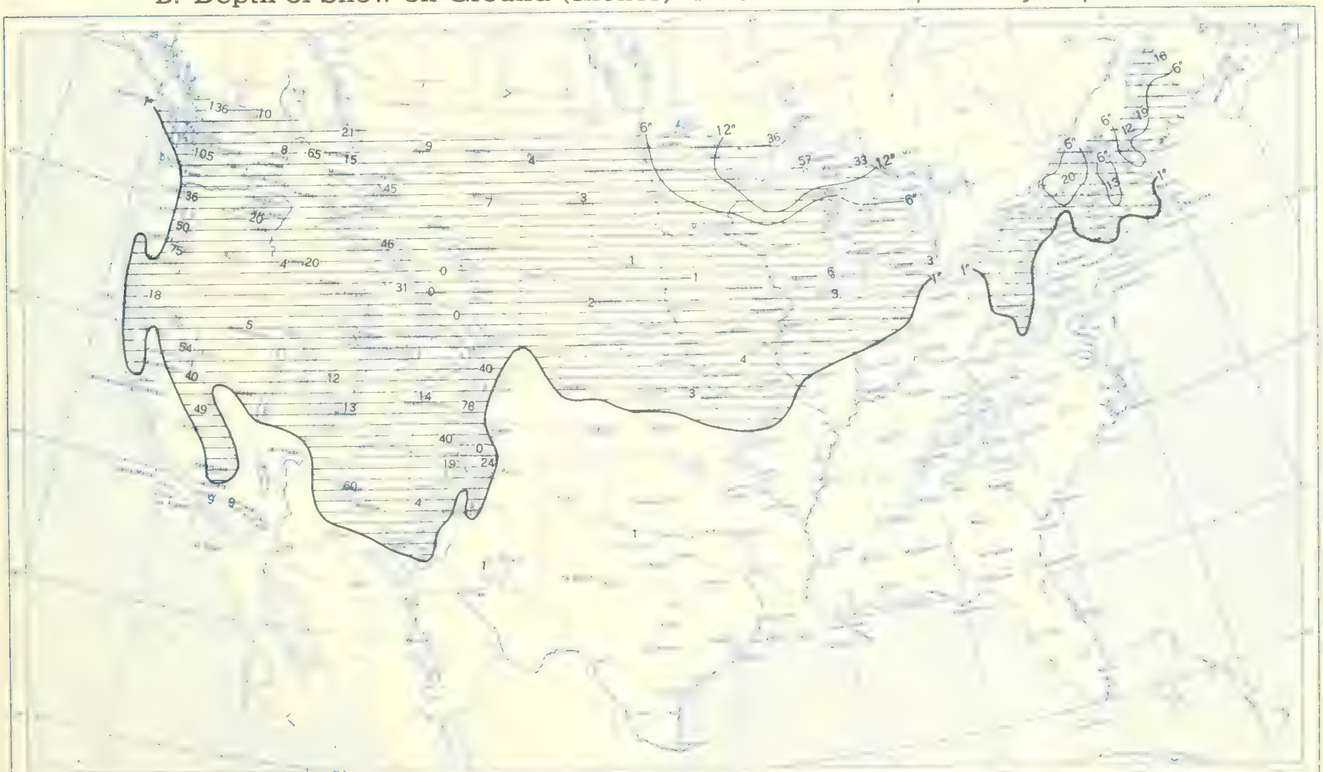


This is the total of unmelted snowfall recorded during the month at Weather Bureau and cooperative stations. This chart and Chart V are published only for the months of November through April although of course there is some snow at higher elevations, particularly in the far West, earlier and later in the year.

Chart V. A. Percentage of Normal Snowfall, January 1957.

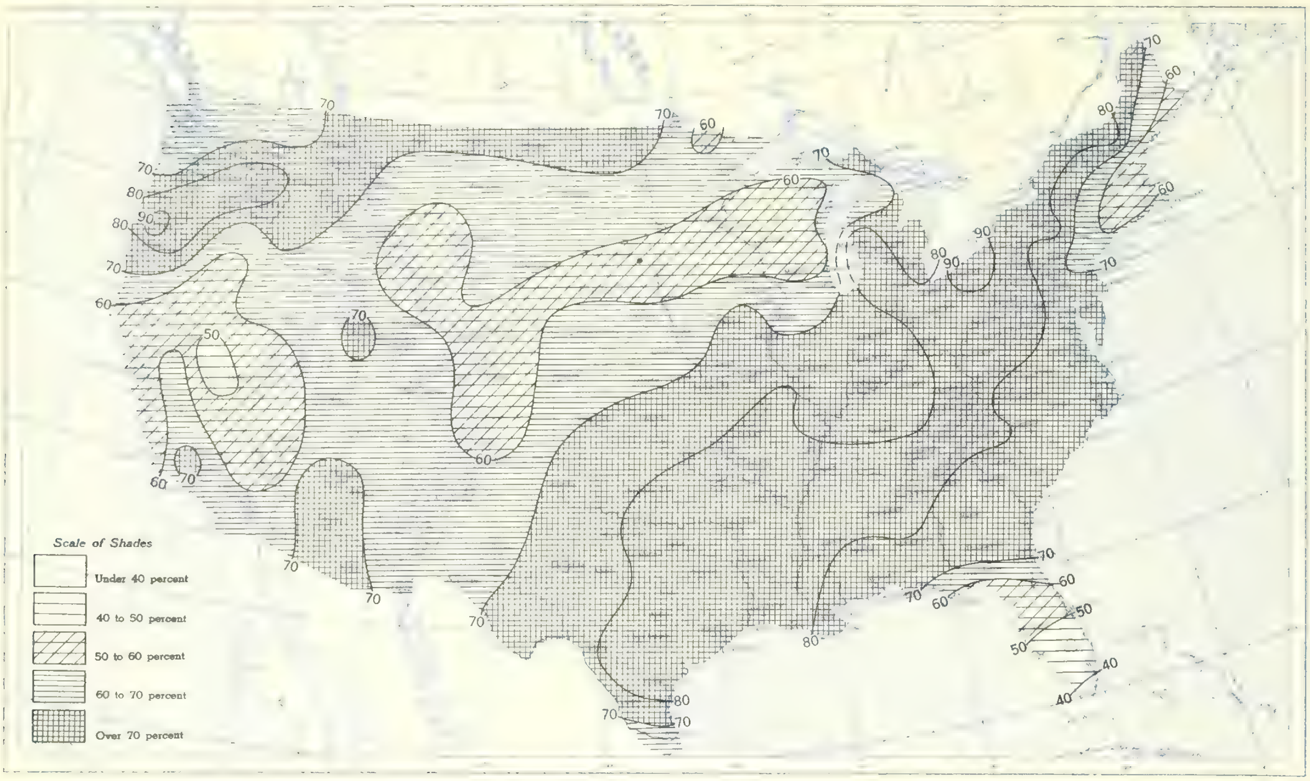


B. Depth of Snow on Ground (Inches). 7:30 a. m. E. S. T., January 29, 1957.

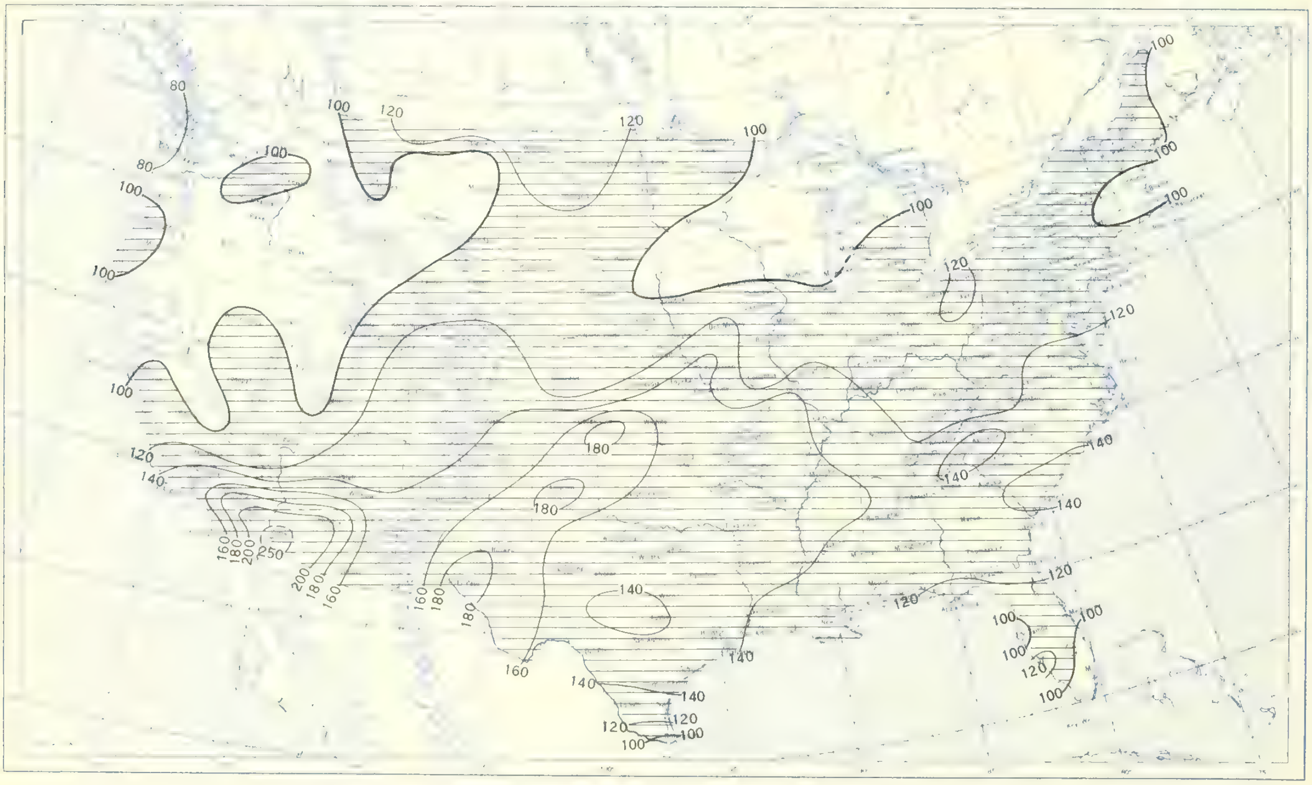


A. Amount of normal monthly snowfall is computed for Weather Bureau stations having at least 10 years of record.
B. Shows depth currently on ground at 7:30 a. m. E. S. T., of the Tuesday nearest the end of the month. It is based on reports from Weather Bureau and cooperative stations. Dashed line shows greatest southern extent of snowcover during month.

Chart VI. A. Percentage of Sky Cover Between Sunrise and Sunset, January 1957.

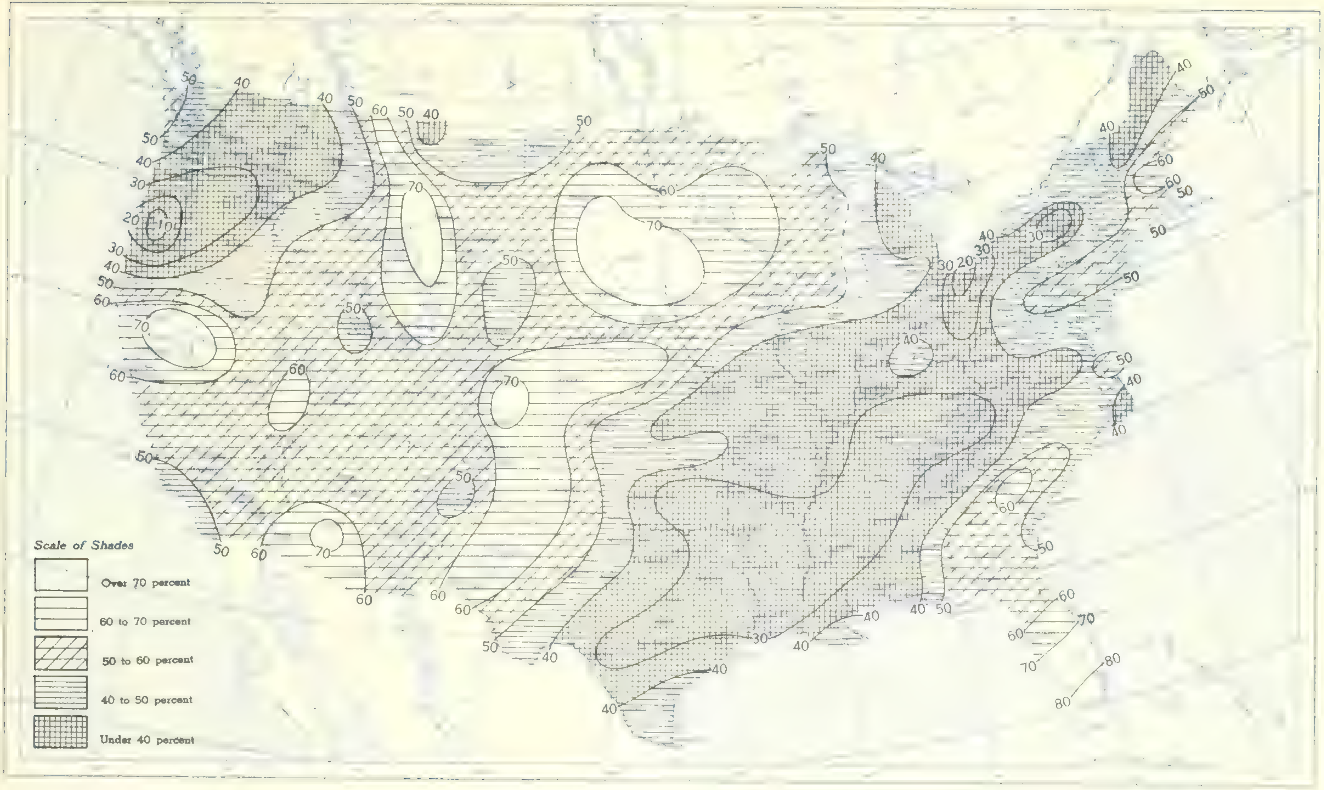


B. Percentage of Normal Sky Cover Between Sunrise and Sunset, January 1957.

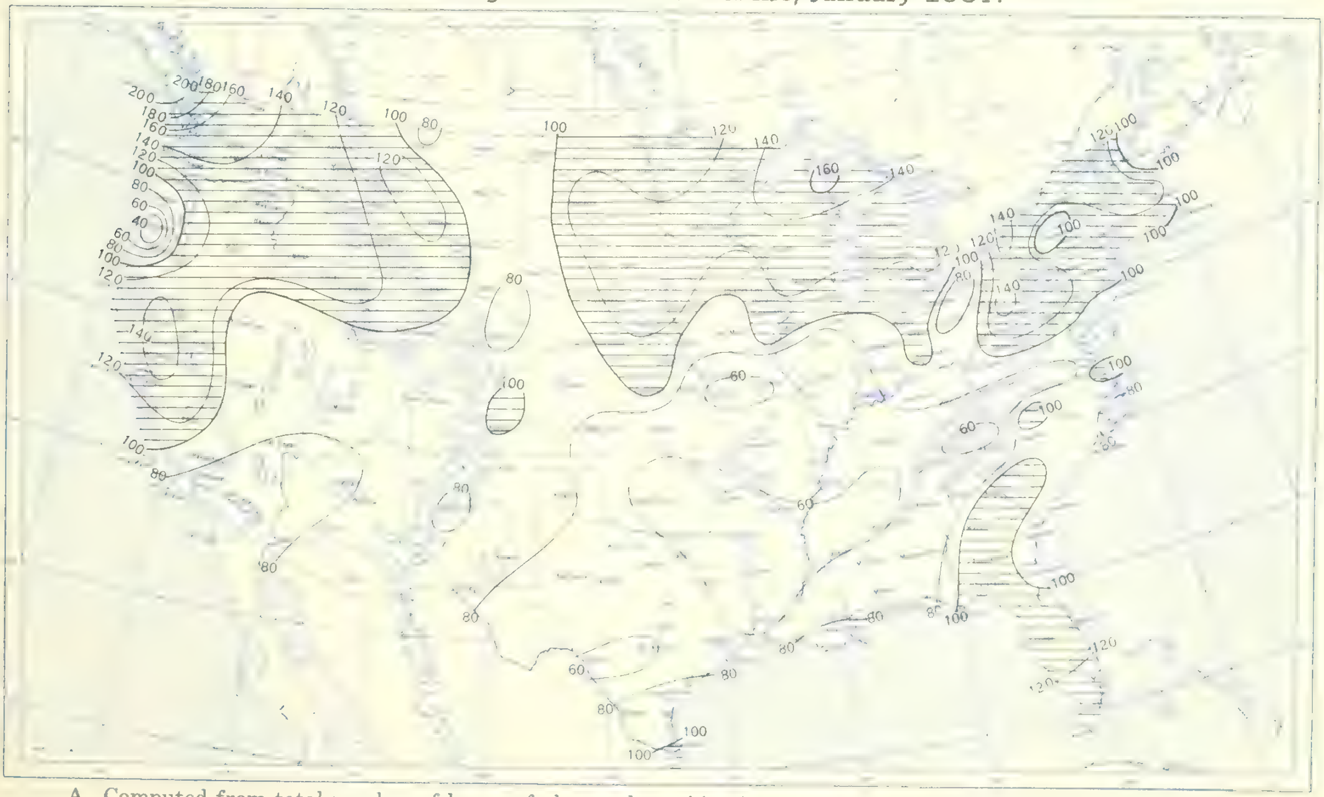


A. In addition to cloudiness, sky cover includes obscuration of the sky by fog, smoke, snow, etc. Chart based on visual observations made hourly at Weather Bureau stations and averaged over the month. B. Computations of normal amount of sky cover are made for stations having at least 10 years of record.

Chart VII. A. Percentage of Possible Sunshine, January 1957.



B. Percentage of Normal Sunshine, January 1957.



A. Computed from total number of hours of observed sunshine in relation to total number of possible hours of sunshine during month. B. Normals are computed for stations having at least 10 years of record.

Chart VIII. Average Daily Values of Solar Radiation, Direct + Diffuse, January 1957. Inset: Percentage of Mean Daily Solar Radiation, January 1957. (Mean based on period 1951-55.)

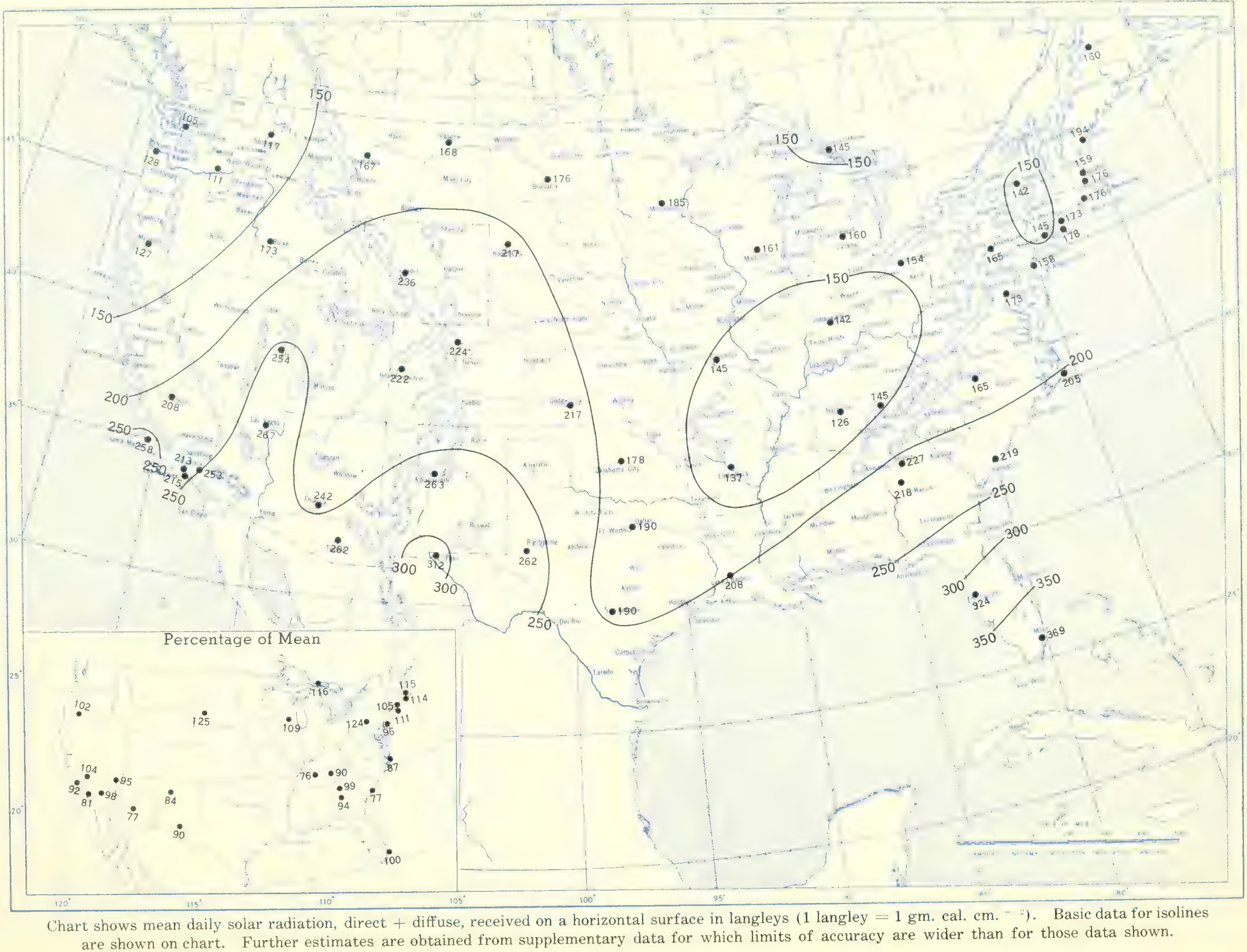
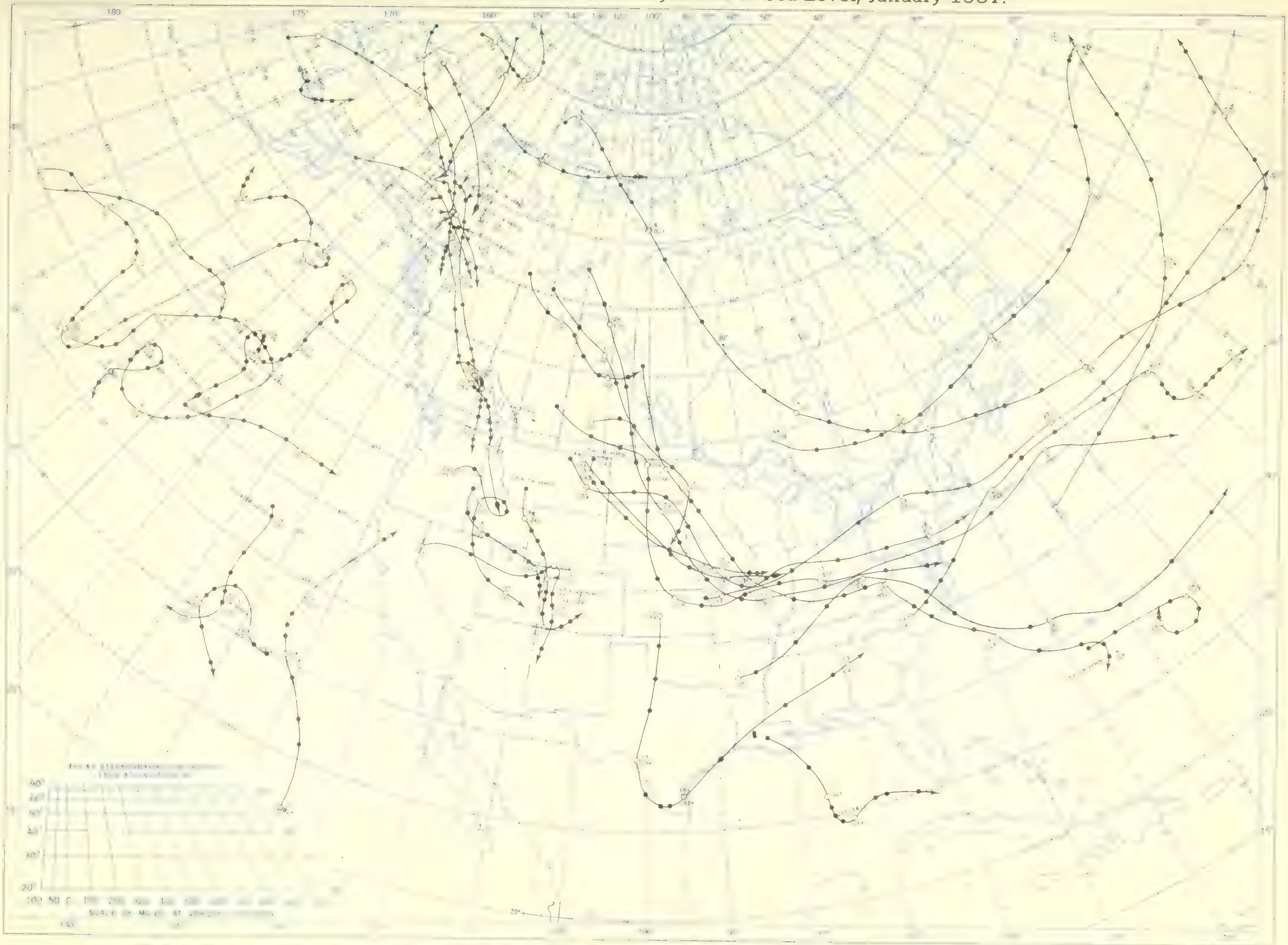


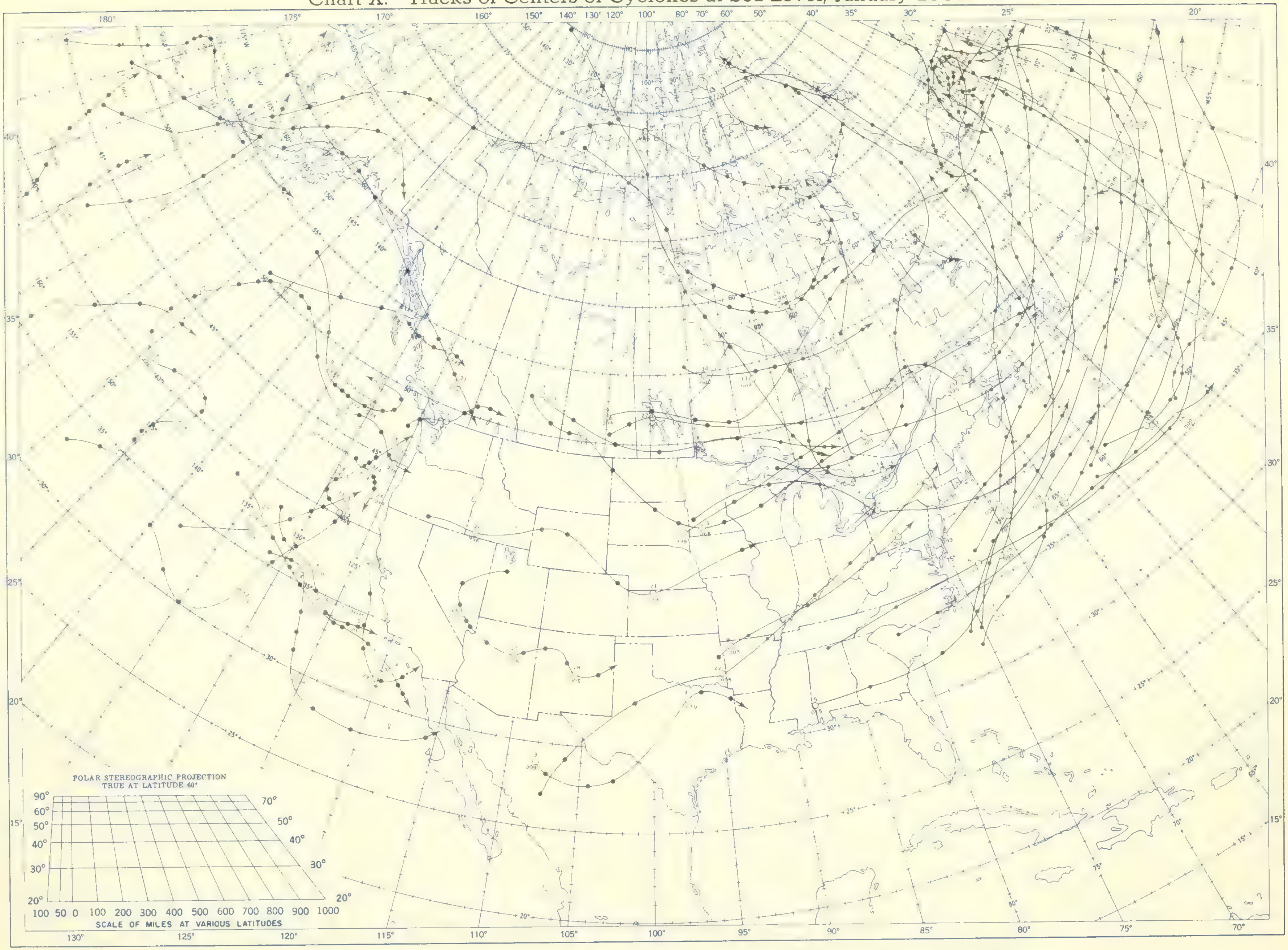
Chart shows mean daily solar radiation, direct + diffuse, received on a horizontal surface in langleys (1 langley = 1 gm. cal. cm.⁻²). Basic data for isolines are shown on chart. Further estimates are obtained from supplementary data for which limits of accuracy are wider than for those data shown.

Chart IX. Tracks of Centers of Anticyclones at Sea Level, January 1957.



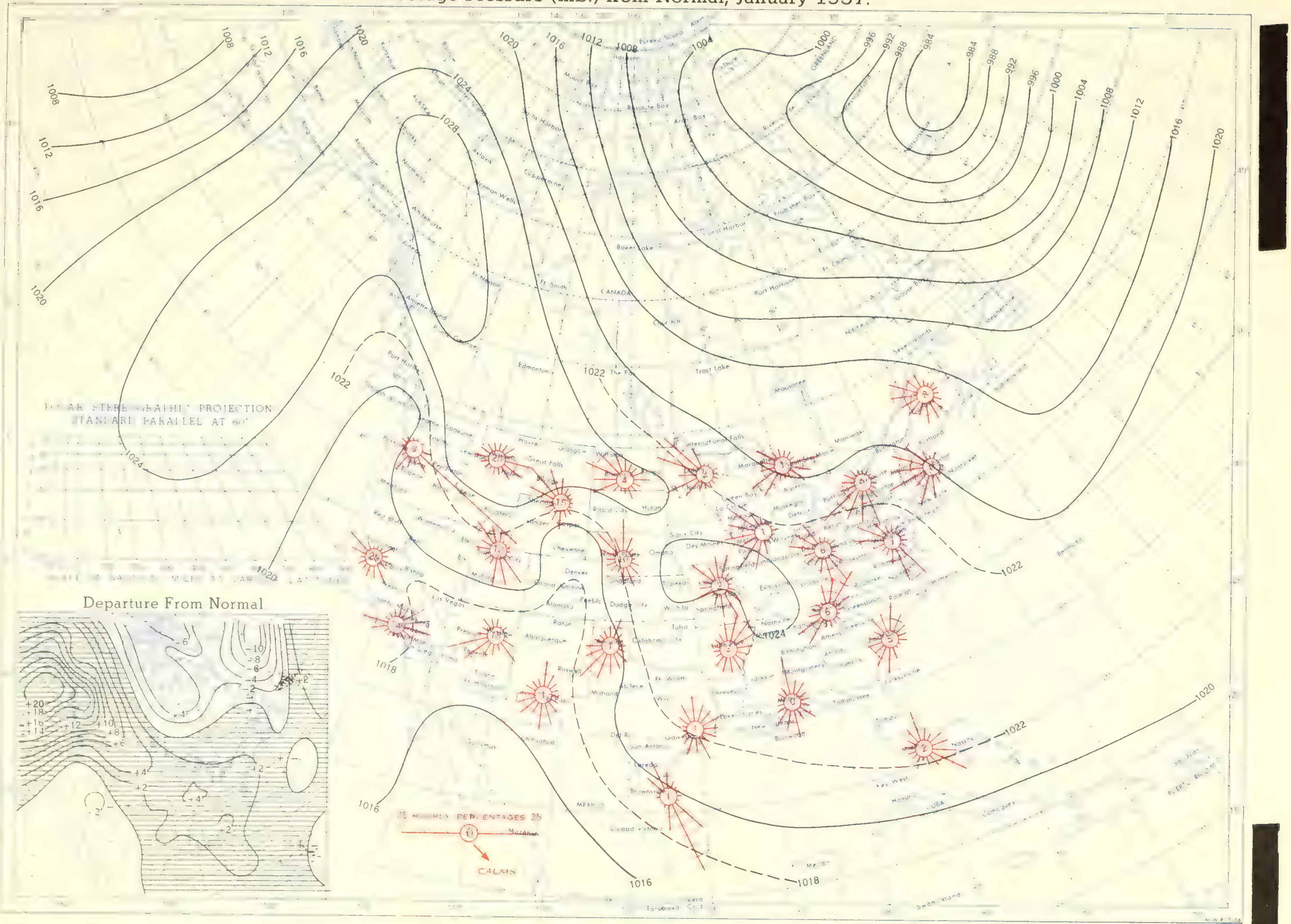
Circle indicates position of center at 7:30 a. m. E. S. T. Figure above circle indicates date, figure below, pressure to nearest millibar. Dots indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.

Chart X. Tracks of Centers of Cyclones at Sea Level, January 1957.



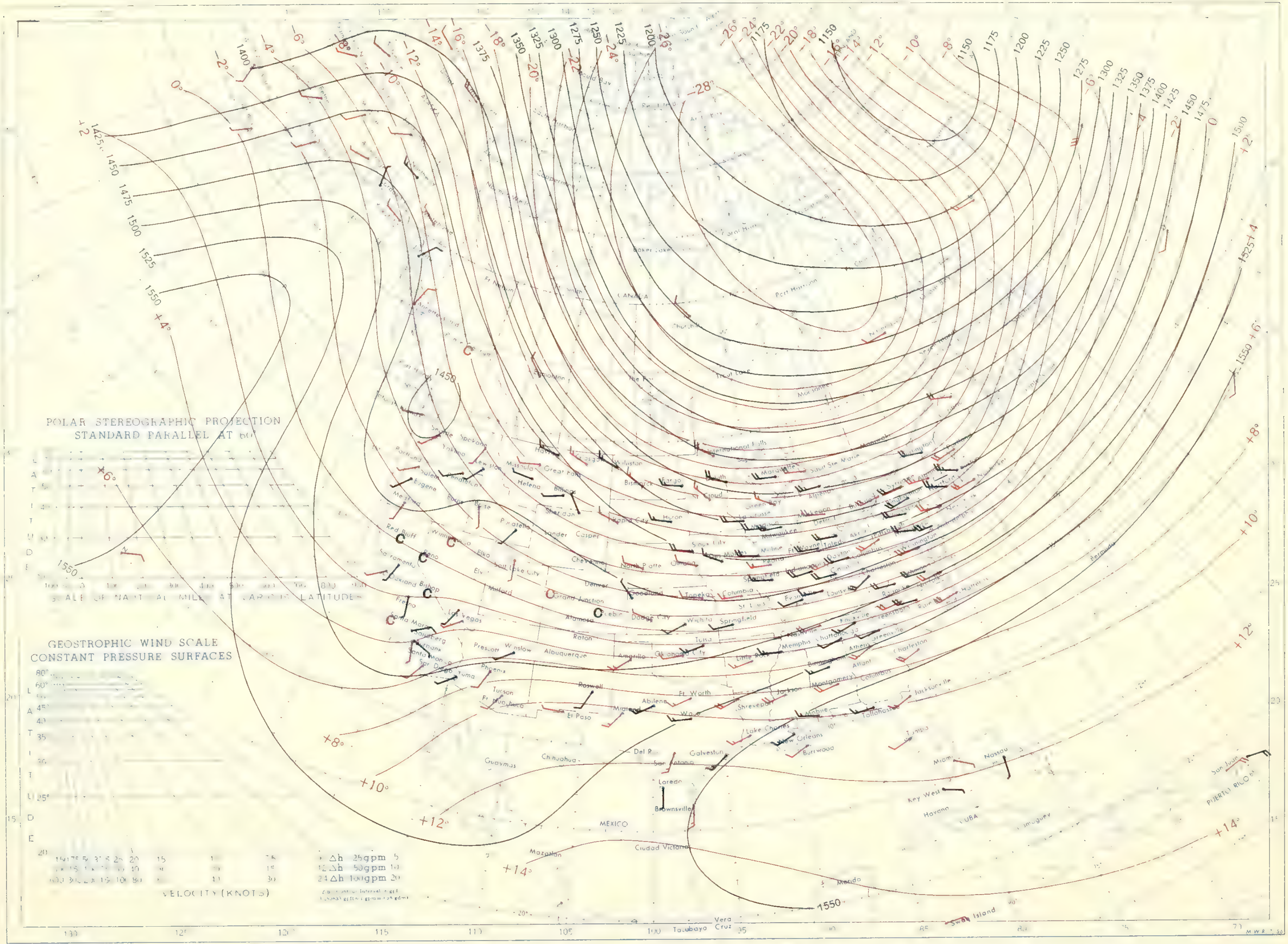
Circle indicates position of center at 7:30 a. m. E. S. T. See Chart IX for explanation of symbols.

Chart XI. Average Sea Level Pressure (mb.) and Surface Windroses, January 1957. Inset: Departure of Average Pressure (mb.) from Normal, January 1957.



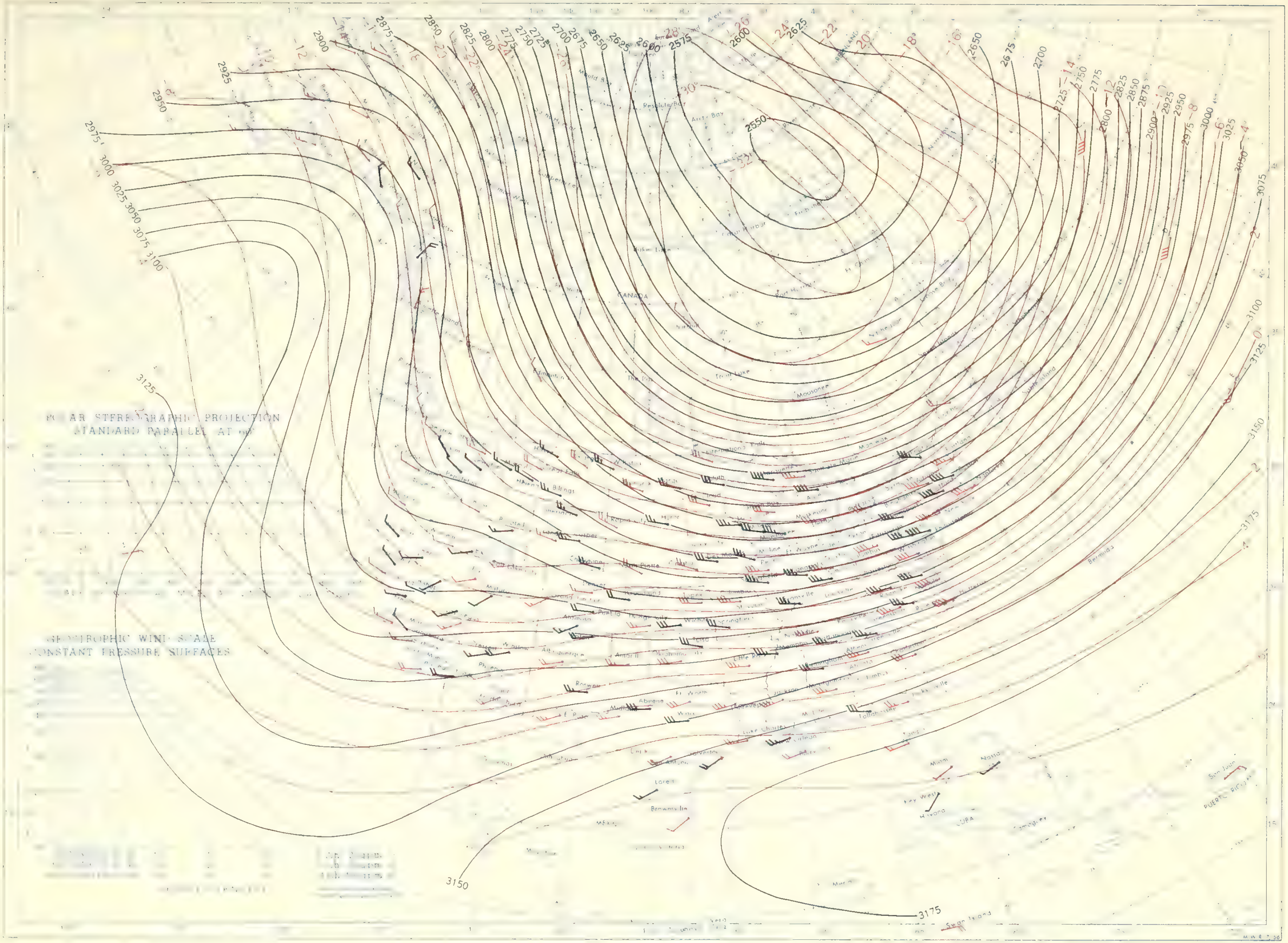
Average sea level pressures are obtained from the averages of the 7:30 a. m. and 7:30 p. m. E. S. T. readings. Windroses show percentage of time wind blew from 16 compass points or was calm during the month. Pressure normals are computed for stations having at least 10 years of record and for 10° intersections in a diamond grid based on readings from the Historical Weather Maps (1899-1939) for the 20 years of most complete data coverage prior to 1940.

Chart XII. 850-mb. Surface, 0300 GMT, January 1957. Average Height and Temperature, and Resultant Winds.



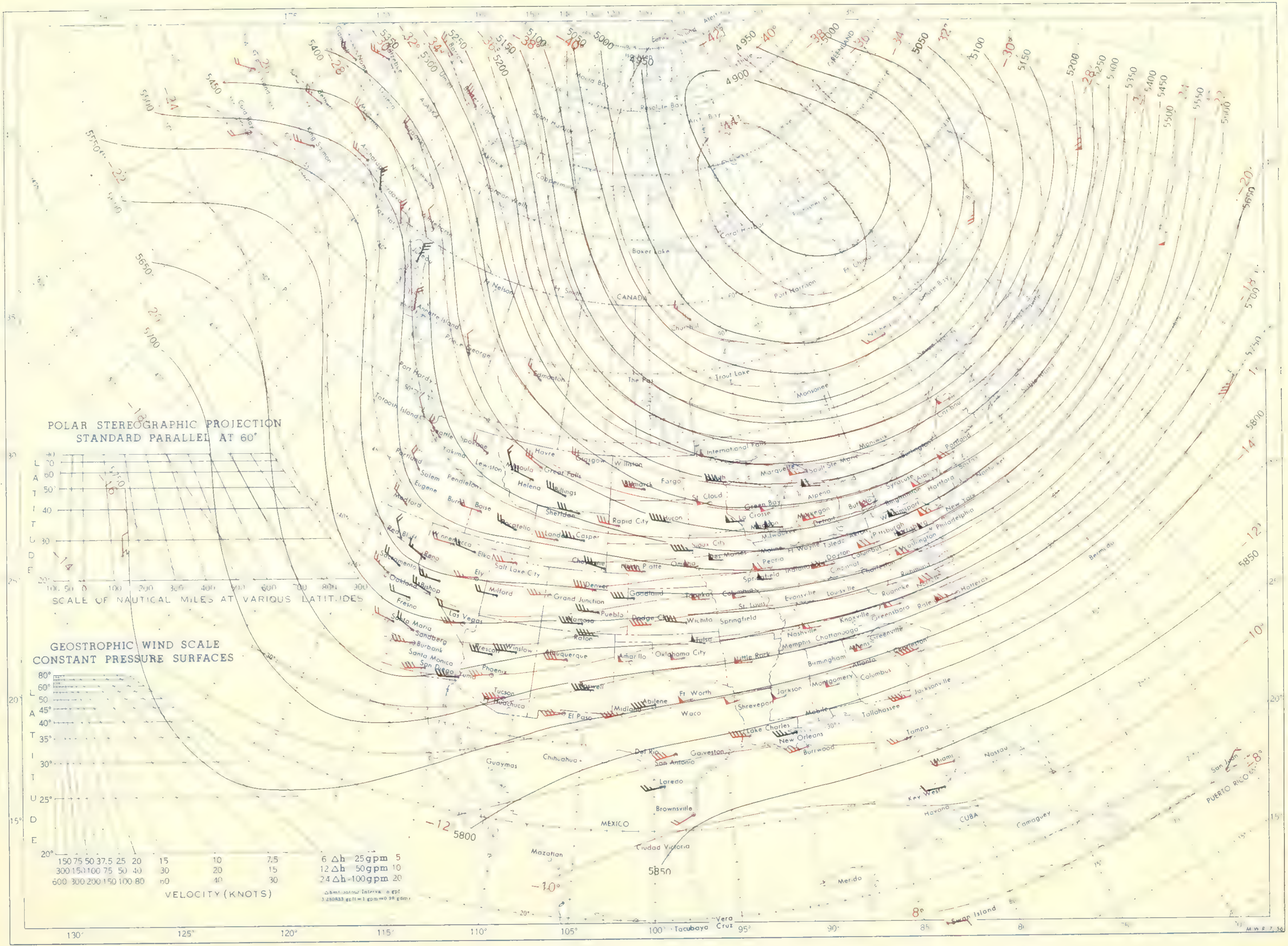
Height in geopotential meters (1 g.p.m. = 0.98 dynamic meters). Temperature in °C. Wind speed in knots; flag represents 50 knots, full feather 10 knots, and half feather 5 knots. Winds shown in red are based on rawins taken at the indicated pressure surface and time. Those in black are based on pibals taken at 2100 GMT and are for the nearest standard height level.

Chart XIII. 700-mb. Surface, 0300 GMT, January 1957. Average Height and Temperature, and Resultant Winds.



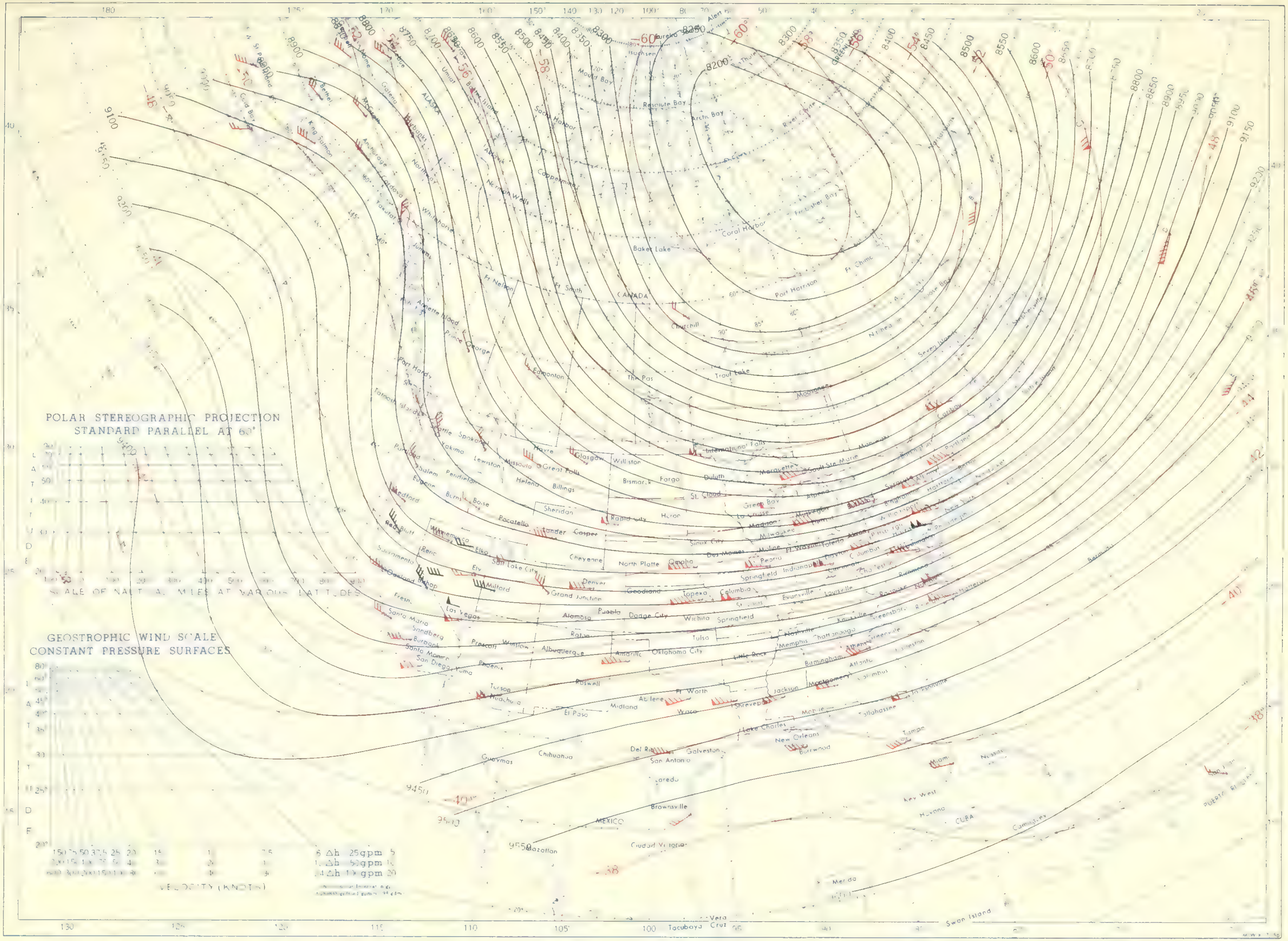
See Chart XII for explanation of map.

Chart XIV. 500-mb. Surface, 0300 GMT, January 1957. Average Height and Temperature, and Resultant Winds.



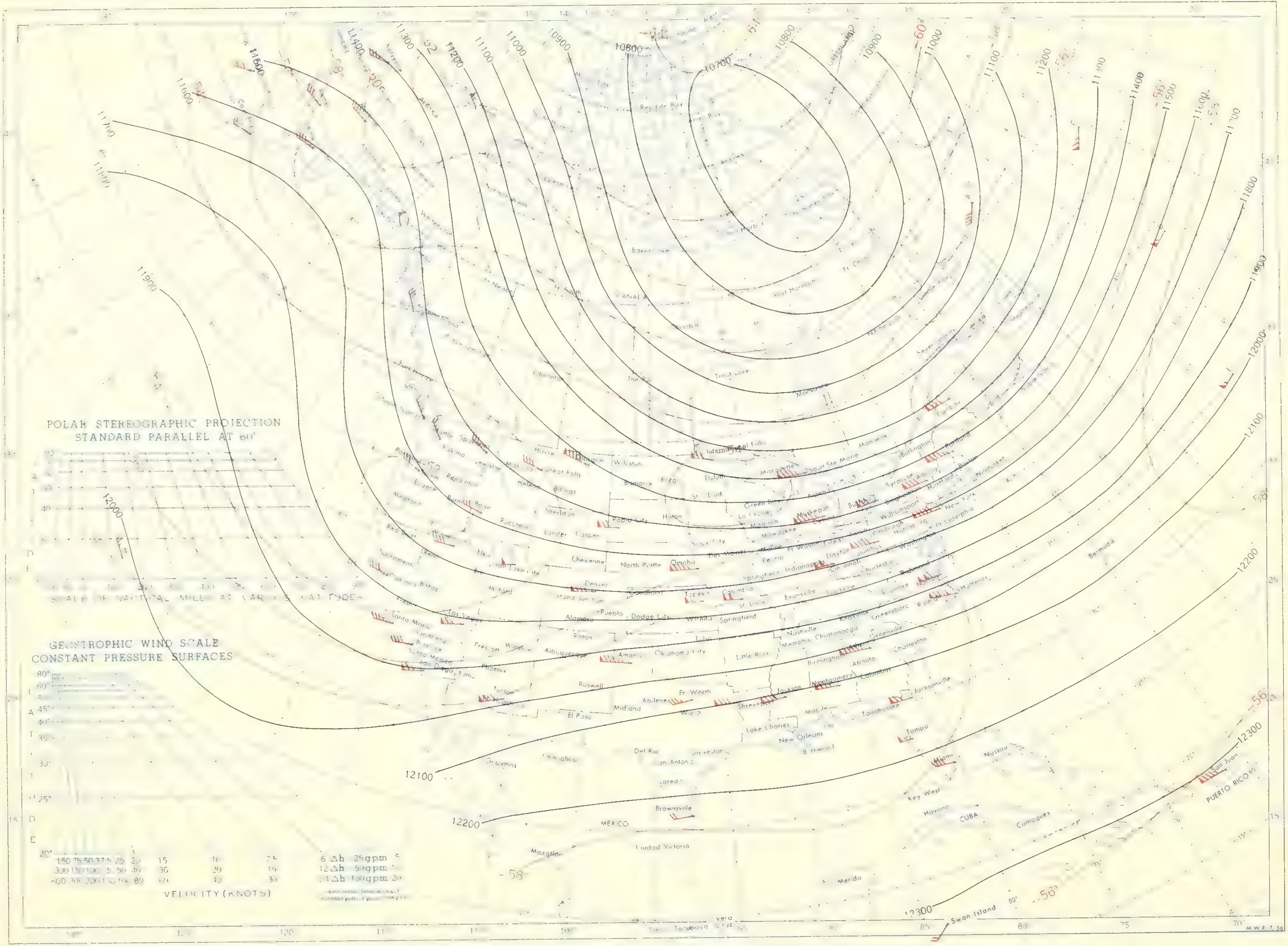
See Chart XII for explanation of map.

Chart XV. 300-mb. Surface, 0300 GMT, January 1957. Average Height and Temperature, and Resultant Winds.



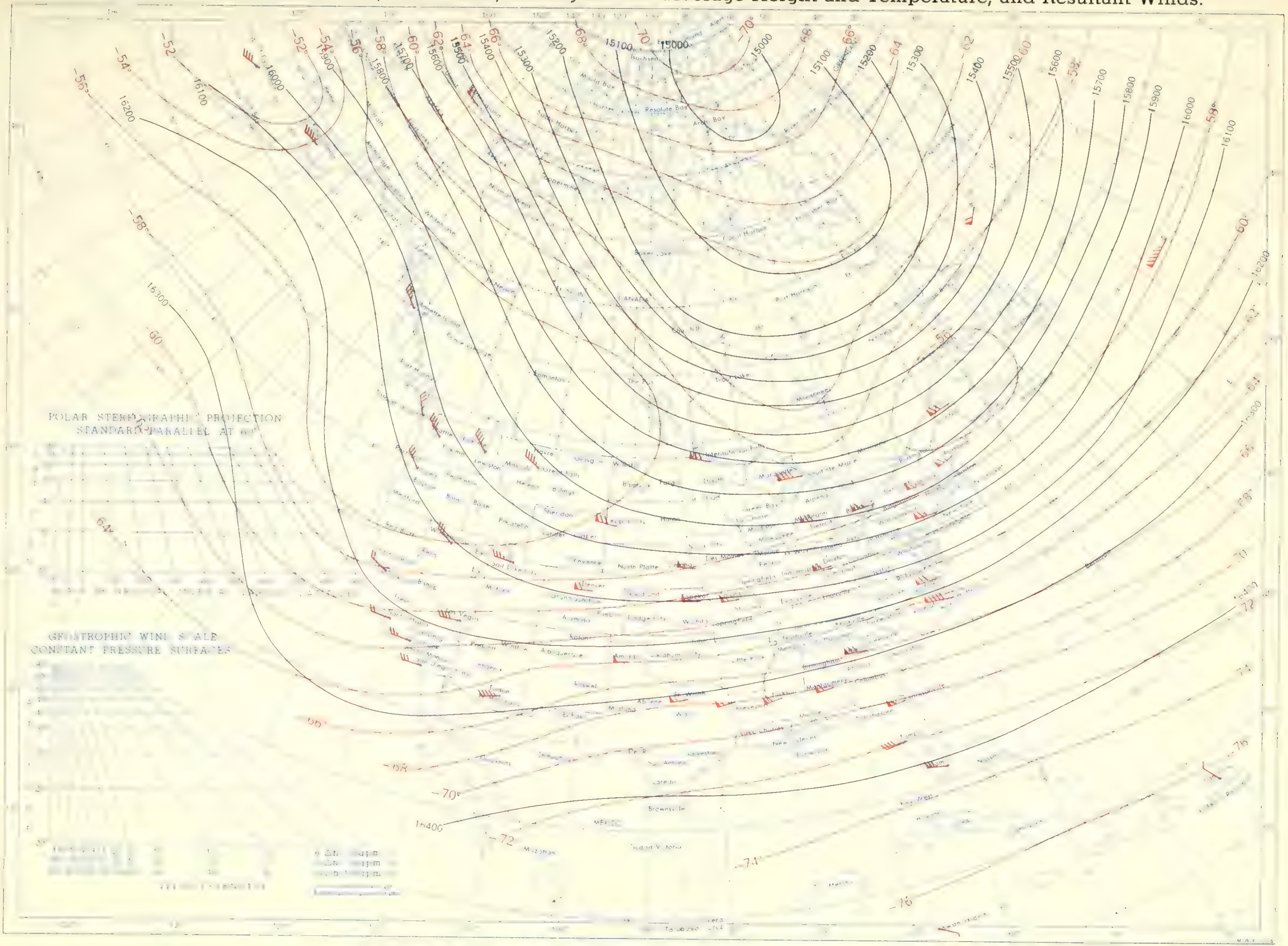
See Chart XII for explanation of map.

Chart XVI. 200-mb. Surface, 0300 GMT, January 1957. Average Height and Temperature, and Resultant Winds.



See Chart XII for explanation of map. All winds are from rawin reports.

Chart XVII. 100-mb. Surface, 0300 GMT, January 1957. Average Height and Temperature, and Resultant Winds.



See Chart XII for explanation of map. All winds are from rawin reports.

C 30.51:

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CLIMATOLOGICAL DATA

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FEBRUARY 1957
Volume 8 No. 2

ASHEVILLE: 1957

CONTENTS

SURFACE DATA

Page

General Summary of Weather Conditions---------------------- 43

Condensed Climatological Data - States-------------------- 44

Climatological Data - Stations---------------------------- 45

Heating Degree Days--------------------------------------- 49

Storm Data and Unusual Weather Phenomena------------------ 50

General Summary of River and Flood Conditions------------- 54

Flood Stage Data-- 56

UPPER AIR DATA

Rawinsonde Data--- 57

SOLAR RADIATION DATA

Solar Radiation Intensities------------------------------- 63

Blue Hill Data-- 64

Net Radiation--- 64

Daily Totals and Average Daily Totals by Weeks------------ 65

CHARTS I-XVII

NOTE.--This publication contains all of the climatic data formerly printed in the MONTHLY WEATHER REVIEW.

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CLIMATOLOGICAL DATA

NATIONAL SUMMARY

Volume 8 No. 2 FEBRUARY 1957

GENERAL SUMMARY OF WEATHER CONDITIONS

Unseasonably mild temperatures in northern areas, the main weather feature of the month, were in sharp contrast to the extreme cold of January, but in the South temperatures were above normal for the third consecutive month and among the highest of record for February. Under the influence of mild temperatures the snow cover retreated to mountainous areas, and melting snow in the northern Rockies resulted in several snowslides and some flooding. The mild weather in the Great Plains drought area helped farmers stretch scarce livestock feed, but caused concern among southern fruit growers over the vulnerability of early development of buds and blooms to spring freeze damage.

Light precipitation furnished little or no drought relief to the central and southwestern Great Plains, but heavy rains produced some flooding in the Pacific Northwest. In the East a heavy belt of rainfall extending from the middle Atlantic coast to the southeastern Great Plains furnished further drought relief in the latter area, and caused additional floods in the lower Appalachians. Moderate to heavy rains which fell in Florida the latter part of the month reduced the necessity for heavy irrigation of citrus and raised ground water levels although they still remained below normal.

The month was relatively free of severe storms. No blizzards or unusually heavy snowstorms were reported.

TEMPERATURE.--Temperatures for the month averaged slightly below normal in Washington and eastward in a narrow belt along the Canadian Border to the Great Lakes. Elsewhere averages were well above normal, with departures ranging up to more than 10° in the lower Mississippi Valley and Far Southwest. The following southern stations reported their highest average temperatures of record for February:

Phoenix, Ariz.	61.4°
Prescott, Ariz.	46.7°
Tucson, Ariz.	61.1°
Albuquerque, N. Mex.	48.1°
Roswell, N. Mex.	52.2°
El Paso, Tex.	57.6°
Del Rio, Tex.	63.3°
Corpus Christi, Tex.	66.7°
Macon, Ga.	58.8°

The average for Tucson, Ariz., was the highest since 1867. Also, new February highs were established for many stations, among which were the following:

Prescott, Ariz.	76° on 13th
Tucson, Ariz.	92° on 14th
Yuma, Ariz.	93.7° on 14th
Jacksonville, Fla.	87° on 5th
Portland, Maine	64.3° on 26th
Wilmington, Del.	81° on 4th
Columbus, Ohio	73° on 25th

In most of the country the coldest weather occurred either during the first few days of the month or from about the 19th to 24th. During the first period subzero minima were recorded at many stations between the Great Lakes and the Cascades and freezing extended to the Mexican Border in Arizona, New Mexico and western Texas. During the second period two successive intrusions of cold air reduced temperatures to subfreezing levels well into southern areas east of the Rockies, and to subzero levels between the Great Lakes and the Continental Divide. On the 23d Baudette, Minn., recorded -37° for the lowest temperature of the month.

The remainder of the month was unusually mild. During the first 11 days of the month maximum temperatures in the Gulf Coastal areas ranged in the 70's and 80's and occasionally rose into the 90's at a few stations. On the 11th Eagle Pass, Tex., recorded 96° for the month's highest temperature. For the first time in more than 70 years of record, the temperature did not fall to the freezing level at Atlanta, Ga. Warm weather stimulated rapid crop growth in the South, and budding and blooming of fruit trees were recorded as far north as Meridian, Miss.

PRECIPITATION.--Very heavy rains fell in a belt extending from eastern Oklahoma and Texas northeastward to the middle Atlantic coast. Heaviest amounts fell in the lower Appalachian region where monthly totals ranged up to 17.71 inches at Sassafras Mountain, S. C.; 16.21 at Flat Top, Ga.; 15.55 at Haw Knob, Tenn.; 15.42 at Clingmans Dome, N. C.; and 10.11 inches at Ider, Ala. Heavy rains during the first decade were responsible for some flooding in southwestern Pennsylvania, southern Ohio, northwestern West Virginia, and in the lowlands of Kentucky. During the first few days of the month some flooding also occurred in northern portions of Mississippi, Alabama and Georgia as late January flood waters in the lower Appalachians moved downstream. Rains greatly relieved the drought in much of Texas and Oklahoma, furnishing sufficient moisture for small grain growth in both states and giving to central and eastern Texas the best early-season moisture in several years.

The Florida Peninsula received from 2 to over 4 inches of much-needed rain, and citrus irrigation which had been necessary for some weeks previously was largely discontinued. Northwestern Florida and southern Georgia received less than 2 inches of rain, leaving these areas in need of still more moisture.

Heavy rains fell over the Pacific States where the heaviest amounts occurred during a storm on the 23d. Excessive falls caused local flooding in northern California.

In most of the Great Plains outside Texas and Oklahoma, precipitation totaling less than 1/2 inch was less than 50 percent of normal, as was also the case in Iowa and southern Wisconsin. Winter grains in Kansas, Nebraska and Colorado needed moisture badly at the end of the month.

SNOWFALL.--Snowfall was below average, and due to mild weather, the cover by the end of the month had retreated to mountainous areas of the Far West and Northeast and the extreme upper portions of the Great Lakes and Mississippi Valley. The snowpack in the Western Mountains decreased slightly and was lighter than usual at the end of the month.

A number of slides occurred in the Rockies. At Wardner, Idaho, on the 5th a slide killed one person, injured 5 others, and caused damage estimated at $50,000. Probably the most notable storm of the month was that which on the 1st left 6 to 12 inches of snow on Long Island, N.Y., and lighter amounts in southern New England and parts of New Jersey, and eastern Pennsylvania.

DESTRUCTIVE STORMS.--One of the worst of the relatively few February storms was that in the Pacific Northwest on the 23d when high winds were responsible for a few deaths and light property damage over a large area. High winds also caused some damage in Missoula, Mont., on the 18th-19th, and caused a substantial loss of wheat acreage in the Nebraska Panhandle on the 11th.

Glaze caused some damage in northwestern Oklahoma on the 22d and 23d and in New Jersey and Pennsylvania on the 28th.

CONDENSED CLIMATOLOGICAL SUMMARY

FEBRUARY 1957

Section	Temperature						Precipitation			
	Monthly extremes						Monthly extremes			
	Station	Highest	Date	Station	Lowest	Date	Station	Greatest	Station	Least
		°F			°F			In.		In.
Alabama	5 Stations	85	4+	4 Stations	22	17+	Ider	10.11	Fort Deposit 1W	0.80
Arizona	Organ Pipe Cactus NM	95	13	Fort Valley	-17	1	Junipine	2.87	4 Stations	.00
Arkansas	De Queen	85	9	Batesville Livestock	15	21+	Pine Bluff	11.99	Nathan 4WNW	1.91
California	Indio US Date Garden	95	13	Boca	-26	3	Strawberry Valley	21.52	2 Stations	.00
Colorado	Trinidad	78	12	Taylor Park	-33	5	Crested Butte	3.39	7 Stations	.00
Connecticut	Mansfield Hollow Dam	66	26	Mansfield Hollow Dam	2	3	North Guilford	3.26	Cream Hill	.98
Delaware	Milford	69	27	2 Stations	16	20+	Selbyville	4.29	Newark College Farm	2.13
Florida	Tamiami Trl 40 Mi. Bend	91	11	Jasper 9ESE	28	13+	Peters	8.20	Tallahassee WB AP	.82
Georgia	Homerville	88	10	Blairsville Exp. Sta.	16	15	Flat Top	16.21	Cairo 2NNW	1.03
Idaho	Lewiston	67	24	Obsidian 2 NNW	-24	10	Burke 2ENE	7.80	May RS	.15
Illinois	Harrisburg	74	24	2 Stations	5	17+	Red Bud	6.17	Galena	.48
Indiana	Greencastle 1E	73	26	Waterloo	5	2	Madison	4.10	Wheatfield	.53
Iowa	4 Stations	63	13+	Inwood 2W	-15	22	Keokuk	1.90	3 Stations	T
Kansas	Elkhart	77	8+	Healy	-5	23	Elk City 5SW	2.61	2 Stations	.04
Kentucky	4 Stations	75	9+	2 Stations	5	20	Benton 2	6.81	Bardstown S J Prep. Sch.	2.11
Louisiana	Cinclare	89	10	2 Stations	25	21	West Monroe	7.10	Kinder 3W	1.30
Maine	Sanford 2NNW	67	26	Squa Pan Dam	-29	12	Machias	3.10	Long Falls Dam	.72
Maryland	3 Stations	71	27	Oakland 1SE	2	12	Sines Deep Creek	5.74	Takoma Park Miss Ave	1.77
Massachusetts	Plymouth	71	26	West Cummington	-5	12	Edgertown	2.46	Ware	.62
Michigan	2 Stations	67	25	2 Stations	-23	2+	Kent City 2SW	3.01	Hubbard Lake Dam	.26
Minnesota	Tracy Power Plant	55	25	Baudette	-37	23	Duluth	1.55	Red Lake Falls	.17
Mississippi	Leakesville	88	5	Pelahatchie	21	17	Ashland	9.26	Wiggins	.42
Missouri	2 Stations	75	10+	Tarkio	3	4	De Soto	6.14	Lucerne	.02
Montana	Wyola	64	26	Wolf Point 4ESE	-34	2	Heron 2NW	6.72	Townsend	.00
Nebraska	Greeley	72	25	Merriman	-13	22	Falls City	.60	3 Stations	.00
Nevada	2 Stations	85	14+	Deeth	-19	4	Glenbrook	1.90	3 Stations	T
New Hampshire	Windham	70	26	First Conn Lake	-27	12	Mount Washington	3.32	Windham	.68
New Jersey	Hammonton 2NNE	72	28	Layton 3NW	3	3	Atlantic City WB	4.01	Deepwater	1.57
New Mexico	Glenwood	90	13	Gavilan	-17	1	Cloudcroft 1	2.74	4 Stations	.00
New York	Canandaigua 3S	70	26	Paul Smiths	-20	12	Lewbeach	3.59	Middleburg 4SW	.45
North Carolina	4 Stations	83	4+	3 Stations	11	15+	Clingmans Dome	15.42	Wilmington 7N	2.01
North Dakota	Marmarth	58	27	Belcourt Indian Res.	-32	23	Selfridge 11W	.82	Killdeer 8NW	T
Ohio	2 Stations	76	26	4 Stations	6	20+	Higginsport	4.32	Canfield Is.	.87
Oklahoma	Altus	86	9	Freedom	8	23	Kiamichi Tower	5.77	Kenton 6N	T
Oregon	Brookings	73	14	Ukiah	-27	21	Valsetz	16.68	Redmond	.17
Pennsylvania	Newell	72	26	Hawley 1S Dam	-4	3	Kregar 4SE	5.14	Hop Bottom 2SE	.53
Rhode Island	2 Stations	65	26	Providence WB Airport	12	3	Woonsocket	1.70	Block Island WB AP	1.27
South Carolina	Yemassee 4W	85	6+	2 Stations	19	15	Sassafras Mountain	17.71	Bamberg	.80
South Dakota	Interior 3 NE	68	14	La Delle 7NE	-29	22	Wessington Spgs 9SW	1.01	Wewela	T
Tennessee	2 Stations	78	9	Crossville Exp. Station	12	18	Haw Knob	15.55	Memphis WB City	4.46
Texas	Eagle Pass	96	11	Follett	8	23	Daingerfield	6.72	Bunker Hill	.00
Utah	St George PH	79	14	Ouray	-29	4	Alta	4.54	Partoun	.00
Vermont	Bennington 2NW	68	26	Lemington	-26	12	Searsburg Station	2.09	Lemington	.70
Virginia	Farmville	75	27	2 Stations	5	12+	Bristol	9.17	Herndon	1.95
Washington	Trinidad 2SSE	70	26	Chewelah	-22	2	Scenic	18.62	2 Stations	.14
West Virginia	2 Stations	78	26+	2 Stations	-4	21	Pickens 1	7.94	Wellsburg 3NE	1.40
Wisconsin	3 Stations	60	24+	Danbury 1SE	-28	22	Port Wing	1.47	Westby 2ENE	.05
Wyoming	Torrington Exp. Farm	71	14	Sage 4NNW	-25	5	Snake River	4.94	7 Stations	.00
Puerto Rico	4 Stations	91	5+	Lares	52	20	Rio Blanco 1800 Feet	4.75	Cambalache Exp. Forest	.12

+ And also on a later date or dates.

Note: Dates in Table 1 apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for times of observations).

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure		Temperature												Precipitation							Wind					No. of days (sunrise to sunset)				
		Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	No of days: Max. 90° F. or above	No of days: Min. 32° F. or below	Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	No. of days: .01 inch or more	No. of days: With thunderstorms	Snow, Sleet: Total	Snow, Sleet: Max. depth on ground	Average hourly speed	Prevailing direction	Fastest mile: Speed	Fastest mile: Direction	Fastest mile: Date	Clear	Partly cloudy	Cloudy	Sky cover, tenths (sunrise to sunset)	Possible sunshine
	Ft.	Mb.	Mb.	°F.	°F.	°F.	°F.	°F.		°F.				°F.	%	In.	In.	In.			In.	In	M p h		M. p. h.			0–3	4–7	8–10	0–10	%
ALABAMA																																
Birmingham	610	993.7	1019.2	65	46	55.5	7.2	80	8	28	17	0	2	44	70	3.73	-1.44	1.33	13	1	0.0	0	9.8	N	33	S	1	4	8	16	7.3	45
Mobile	211	1010.6	1018.8	70	53	61.2	6.2	80	4+	38	17	0	0	52	76	5.41	.60	2.75	7	1	.0	0	10.6	S	--	---	--	4	11	13	7.1	--
Montgomery	198	1011.2	1017.3	70	49	59.4	7.8	83	4	34	17	0	0	48	70	2.40	-2.33	1.19	8	1	.0	0	8.3	S	28	S	1	5	7	16	7.0	50
ARIZONA																																
Flagstaff	6993	------	------	51	24	37.2	8.4	64	14	1	5	0	24	--	--	.85	-.89	.65	5	0	T	30	----	---	--	---	--	5	6	17	6.8	--
Phoenix	1114	975.6	1015.1	73	50	61.4	7.1	88	13	35	1	0	0	47	63	.21	-.58	.13	5	2	.0	0	3.0	E	•21	SSE	17	5	3	20	7.4	77
Prescott	5014	847.3	1016.6	59	34	46.7	7.3	76	13	13	1	0	8	--	--	.70	-.63	.36	4	1	.0	1	6.7	S	29	S	17	4	6	18	7.1	63
Tucson	2558	925.8	1014.0	74	48	61.1	7.9	92	14	33	1	1	0	40	53	.36	-.56	.16	6	0	.0	0	5.4	SE	22	SW	17+	3	11	14	7.1	75
Winslow	4880	851.7	1015.5	61	34	47.5	7.7	78	14	21	1	0	9	28	52	.66	.19	.59	3	2	.0	0	5.8	WSW	•21	SSW	23	5	5	18	7.2	--
Yuma	199	1009.5	1014.7	80	52	65.8	5.7	94	14	37	1	3	0	39	43	.05	-.24	.03	2	0	.0	0	5.4	N	31	NW	28	8	10	10	5.8	79
ARKANSAS																																
Fort Smith	458	1001.7	1019.0	59	41	49.7	5.1	81	9	29	17	0	3	40	75	5.26	2.22	2.16	11	0	.0	0	8.4	ENE	28	SW	9	3	4	21	7.8	39
Little Rock	257	1006.1	1019.3	58	43	50.4	4.8	81	9	30	21	0	3	40	71	5.32	1.26	2.13	11	1	.0	0	9.1	NNE	37	W	9	3	6	19	7.9	40
Texarkana	361	------	------	64	47	55.1	5.6	82	9	30	21	0	1	--	--	3.56	-.54	.77	10	1	.0	0	----	---	--	---	--	--	--	--	--	--
CALIFORNIA																																
Bakersfield	489	1000.0	1018.3	64	47	55.4	2.9	76	25	30	1+	0	2	47	76	.70	-.42	.44	4	0	.0	0	3.7	N	•32	SSE	22	2	5	21	8.4	--
Bishop	4108	874.4	1016.6	61	30	45.5	4.2	72	16	15	4	0	15	--	--	.57	-.34	.34	5	0	T	T	----	---	--	---	--	7	4	17	6.6	--
Blue Canyon	5280	838.1	1016.6	45	34	39.7	3.6	61	15	20	2	0	10	--	--	14.74	5.27	4.17	16	0	25.2	31	----	---	--	---	--	5	3	20	7.8	--
Burbank	699	990.5	1016.8	68	49	58.5	4.5	88	13	34	1	0	0	47	69	2.12	-.94	1.54	6	1	.0	0	3.2	S	•23	ESE	23	6	3	19	7.5	--
Eureka (U)	43	1014.2	1016.2	54	44	49.0	.6	65	22+	33	4	0	0	--	--	4.36	-1.29	2.16	12	1	.0	0	6.2	---	35	SW	24	3	4	21	8.1	32
Fresno	331	1006.1	1018.1	61	46	53.3	2.6	73	25	25	3	0	5	47	82	1.51	-.15	.66	10	0	.0	0	4.5	E	21	SE	22	3	3	22	8.4	35
Los Angeles (U)	312	------	------	68	53	60.7	4.3	88	12	41	3	0	0	48	67	1.47	-1.90	.84	3	1	.0	0	5.5	---	24	S	22+	6	3	19	7.2	49
Los Angeles	99	1012.9	1016.8	66	52	59.1	5.0	85	12	41	1+	0	0	50	75	1.94	-.81	1.10	5	1	.0	0	6.2	W	•23	SSE	23	5	4	19	7.8	--
Mt. Shasta (R)	3544	891.6	1017.3	48	30	39.2	2.3	59	18	12	4	0	17	--	--	8.17	2.95	3.43	13	0	7.0	16	----	---	--	---	--	7	4	17	6.8	--
Oakland	3	1017.3	1017.6	58	46	51.9	1.2	67	13+	29	3	0	2	47	83	3.12	-.28	.65	12	0	.0	0	6.6	WSW	•29	SSW	24	3	2	23	8.5	--
Red Bluff	341	1004.4	1017.3	60	43	51.5	1.6	78	15	26	4	0	5	41	70	1.92	-1.61	.88	10	0	.0	0	10.6	SSE	43	SE	23	4	7	17	7.1	51
Sacramento	17	1016.3	1017.3	59	45	52.2	2.5	74	14	28	3	0	4	46	82	4.19	1.43	1.00	14	0	.0	0	8.8	SSE	36	SE	23	3	3	22	8.3	40
Sandberg (R)	4517	862.9	1015.9	56	41	47.8	7.0	68	13	26	3	0	2	--	--	1.96	-.76	1.36	5	0	T	13	13.3	---	•36	S	22	3	7	18	7.6	--
San Diego	19	1013.2	1016.4	67	53	60.1	3.8	83	13	43	1	0	0	50	72	.50	-1.76	.35	4	0	.0	0	5.6	NE	19	S	23	4	5	19	7.7	45
San Francisco (U)	52	------	------	59	49	54.0	1.0	69	13+	40	3+	0	0	--	--	3.58	-.33	.87	15	0	.0	0	6.9	---	32	SW	24	3	6	19	7.8	33
San Francisco	8	1016.9	1017.7	58	47	52.9	2.1	69	15	33	3	0	0	48	86	3.86	.42	.79	12	0	.0	0	6.8	SSW	44	S	23	2	3	23	8.6	--
Santa Maria	238	1008.5	1017.5	63	46	54.5	2.7	77	12+	26	4	0	4	48	81	1.93	-.54	.87	9	0	.0	0	6.1	WNW	•31	ESE	22	3	2	23	8.3	--
COLORADO																																
Alamosa	7536	770.7	1019.6	49	16	32.2	9.2	61	14	-4	1	0	28	--	--	.08	-.10	.06	2	0	.8	1	----	---	--	---	--	3	10	15	7.2	--
Colorado Springs	6173	810.0	1017.6	53	25	38.9	7.1	70	14	13	1	0	25	17	46	.48	.15	.48	2	0	4.3	1	10.6	SSE	•37	WNW	10	5	9	14	6.7	--
Denver	5292	836.1	1015.5	55	27	40.7	8.7	69	14	18	1+	0	22	17	46	.73	.20	.66	4	0	1.6	1	11.8	S	36	W	11	6	11	11	6.0	75
Grand Junction	4849	862.9	1022.5	39	23	31.0	-1.0	53	22+	-5	6	0	21	25	81	.63	.00	.21	7	0	.3	12	4.9	E	28	SE	23	3	6	19	7.8	55
Pueblo	4639	856.4	1017.2	58	25	41.7	7.6	75	14	12	5	0	21	19	45	.25	-.23	.25	2	0	T	T	7.9	W	42	NW	8	5	8	15	6.6	77
CONNECTICUT																																
Bridgeport	7	1019.9	------	42	26	34.0	5.0	60	27	16	12	0	25	--	--	1.78	-1.19	.77	7	0	4.4	4	----	---	--	--	--	7	3	18	7.2	--
Hartford	169	1014.0	1020.2	41	22	31.8	3.7	64	26	9	12+	0	26	19	60	1.54	-1.03	.70	8	0	3.5	6	11.0	NW	38	NW	20	6	7	15	6.9	45
Middletown (U)	133	1014.9	------	41	23	32.4	---	63	26	11	3+	0	26	--	--	2.35	----	1.18	9	0	3.3	5	9.4	---	%42	NW	10	--	--	--	---	--
New Haven	6	1019.8	1020.3	42	25	33.5	4.4	57	27	14	12	0	25	--	--	2.45	-.85	1.01	11	0	5.0	6	7.2	---	26	N	28	6	5	17	7.2	57
DELAWARE																																
Wilmington	78	1017.5	1020.7	45	30	37.4	3.7	64	27	19	12	0	21	30	78	3.76	.78	1.51	11	0	1.3	1	9.7	ENE	--	--	--	7	2	19	7.4	--
DISTRICT OF COLUMBIA																																
Washington (U)	72	------	------	49	35	41.5	4.0	67	27	24	20	0	12	--	--	2.91	.27	1.00	12	--	.4	T	7.5	---	31	W	17	--	--	--	---	--
Wash. Nat'l. AP	14	1016.7	1021.2	49	34	41.4	4.3	68	27	24	20	0	13	32	74	2.75	.31	.86	11	0	1.6	1	8.6	S	38	NW	17	6	4	18	7.4	38
FLORIDA																																
Apalachicola (U)	13	1017.6	------	70	57	63.3	6.4	80	10	45	14+	0	0	--	--	1.10	-2.84	.43	6	1	.0	0	8.3	---	26	SE	18	8	10	10	5.5	58
Daytona Beach	31	1016.5	1019.4	76	54	65.1	4.6	85	1	37	14+	0	0	56	80	1.62	-.78	1.04	8	0	.0	0	10.6	SSW	•30	NNW	21+	9	10	9	5.3	--
Fort Myers	15	1017.7	------	80	58	68.8	3.2	86	4+	45	15+	0	0	--	--	3.68	1.74	1.62	7	5	.0	0	7.9	---	•24	WNW	28	7	12	9	5.5	--
Jacksonville	24	1018.3	1019.5	75	53	64.0	6.5	87	5	35	13	0	0	53	73	1.69	-.97	.47	9	0	.0	0	10.6	WSW	31	N	20	7	10	11	5.9	61
Key West (U)	9	1016.4	------	81	68	74.9	3.3	86	2	64	19	0	0	--	--	4.94	3.30	2.02	11	4	.0	0	8.4	---	23	NW	21	11	12	5	4.7	79
Lakeland (U)	214	------	------	77	59	67.9	4.5	84	1+	47	13	0	0	--	--	4.56	2.24	1.93	8	3	.0	0	7.2	---	--	---	--	7	11	10	5.8	58
Maimi (U)	8	------	------	77	66	71.4	2.7	83	11	55	14	0	0	--	--	6.15	4.42	2.68	9	4	.0	0	12.9	---	44	SE	25	13	12	3	4.4	78
Miami	8	1016.6	1017.8	81	65	72.7	4.0	86	11+	51	14+	0	0	63	74	4.68	2.90	2.06	10	4	.0	0	11.7	E	40	SSW	18	9	14	5	5.3	--
Miami Beach	9	------	------	78	68	73.3	3.1	83	11	58	15	0	0	--	--	7.28	5.53	2.65	10	--	.0	0	----	---	--	---	--	7	18	3	---	--
Orlando	106	1014.3	1018.9	78	57	67.5	4.3	86	4	44	15	0	0	58	77	1.93	-.12	1.05	6	0	.0	0	9.9	S	•36	WNW	19	9	12	7	5.0	--
Pensacola (U)	13	1016.4	------	69	56	62.3	6.3	79	10	43	17+	0	0	--	--	2.40	-1.53	1.03	8	1	.0	0	10.6	---	33	SE	25	-	--	--	---	54
Tallahassee	64	1016.2	1018.8	73	51	62.1	6.5	84	10	34	14	0	0	51	74	.82	3.22	.44	7	0	.0	0	6.9	S	--	--	--	4	11	13	6.8	--
Tampa	19	1017.5	1018.9	77	57	67.4	4.5	84	4+	44	14+	0	0	58	79	3.25	.75	1.81	10	2	.0	0	9.1	ENE	•22	WSW	28	6	13	9	5.6	69
West Palm Beach	15	1016.8	1017.8	79	64	71.7	4.0	85	19	53	15	0	0	62	76	6.41	4.20	2.73	13	4	.0	0	11.8	E	•35	SE	25	6	13	9	5.8	-
GEORGIA																																
Athens	798	989.7	1019.3	62	43	52.5	5.9	77	4+	29	17+	0	6	43	75	3.10	-1.87	1.07	13	2	.0	0	8.9	NE	•23	SW	1	6	3	19	7.3	--
Atlanta	975	977.5	1019.7	63	46	54.7	8.0	79	8	33	17	0	0	43	70	1.91	-2.91	1.20	9	0	.0	0	12.4	NW	•32	NW	1	5	6	17	7.2	45
Augusta	143	1012.3	1019.1	68	45	56.3	7.5	81	8+	24	18	0	6	46	75	1.68	-2.05	.74	7	1	.0	0	7.0	NE	•21	NW	1+	3	9	16	7.4	--
Columbus	385	1004.5	------	69	47	57.9	8.3	81	5+	29	14	0	3	--	--	1.97	-2.70	1.18	7	0	.0	0	----	---	--	---	--	6	7	15	7.0	--
Dawsonville	1110	------	------	60	38	49.0	---	75	8	19	18	0	11	--	--	4.23	----	.77	13	0	.0	0	----	---	--	---	--	--	--	--	---	--
Macon	356	1005.1	1018.8	70	48	58.8	7.3	83	5	30	18	0	1	46	68	1.97	-2.30	.80	10	0	.0	0	10.3	NNE	33	SW	1+	5	12	11	6.4	64
Rome	637	995.8	------	62	40	51.4	6.4	77	8	25	14+	0	9	--	--	5.38	-.02	1.92	17	3	.0	0	----	---	--	---	--	5	5	18	7.3	--
Savannah	48	1016.6	1019.2	70	49	59.0	5.6	83	9	30	18	0	1	50	78	2.18	-.64	.88	8	1	.0	0	9.1	ENE	32	SW	19	3	9	16	6.9	53
Thomasville (U)	283	------	------	73	53	62.6	6.7	86	5+	38	12	0	0	--	--	1.48	-2.33	.75	9	0	.0	0	----	---	--	---	--	-	--	--	---	--
IDAHO																																
Boise	2842	921.4	1020.1	42	27	34.5	.5	57	28	13	2	0	23	28	79	1.72	.37	.42	12	0	7.2	5	7.2	SE	43	W	24	5	4	19	7.7	44
Idaho Falls 46W (R)	4933	848.3	1021.0	36	11	23.3	2.7	48	27	-12	6+	0	27	--	--	1.12	.55	.43	8	0	2.6	7	8.3	---	a34	SW	9	--	--	--	---	--
Idaho Falls 42NW (R)	4790	------	------	34	4	18.8	.3	51	27	-21	6	0	27	--	--	.32	-.05	.17	5	--	---	--	5.4	---	a39	SSW	24	--	--	--	---	--
Lewiston	1413	965.5	1018.3	43	28	35.5	-.4	65	24	5	2	0	19	--	--	.79	-.21	.34	7	0	8.1	10	----	---	--	---	--	1	6	21	8.3	--
Pocatello	4444	863.2	1020.1	40	24	31.6	3.1	52	24	5	7	0	23	27	81	.72	-.21	.26	13	0	1.7	6	9.4	SW	36	S	23	3	4	21	8.3	37
ILLINOIS																																
Cairo (U)	314	1006.8	------	52	38	45.0	4.4	71	24	27	20	0	6	--	--	3.49	.16	.79	14	0	.0	0	8.9	---	29	N	26	5	7	16	6.9	43
Chicago	610	997.3	1021.1	39	27	33.4	6.0	62	24	11	19	0	23	25	74	1.77	.36	.66	12	0	2.9	2	9.4	S	33	NW	16	7	4	17	7.2	41
Moline	589	998.0	1021.0	40	25	32.5	5.9	62	24	12	17	0	26	25	76	1.57	.40	.74	10	1	.7	1	10.4	WNW	35	NW	12+	6	5	17	7.1	43
Peoria	654	998.0	1021.0	41	28	34.5	6.2	62	24	14	20	0	24	26	75	.83	-1.08	.48	8	0	.5	3	10.9	N	43	N	26	5	5	18	7.5	36
Springfield	589	997.6	1021.5	44	29	36.3	5.5	64	24+	16	2	0	19	29	77	1.76	.14	1.42	9	2	T	2	11.1	NNE	42	N	26	4	7	17	7.4	42
INDIANA																																
Evansville	383	1004.4	1020.6	50	34	41.5	4.0	70	24	21	20	0	13	33	73	3.37	.42	1.26	7	1	T	0	9.3	NNE	31	NW	10	6	4	18	7.5	37
Fort Wayne	801	988.2	1020.4	40	25	32.6	4.6	67	25	11	20	0	23	27	80	1.47	-.30	.86	10	0	2.7	3	11.1	S	38	W	16	4	9	15	7.1	34
Indianapolis	793	988.8	1021.0	44	29	36.5	5.0	69	25	18	20	0	19	30	79	1.90	-.18	1.05	12	1	1.4	1	10.0	SE	36	NW	14	2	7	19	8.0	37

See footnotes at end of table.

CLIMATOLOGICAL DATA

State and station		Pressure		Temperature												Precipitation							Wind					No. of days (sunrise to sunset)				
												No. of days							No. of days		Snow, Sleet				Fastest mile							
	Elevation (ground)	Ø Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F. or above	Min. 32° F. or below	Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max. depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy	Sky cover, tenths (sunrise to sunset)	Possible sunshine
	Ft.	Mb.	Mb.	°F.	°F.	°F.	°F.	°F		°F				°F.	%	In.	In.	In.			In.	In.	M p. h.		M. p. h.			0–3	4–7	8–10	0–10	%
INDIANA (Cont'd.)																																
South Bend	768	991.2	1020.4	39	25	31.8	5.4	63	25	9	1	0	25	26	79	1.52	-0.04	0.69	11	1	4.3	4	10.9	S	*33	WNW	16	3	5	20	8.0	--
IOWA																																
Burlington	694	994.9	1021.7	41	26	33.4	5.4	62	24	14	4+	0	26	26	76	1.19	-.22	.87	6	0	.4	3	9.7	NW	35	NW	16	5	6	17	7.1	53
Des Moines	948	988.8	1021.6	39	23	30.8	4.8	55	13	6	22	0	25	23	76	.13	-.95	.03	7	0	.7	1	11.6	NNE	43	NE	26	7	3	18	7.2	47
Dubuque	1065	994.2	1020.7	35	21	28.2	5.6	55	24	5	17	0	26	21	74	.59	-.52	.21	6	0	3.4	4	----	---	--	---	--	4	6	18	7.4	--
Sioux City	1094	978.0	1021.4	39	19	28.7	5.5	57	6	-4	22	0	28	17	64	.20	-.55	.18	3	0	2.2	2	13.1	NNW	44	NW	11	12	3	13	5.7	66
Waterloo	870	------	------	35	20	27.6	5.1	54	24	3	4+	0	27	--	--	.28	-.73	.09	6	0	1.0	2	12.0	---	--	---	--	--	--	--	---	--
KANSAS																																
Concordia (U)	1375	969.2	------	46	26	36.3	3.4	66	13	9	22	0	22	--	66	.37	-.48	.35	4	0	4.4	4	7.0	---	22	NW	10+	9	4	15	6.1	62
Dodge City	2594	928.9	1018.7	51	28	39.8	4.8	69	13	4	23	0	21	25	62	.17	-.61	.10	4	0	2.2	2	13.8	NNE	45	N	21	6	5	17	7.0	48
Goodland	3645	888.6	1018.2	50	20	35.1	4.9	65	24	1	22	0	28	21	61	.26	-.22	.18	2	0	4.3	3	11.4	SSE	*29	S	11+	6	5	17	6.8	--
Topeka	877	984.1	1021.2	46	27	36.4	3.0	65	13	16	22	0	23	28	74	.36	-.61	.15	8	1	1.5	2	9.8	N	38	N	26	5	4	19	7.8	40
Wichita	1321	969.9	1019.6	49	30	39.6	2.4	69	8	16	22+	0	21	30	73	.77	-.21	.57	6	1	1.9	2	12.4	N	40	NE	9	2	8	18	8.1	39
KENTUCKY																																
Lexington	978	983.7	1020.3	49	32	40.3	4.3	66	9	16	20	0	16	33	78	3.48	-.02	1.31	14	1	T	T	10.8	NE	--	---	--	4	3	21	7.9	--
Louisville	485	1000.4	1020.0	50	34	41.7	4.5	68	9	22	20	0	15	33	74	2.83	-.16	1.03	10	1	T	T	10.1	NE	33	NW	14	5	3	20	7.9	35
LOUISIANA																																
Baton Rouge	64	1015.2	1018.4	72	53	62.3	6.7	85	4	33	21	0	0	52	75	4.17	-.19	1.72	9	1	.0	0	10.0	E	--	---	--	2	10	16	7.3	--
Lake Charles	12	1016.3	1017.7	70	54	62.0	6.1	81	7+	36	21	0	0	55	82	2.13	-2.40	1.18	6	0	.0	0	7.6	NE	*23	ESE	18	4	6	18	7.2	--
New Orleans (U)	9	1015.9	------	71	58	64.5	6.0	85	4	44	21	0	0	--	--	2.06	-2.12	.72	9	2	.0	0	6.9	---	20	NE	16+	5	12	11	6.4	44
New Orleans	3	1015.9	1018.0	72	56	63.7	6.3	83	3+	43	21+	0	0	55	79	2.88	-1.09	1.13	9	1	.0	0	9.3	ENE	*24	N	16	5	11	12	6.4	--
Shreveport	252	1008.8	1018.2	65	49	56.8	4.8	82	9+	32	21	0	1	47	75	4.05	.27	2.17	10	2	.0	0	8.7	NNE	--	---	--	2	6	20	7.9	45
MAINE																																
Caribou	624	993.1	1017.7	25	6	15.5	5.7	39	7	-18	2	0	28	8	72	2.00	.27	.68	12	0	22.2	18	11.5	NW	*37	NW	23	5	7	16	7.1	--
Portland	61	1014.9	1019.0	38	16	26.8	5.3	64	26	3	12	0	27	17	65	1.56	-2.27	.97	5	0	1.5	8	9.9	N	29	SW	18	9	10	9	5.2	63
MARYLAND																																
Baltimore (U)	14	------	------	48	35	41.3	4.0	66	27	24	12	0	12	--	--	2.92	-.07	.85	12	--	----	--	----	---	--	---	--	--	--	--	---	--
Baltimore	146	1016.2	1021.1	47	32	39.0	4.0	67	27	22	12	0	17	33	82	2.61	-.38	.56	12	0	2.7	1	8.1	NW	40	NW	10	6	4	18	7.4	41
Frederick	294	------	------	46	29	37.7	3.6	64	27	18	12	0	19	--	--	2.95	.37	1.09	10	0	3.3	2	----	---	--	---	--	--	--	--	---	--
MASSACHUSETTS																																
Blue Hill Obs.(R)	629	994.8	1019.0	40	24	31.3	5.6	67	26	11	12	0	27	--	69	1.77	-1.77	.77	10	0	4.5	5	15.5	W	41	WNW	10	4	13	11	6.4	46
Boston	15	1014.4	1019.2	42	27	34.7	5.5	68	26	13	12	0	24	19	60	1.34	-1.59	.53	9	0	2.8	3	17.0	W	*41	NW	20	6	8	14	7.0	66
Nantucket	43	1019.2	1019.4	40	28	34.1	3.0	54	26	17	3	0	24	28	76	2.30	-1.12	.84	10	0	5.1	5	13.0	WNW	36	NE	12	4	6	18	7.6	44
Pittsfield	1153	975.1	------	36	17	26.5	4.8	59	26	4	12	0	27	--	--	1.02	-1.49	.46	12	0	7.1	6	----	---	--	---	--	--	--	--	---	--
Worcester	986	981.6	------	38	22	29.8	5.7	63	26	8	12	0	27	--	--	1.42	-1.15	.59	9	0	6.2	5	13.4	---	*40	WNW	10	8	6	14	6.4	--
MICHIGAN																																
Alpena (U)	587	996.3	------	32	17	24.2	4.3	50	25	4	15	0	27	--	--	.63	-.82	.14	13	0	6.6	3	10.3	---	31	NW	26	7	6	15	6.9	44
Detroit	619	992.9	1020.8	38	23	30.6	3.9	66	25	13	15	0	26	21	69	1.85	-.17	.60	8	0	8.9	5	10.2	WNW	35	W	16	3	10	15	7.5	42
Detroit (Willow Run)	722	990.5	1020.0	38	22	30.1	4.0	65	25	12	15	0	25	24	77	1.88	.14	.80	8	0	5.8	5	10.7	WNW	*33	NNE	26	3	11	14	7.3	--
East Lansing (U)	856	------	------	37	21	29.1	4.9	56	25	9	2	0	26	--	--	1.38	-.43	.53	12	0	5.5	3	5.2	---	17	NE	26	--	--	--	---	38
Escanaba (U)	594	995.3	------	29	12	20.5	2.9	42	24	0	19	0	28	--	--	.84	-.53	.20	10	0	11.6	10	9.4	---	31	N	26	7	6	15	6.6	52
Flint	761	991.5	1020.5	35	19	27.2	3.9	56	25	3	15	0	26	22	79	1.68	.02	.73	12	0	4.5	3	11.5	S	*25	WSW	16+	5	6	17	7.8	--
Grand Rapids	681	993.9	1020.4	36	21	28.2	4.4	53	25	7	2	0	27	23	81	2.31	.64	.86	12	0	8.2	4	10.8	S	27	W	13+	3	6	19	7.9	43
Marquette (U)	677	990.9	------	29	12	20.5	1.6	42	24	2	2	0	27	--	71	.81	-.91	.17	13	0	12.2	18	8.6	---	35	S	11	6	6	16	7.0	57
Muskegon	627	996.3	1020.7	34	21	27.7	3.2	52	24	10	5	0	27	23	78	2.74	1.10	1.39	12	0	7.8	4	----	---	--	---	--	4	3	21	8.0	--
Sault Ste. Marie	721	995.9	1020.0	27	7	16.8	3.3	39	25	-5	1	0	27	15	88	1.44	-.08	.27	16	0	18.1	24	9.4	WNW	25	NW	19+	6	6	16	6.5	48
MINNESOTA																																
Duluth	1409	976.3	1020.0	22	1	11.2	.2	40	25	-15	2+	0	28	5	73	1.52	.30	.58	14	0	20.6	26	12.9	WNW	38	W	16	7	5	16	6.8	45
Intern'l. Falls	1179	976.0	1020.1	19	-6	6.2	-1.0	36	25	-33	23	0	28	-4	62	.57	-.30	.19	8	0	6.3	16	12.2	W	--	---	--	9	7	12	5.8	--
Minneapolis	830	986.5	1021.8	29	12	20.6	2.4	40	6+	-7	3	0	28	12	70	.83	-.06	.44	10	0	8.7	5	11.4	NW	40	NW	15	8	7	13	6.3	52
Rochester	1017	982.4	1021.3	31	13	22.3	4.3	44	24	-4	22	0	27	16	76	.47	-.28	.23	4	0	4.9	3	11.1	WNW	--	---	--	6	7	15	6.8	--
St. Cloud	1034	980.7	1020.9	26	3	14.7	1.1	42	25	-18	3+	0	28	8	72	1.10	.38	.68	10	0	10.2	8	8.7	WNW	--	---	--	7	7	14	6.6	--
MISSISSIPPI																																
Jackson	305	1006.4	1018.5	67	48	57.6	6.6	82	4+	29	21	0	1	48	74	2.60	-2.49	.93	10	1	.0	0	7.7	NNE	31	SW	15	2	8	18	7.5	40
Meridian	294	1004.7	------	68	46	57.3	6.6	84	8	28	17	0	2	--	--	1.85	-3.53	.81	12	1	.0	0	----	---	--	---	--	7	5	16	6.9	--
Vicksburg (U)	234	1009.0	------	66	50	57.8	5.7	82	8	31	21	0	1	--	--	3.94	-1.20	1.93	8	2	.0	0	8.5	---	26	E	18	3	7	18	7.7	35
MISSOURI																																
Columbia	778	991.2	1020.5	49	30	39.5	5.8	62	24	20	19+	0	20	31	74	1.77	.20	1.04	13	0	.1	1	9.6	NNE	38	W	13	6	5	17	7.2	41
Kansas City	741	985.1	1021.3	47	31	39.1	4.5	63	13	19	22	0	18	29	71	.36	-.80	.13	6	0	T	1	9.9	NE	29	N	26	5	4	19	7.4	50
St. Joseph	809	984.1	------	44	26	35.2	3.4	63	17	11	1	0	24	--	--	.31	-.70	.15	6	0	.8	3	10.6	---	*31	NW	10	6	5	17	7.1	--
St. Louis (U)	465	------	------	48	34	41.0	4.3	69	24	22	20	0	12	--	--	4.49	2.61	2.88	12	0	T	T	10.3	---	33	SW	8	8	4	16	6.8	40
St. Louis	552	999.7	1020.7	48	33	40.4	4.7	69	24	21	20	0	15	31	72	3.74	2.08	2.35	11	0	T	1	8.8	ESE	--	---	--	7	3	18	7.2	--
Springfield	1265	970.9	1019.5	51	34	42.5	5.7	66	9	23	28	0	11	34	77	2.46	.70	1.28	11	1	.0	1	12.2	S	35	N	26	4	3	21	7.7	46
MONTANA																																
Billings	3568	890.6	1018.6	38	16	27.2	1.1	60	26	-10	22	0	26	15	62	.55	.11	.15	8	0	6.8	5	12.9	SW	45	NW	11	4	12	12	6.5	71
Butte	5530	826.3	1019.7	35	10	22.4	3.6	48	25	-25	2	0	27	14	--	.19	-.34	.04	7	0	4.1	11	6.6	SSE	*31	SE	19	7	11	10	5.9	--
Glasgow (U)	2277	942.1	1020.3	23	2	12.5	-2.0	46	14	-21	2+	0	28	9	81	.56	.22	.23	10	0	8.4	12	9.3	ESE	*40	W	11	0	7	21	8.4	--
Great Falls	3664	886.9	1018.0	32	13	22.4	-2.2	54	24	-15	2+	0	24	13	66	.73	.16	.26	10	0	9.5	10	17.0	SW	59	SW	9	4	5	19	7.5	84
Havre	2488	926.5	1020.0	28	8	17.8	-1.1	54	24	-22	2	0	28	11	76	.66	.27	.18	10	0	9.7	15	8.4	---	45	SW	11	1	7	20	8.3	48
Helena	3893	872.0	1020.0	33	10	21.9	-1.5	54	24	-20	2	0	25	13	69	.30	-.11	.21	7	0	5.8	12	7.8	NW	46	W	11	7	8	13	6.4	62
Kalispell	2965	------	------	32	11	21.6	-3.4	48	28	-16	1+	0	26	--	--	1.28	.36	.34	13	0	16.8	22	----	---	--	---	--	2	4	22	8.4	--
Miles City	2629	922.8	1020.2	30	10	19.9	-.2	54	24	-16	2	0	28	12	--	.35	-.01	.12	9	0	3.8	8	10.7	NW	*40	NW	11	3	14	11	6.9	--
Missoula	3200	901.5	1019.8	36	17	26.2	.5	53	25	2	2	0	26	19	73	.51	-.31	.16	10	0	6.5	11	6.4	E	37	NE	19	5	5	18	7.5	45
NEBRASKA																																
Grand Island	1841	951.9	1020.4	46	19	32.5	4.8	67	25	2	22	0	28	18	61	.24	-.42	.11	4	0	1.7	1	12.4	SSE	--	---	--	10	3	15	6.0	--
Lincoln (U)	1166	------	------	45	24	34.2	4.9	65	13	7	22	0	26	--	--	.28	-.64	.18	3	0	2.5	2	10.1	---	41	NW	10	12	5	11	5.1	67
Norfolk	1544	962.8	1020.6	41	16	28.7	5.1	64	25	-3	22	0	28	17	64	.17	-.62	.15	2	0	1.6	2	----	---	--	---	--	12	5	11	5.2	--
North Platte	2779	917.0	1019.3	48	17	32.5	3.8	68	24	2	22	0	28	19	64	.29	-.05	.16	5	0	2.0	2	9.6	NW	33	N	25	8	7	13	6.4	61
Omaha	978	980.0	1021.5	42	23	32.5	5.3	63	13	6	22	0	27	21	68	.13	-.74	.05	4	0	1.8	2	11.3	SSE	37	N	15	10	8	10	5.5	62
Omaha, N.Omaha AP	1323	971.2	------	40	21	30.4	5.7	61	13	4	22	0	27	--	--	.13	-.74	.08	3	0	1.2	1	----	---	--	---	--	--	--	--	---	--
Scottsbluff	3950	878.1	1017.6	51	18	34.7	6.5	65	14	6	21	0	27	18	55	.05	-.36	.03	3	0	1.3	1	12.3	WNW	*44	WNW	3	7	10	11	5.9	--
Valentine (U)	2587	924.1	------	42	14	27.8	2.5	64	24	-11	22	0	28	--	--	.01	-.45	.01	1	0	.2	2	11.1	---	45	SW	11	14	4	10	5.3	74
NEVADA																																
Elko	5075	845.2	1019.7	47	20	33.5	5.1	55	16+	-8	4	0	23	25	74	.65	-.30	.17	11	0	1.0	3	3.8	WSW	*23	S	23	7	7	14	6.5	--
Ely	6257	808.7	1019.0	48	21	34.3	6.2	56	13	-9	3	0	26	24	68	.17	-.73	.08	5	0	T	3	10.4	S	47	S	23	5	6	17	7.3	63
Las Vegas	2162	949.5	1015.3	67	43	55.0	4.6	79	13	26	1+	0	6	31	41	.16	-.42	.15	2	0	.0	0	8.3	SW	*32	SW	9	7	8	13	6.4	67
Reno	4397	861.8	1017.9	52	26	38.9	2.6	61	19	8	3+	0	23	29	67	.80	-.25	.55	4	0	T	T	5.7	S	52	SE	24	7	4	17	7.0	50
Winnemucca	4299	867.9	1018.5	51	26	38.3	3.8	59	13	-1	4	0	18	30	70	.71	-.30	.24	7	0	T	3	7.9	NE	40	SW	24	7	5	16	6.7	44

See footnotes at end of table.

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure		Temperature											Average relative humidity	Precipitation							Wind					No. of days (sunrise to sunset)			Sky cover, tenths (sunrise to sunset)	Possible sunshine
												No. of days							No. of days		Snow, Sleet				Fastest mile							
		Station ø	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F or above	Min 32° F or below	Average dew point		Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy		
	Ft.	Mb.	Mb.	°F	°F	°F	°F	°F.		°F				°F	%	In.	In.	In			In.	In.	M p. h.		M p. h.			0–3	4–7	8–10	0–10	%
NEW HAMPSHIRE																																
Concord	339	1008.3	1019.4	39	15	26.8	5.6	66	26	-5	12	0	28	17	69	1.13	-1.17	0.64	5	0	2.8	7	7.4	NW	27	NW	23	9	7	12	5.7	62
Mt. Washington	6262	797.9	------	17	3	9.7	4.2	39	26	-10	20	0	28	--	78	3.32	-1.43	.85	14	1	17.9	4	34.5	W	%107	W	18	7	4	17	7.2	45
NEW JERSEY																																
Atlantic City (U)	8	1018.4	------	44	33	38.9	3.5	61	27	25	12+	0	13	--	--	4.01	.77	1.46	13	1	1.0	T	14.9	-	56	NE	28	3	6	19	7.8	39
Newark	11	1019.5	1020.7	44	29	36.4	4.7	61	27	18	12	0	22	26	69	2.77	-.33	1.14	11	0	8.8	7	9.2	SW	*29	NW	10+	6	5	17	7.1	--
Trenton (U)	56	1012.5	1019.6	43	30	36.9	4.2	62	27	18	12	0	20	--	--	2.86	.20	.83	13	0	6.7	5	8.5	---	31	NW	20	5	6	17	7.3	40
NEW MEXICO																																
Albuquerque	5310	848.6	1015.3	59	37	48.1	8.6	72	11	22	1	0	5	28	50	.59	.26	.48	6	0	T	0	7.1	N	33	NW	25	2	10	16	7.5	63
Clayton	4969	845.9	1016.6	58	28	43.1	6.5	77	8	16	22	0	17	--	--	.06	-.31	.04	3	0	.1	T	----	---		---	--	4	5	19	7.8	--
Raton	6379	804.6	1015.6	57	23	40.2	8.2	68	8	11	2+	0	27	--	--	.26	-.11	.30	1	0	1.5	1	---	---	--	---	--	4	6	18	7.6	--
Roswell	3612	893.3	1015.2	66	39	52.3	7.5	84	8	15	2	0	6	34	56	.64	.18	.49	5	0	.0	0	9.3	---	61	NW	24	5	10	13	6.8	
NEW YORK																																
Albany	277	1016.6	1020.3	38	20	28.8	5.9	62	26	6	12	0	26	20	72	1.02	1.01	.71	6	0	2.7	4	8.9	WNW	40	NW	10	7	4	17	6.7	53
Binghamton	1601	958.3	1019.4	35	19	27.0	5.4	55	25	4	12	0	26	21	78	1.31	-.99	.59	13	0	12.2	7	10.9	NW	39	NW	20	2	6	20	8.1	32
Buffalo	693	991.0	1020.2	38	24	30.8	6.1	63	25	12	12	0	25	23	74	1.65	-.94	.96	10	0	3.1	3	11.7	SW	36	SW	9	3	2	23	8.3	41
New York (U)	10	1019.7	------	43	31	37.1	4.4	58	27	19	12	0	20	--	-	2.25	-.88	.77	8	0	6.4	6	12.7	---	51	NW	10	6	5	17	6.9	46
New York	19	1018.7	1020.6	44	31	37.8	5.2	61	27	19	12	0	18	27	67	2.20	-.84	.76	9	0	5.7	5	12.3	WNW	41	NW	10	6	4	18	7.1	--
Rochester	543	1000.1	1020.1	38	22	29.9	5.9	67	25	9	12	0	25	24	81	1.56	-.86	.82	11	0	8.0	6	12.2	WSW	36	NW	10	3	5	20	8.0	43
Schenectady	217	------	------	39	22	30.2	8.3	59	26	8	12	0	26	--	--	1.04	-1.18	.79	7	0	1.3	2	----	---	--	---	--	11	9	8	4.9	--
Syracuse	424	998.2	1021.1	38	22	30.4	5.3	66	25	7	12	0	26	22	72	1.76	-.76	1.26	12	0	6.7	2	8.7	WNW	38	NW	10	3	5	20	8.0	29
NORTH CAROLINA																																
Asheville (U)	2203	------	------	56	37	46.8	6.0	71	9	23	18	0	10	--	--	3.13	.28	.80	17	0	.1	T	9.0	---	34	NW	17	4	9	15	7.0	50
Charlotte	725	991.4	1020.1	60	40	49.8	5.4	74	4	26	15	0	9	40	74	4.83	1.28	1.13	15	1	T	0	8.5	NE	36	N	14	4	8	16	7.3	47
Greensboro	891	988.1	1020.8	56	36	45.9	4.9	72	26	22	15	0	10	35	73	3.95	.82	1.06	14	0	T	0	8.1	NE	29	N	10	3	10	15	7.3	53
Hatteras (R)	4	1019.0	1019.5	56	45	50.6	3.0	68	3+	36	15+	0	0	45	83	3.33	-.68	1.20	14	1	.0	0	14.4	NNE	40	NE	11+	2	5	21	8.5	35
Raleigh	433	1006.2	1020.3	58	36	47.1	4.0	76	4	23	14	0	10	37	75	4.40	1.13	1.14	13	0	T	0	9.0	N	*23	NW	17	4	5	19	7.7	45
Wilmington	30	1018.6	------	63	42	52.6	3.9	81	4	27	22	0	7	--	--	2.31	-.99	1.23	8	0	.0	0	10.6	---	31	N	20	5	7	16	7.0	47
Winston-Salem	967	984.5	1020.3	55	37	46.3	5.1	71	26+	25	15+	0	9	35	71	4.37	.98	1.16	13	0	T	0	7.9	NE	*27	NW	14+	4	8	16	7.2	--
NORTH DAKOTA																																
Bismarck	1650	957.3	1021.1	25	3	13.8	1.1	49	27	-16	22	0	28	8	75	.23	-.20	.15	6	0	4.4	4	11.3	WNW	43	W	11	2	14	12	7.0	54
Devils Lake (U)	1471	963.4	------	19	0	9.3	.6	43	27	-18	2	0	28	--	--	.42	.01	.21	8	0	5.1	7	9.0	- -	32	NW	28	5	9	14	7.0	68
Fargo	895	985.1	1021.8	22	3	12.5	1.7	40	11+	-19	22	0	28	7	77	.23	-.43	.10	8	0	4.4	3	15.2	N	56	W	28	5	11	12	6.6	64
Williston (U)	1877	948.9	1020.1	24	6	15.2	1.7	47	26	-21	2	0	27	6	64	.19	-.27	.13	5	0	2.1	5	7.4	---	34	NW	28	0	8	20	8.0	56
OHIO																																
Akron	1210	981.7	1020.9	39	23	31.4	3.3	66	25	12	20	0	25	25	79	1.29	-.84	.38	12	0	3.4	1	11.7	S	--	---	--	2	5	21	8.4	--
Cincinnati Obs.	761	------	------	46	32	38.9	4.1	68	25	18	20	0	17	-	--	2.97	.42	1.06	11	1	.8	T	6.2	---	30	SW	9	--	--	--	---	36
Cincinnati	869	987.3	1020.2	46	31	38.3	4.4	66	25	16	20	0	17	30	74	2.79	.24	.93	12	1	1.5	T	9.2	NNE	25	SW	9+	3	3	22	8.4	-
Cleveland (U)	663	------	------	40	27	33.6	3.5	72	25	16	12	0	23	--	--	----	----	----	--	--	----	--	--	---	--	---	-	--	--	-	---	-
Cleveland	787	991.4	1020.3	40	26	33.0	4.4	69	25	14	21	0	24	27	78	1.40	-.72	.70	10	1	3.1	2	13.8	S	41	W	16	2	6	20	8.3	26
Columbus (U)	724	------	------	44	31	37.1	4.5	70	25	17	20	0	19	--	--	1.98	-.17	.78	9	0	3.1	2	--	--	--	---	--	--	--	--	---	-
Columbus	815	990.0	1020.9	45	28	36.5	5.3	73	25	13	20	0	22	30	78	1.87	-.40	.69	13	0	3.0	1	8.9	NNW	34	SW	14	2	7	19	8.1	38
Dayton	1002	983.3	1020.7	42	28	35.1	3.7	68	25	14	20	0	22	28	76	2.31	.20	1.29	10	0	2.1	2	10.9	NNE	47	W	16	2	6	20	8.4	38
Sandusky (U)	603	997.0	------	39	26	32.3	2.9	69	25	14	20	0	26	--	--	2.44	.52	1.55	8	0	4.7	3	7.6	---	27	NW	14	3	10	15	7.1	43
Toledo	676	994.5	1020.8	39	24	31.4	4.1	68	25	11	15	0	25	26	81	1.47	-.39	.79	8	0	2.2	1	9.5	WSW	38	N	26	2	10	16	7.7	42
Youngstown	1178	976.6	1020.7	39	23	31.2	3.0	65	25	11	12	0	25	26	81	1.71	-1.01	.53	13	1	9.5	2	10.9	SSW	*30	NNW	14+	1	7	20	8.4	--
OKLAHOMA																																
Oklahoma City	1280	974.6	1019.0	54	37	45.4	3.6	72	9	21	23	0	6	39	82	.86	-.38	.35	8	0	T	T	12.6	N	43	N	26	2	8	18	8.1	36
Tulsa	672	994.2	1019.1	55	38	46.7	4.7	75	8	28	2	0	6	38	75	1.46	-.11	.53	9	0	T	T	10.1	N	38	N	26	3	1	24	8.5	31
OREGON																																
Astoria	8	1015.2	1015.3	50	35	42.4	-.7	62	17+	23	2	0	10	38	84	6.90	-2.54	1.50	19	0	.2	T	8.6	NE	*44	S	23	5	4	19	7.6	--
Burns (U)	4140	872.3	1018.3	41	20	30.6	-.6	52	26+	2	6	0	24	24	77	2.31	1.08	.86	11	0	6.4	9	----	---	--	---	--	5	7	16	7.2	--
Eugene	361	1003.1	1016.9	51	35	42.8	.1	66	28	26	18	0	11	--	--	5.87	1.03	1.69	14	0	T	T	8.5	---	*28	S	23	4	3	21	7.9	--
Meacham	4050	------	------	38	23	30.4	1.4	50	15+	1	20+	0	23	--	--	3.66	-.69	1.29	13	0	29.5	50	----	---	--	---	--	4	8	16	7.6	--
Medford	1312	968.5	1016.9	55	33	44.2	1.6	70	16	21	10	0	16	36	79	2.99	.97	1.33	12	1	.0	0	2.3	S	*31	SSE	7	6	6	16	7.0	--
Pendleton	1492	963.1	1018.2	44	29	36.1	-.5	62	24+	6	21	0	19	29	78	.88	-.52	.87	9	0	6.9	8	8.3	WNW	*25	NW	11	5	5	18	7.5	--
Portland	21	1010.5	1016.3	50	33	41.7	.2	63	26	22	2	0	17	35	80	4.14	-.01	1.37	14	0	1.4	1	10.1	ESE	38	S	24	5	5	18	7.3	36
Roseburg	505	997.6	1016.6	53	36	44.1	1.0	66	26	25	6	0	13	--	--	5.41	1.65	1.84	14	0	.0	0	3.9	---	24	S	23	0	7	21	8.7	27
Salem	195	1008.8	1016.2	51	34	42.7	-.1	67	28	27	18+	0	13	37	83	4.93	-.39	1.26	16	0	T	0	8.4	S	*29	S	23	5	3	20	7.5	--
Sexton Summit (R)	3836	------	------	45	35	40.0	3.6	62	16	22	3	0	12	--	--	5.14	1.55	1.95	12	0	5.6	17	----	---	--	- -	-	7	3	18	7.1	--
PENNSYLVANIA																																
Allentown	376	1006.7	1021.5	41	25	33.0	4.4	55	27	8	3	0	27	26	76	2.16	-.48	.75	10	0	7.8	7	9.9	WSW	--	---	--	5	5	18	7.4	--
Erie	732	------	------	38	24	30.8	4.3	67	25	11	12	0	25	--	--	1.73	-.34	.80	10	0	6.7	3	9.4	---	*25	NNE	27	2	6	20	8.1	-
Harrisburg	335	1006.9	1021.2	43	29	35.9	3.8	58	26	17	12	0	21	26	71	2.64	.40	.67	11	0	16.4	7	7.0	ESE	41	NW	10	4	8	16	7.5	42
Philadelphia (U)	26	------	------	46	33	39.4	4.3	64	27	22	12	0	17	--	--	2.86	-.17	.78	10	--	----	-	-	---	--	---	--			--	---	--
Philadelphia	10	1016.0	1020.6	44	30	37.4	3.8	64	27	20	12	0	20	29	74	2.81	-.21	1.12	10	0	1.8	1	9.1	NNE	35	NW	10	6	3	19	7.5	34
Pittsburgh (U)	749	------	------	45	31	37.8	4.2	70	25	20	19	0	19	--	--	1.74	-.61	.47	12	--	2.8	-		--	--	--	--	--	-	-	- -	
Pittsburgh	1151	989.0	1020.3	42	27	34.6	4.8	68	25	15	12	0	22	27	76	1.35	-1.02	.25	15	0	4.3	2	10.0	WSW	*25	W	9+	1	7	20	8.4	44
Reading (U)	266	1008.3	1020.7	43	30	36.7	3.9	59	26+	18	12	0	19	--	--	2.19	-.49	.58	12	0	7.6	6	9.7	---	35	NW	10	3	6	19	7.8	39
Scranton	940	985.7	1021.3	39	23	31.1	4.0	58	25	7	12	0	26	23	73	.89	-1.13	.36	7	0	3.3	4	8.9	WSW	30	SW	3	3	7	18	7.8	37
Shippingport (U)	736	------	------	43	26	34.7	---	70	25	14	21	0	22	--	--	1.40	-	.55	10	1	4.3	2	3.0	---	%31	WNW	16		-			-
Williamsport	527	1001.3	------	41	25	33.1	4.0	56	26	12	12	0	25	--	--	2.20	-.14	.77	14	0	9.5	4	-	--	-		--	2	9	17	7.8	--
RHODE ISLAND																																
Block Island	110	1014.9	1019.4	40	28	34.3	3.4	54	26	19	12	0	23	--	--	1.27	-1.98	.68	9	0	2.8	3	- -	---	--	- -	--		--	--	6.9	--
Providence	55	1013.7	1020.0	42	25	33.9	5.3	65	26	12	3	0	26	23	68	1.68	-1.16	.81	9	0	3.5	5	11.1	SW	*38	S	27	3	12	13	7.1	60
SOUTH CAROLINA																																
Charleston (U)	9	------	------	64	49	56.5	3.8	79	4	35	22	0	0	--	--	3.27	.20	2.41	10	0	.0	0	9.6	---	33	N	11	-	-	--		50
Charleston	41	1016.8	1019.4	67	46	56.6	4.7	83	4	27	18	0	4	47	78	3.35	.22	2.33	9	1	T	0	9.7	NNE	--	---		2	11	15	7.5	--
Columbia	217	1010.4	1019.4	66	44	55.1	6.6	80	4	24	18	0	7	45	75	1.30	-2.33	.36	8	2	.0	0	7.4	NNE	*23	NW	1+	5	7	16	7.1	63
Florence	146	1014.0	------	65	44	54.1	6.5	82	4	28	15	0	5	--	--	2.26	-1.04	1.05	9	0	.0	0	---	---	--	---	-	5	5	18	7.3	--
Greenville	1008	981.4	1019.2	59	41	49.9	4.6	75	4	29	15	0	5	38	72	4.20	-.06	1.08	15	2	.0	0	10.9	NE	34	W	1	5	5	18	7.5	46
Spartanburg	801	------	------	59	41	50.3	4.9	76	4	30	12+	0	5	--	--	4.11	-.12	.98	15	1	.0	0	8.6	--	*39	NW	10		-		--	--
SOUTH DAKOTA																																
Huron	1282	971.9	1021.4	31	10	20.5	2.9	49	11	-21	22	0	28	14	76	.53	.04	.31	5	0	10.5	7	12.0	SSE	50	NW	15	8	9	11	6.1	78
Rapid City	3165	901.1	1019.3	40	16	27.6	3.7	62	14	-7	21+	0	27	16	66	.29	-.03	.19	6	0	3.9	3	11.3	N	50	NW	11	6	8	14	6.2	54
Sioux Falls	1420	967.2	1021.0	35	12	23.4	3.9	54	25	-9	2+	0	28	12	62	.26	-.48	.10	4	0	4.5	3	11.7	NW	*40	WNW	12	9	5	11	5.9	--
TENNESSEE																																
Bristol	1519	963.9	------	55	37	46.1	6.0	73	26	20	15	0	12	--	--	5.13	1.72	.88	15	1	T	0	----	---	--	---	--	3	9	16	7.3	--
Chattanooga	670	991.3	1019.3	60	41	50.5	6.5	74	8	26	17	0	9	41	75	6.38	1.27	1.57	15	1	.0	0	8.1	S	27	S	9	5	5	18	7.4	42
Knoxville	949	983.8	1019.5	59	41	49.6	7.1	72	9	25	20	0	8	41	74	7.86	3.13	2.34	15	0	.0	0	8.1	NE	41	SW	9+	4	7	17	7.5	36
Memphis (U)	271	------	------	56	43	49.6	5.1	76	9	29	20	0	2	--	--	4.46	.24	1.38	13	--	T	T	----	---	--	---	--	--	--	--	---	--

See footnotes at end of table.

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure		Temperature												Precipitation							Wind					No of days (sunrise to sunset)			Sky cover, tenths (sunrise to sunset)	Possible sunshine
		Station Ø	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	No. of days: Max. 90° F or above	No. of days: Min 32° F or below	Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	No of days: .01 inch or more	No of days: With thunderstorms	Snow, Sleet: Total	Snow, Sleet: Max. depth on ground	Average hourly speed	Prevailing direction	Fastest mile: Speed	Fastest mile: Direction	Fastest mile: Date	Clear	Partly cloudy	Cloudy		
	Ft.	Mb	Mb.	°F.	°F.	°F	°F.	°F.		°F		#		°F	%	In.	In.	In			In.	In.	M p. h.		M. p. h.			0–3	4–7	8–10	0–10	%
TENNESSEE (Cont'd.)																																
Memphis	263	1004.4	1019.3	59	42	50.1	5.6	77	9	28	17	0	4	41	74	4.65	0.06	1.40	12	1	T	T	10.9	N	37	SW	9	4	5	19	7.7	45
Nashville	577	999.6	1020.0	56	39	47.4	5.1	72	9+	24	21	0	9	40	78	5.24	1.08	1.25	16	0	T	0	7.7	N	27	N	9	5	4	19	7.6	38
Oak Ridge (R)	905	984.2	------	58	40	49.1	8.7	72	9	26	17	0	9	-	-	8.60	2.81	1.68	16	2	.0	0	5.9	---	26	---	16	5	3	20	7.4	--
TEXAS																																
Abilene	1759	955.6	1017.1	62	45	53.3	5.2	86	9	31	22+	0	2	45	77	2.15	1.24	1.04	9	3	.0	0	10.2	S	43	NW	26	3	8	17	7.9	--
Amarillo	3590	889.3	1016.2	58	35	46.4	6.8	80	8	16	22	0	8	32	65	1.11	.49	.69	5	0	1.6	1	12.7	SSW	34	W	9+	5	3	20	7.8	68
Austin	615	995.9	1017.7	70	52	60.9	6.8	88	10	38	28	0	0	52	79	3.14	.58	1.09	9	1	.0	0	9.7	NE	33	NW	26	4	9	15	6.8	39
Brownsville	16	1013.5	1015.9	78	61	69.1	5.1	85	9+	49	21	0	0	63	85	5.20	4.00	4.96	6	1	.0	0	13.0	SE	30	S	3+	13	6	9	5.0	55
Corpus Christi	41	1015.6	1016.5	75	59	66.7	6.4	90	10	45	28	1	0	60	83	1.48	.04	.69	7	1	.0	0	10.5	SSE	30	S	4	4	9	15	6.9	50
Dallas	487	999.3	1018.2	63	47	55.0	5.2	86	9	37	27	0	0	47	77	1.12	-1.50	.35	9	1	.0	0	9.4	NNE	37	NW	26	1	9	18	8.0	40
Del Rio	1091	981.7	1016.2	73	54	63.3	6.2	92	10	41	2	1	0	51	70	.94	-.13	.51	7	0	.0	0	9.1	---	26	NW	1+	6	11	11	6.6	45
El Paso	3920	886.6	1014.3	70	45	57.6	8.5	81	10+	28	2	0	2	34	43	.46	.10	.27	3	1	.0	0	10.5	N	43	W	25	7	13	8	5.9	78
Fort Worth	544	997.3	1018.4	63	46	54.1	4.3	86	9	36	27	0	0	46	79	1.77	-.80	.58	9	0	.0	0	11.5	NNE	*33	NNW	26	1	10	17	7.8	--
Galveston (U)	7	-	---	67	58	62.7	5.3	75	10	45	21	0	0	--	-	2.03	-.85	.74	8	--	.0	0	11.8	---	33	NW	27	--	--	--	---	49
Galveston	5	1014.9	1017.6	68	58	62.8	5.5	76	15	44	21	0	0	58	86	3.38	.24	1.82	9	2	.0	0	12.5	ESE	--	---	--	4	10	14	6.8	--
Houston (U)	41	1012.2	---	71	56	63.5	5.8	85	10	39	21	0	0	--	--	2.29	-.52	1.16	9	0	.0	0	9.4	---	27	NE	16	3	14	11	6.9	44
Houston	50	1014.9	1017.7	71	55	62.9	6.3	85	10	38	21	0	0	55	81	2.46	-.24	1.29	7	0	.0	0	11.5	ENE	--	---	--	3	11	14	7.3	--
Laredo	500	1014.6	1015.4	79	59	68.7	6.8	93	10	47	17	4	0	57	71	2.55	1.70	1.38	8	0	.0	0	10.8	SE	*28	NE	16	9	8	11	5.9	--
Lubbock	3243	903.5	1016.2	62	38	49.7	6.6	81	9	19	2	0	5	38	72	.73	.20	.40	7	0	T	T	12.9	SW	*43	W	9	5	5	18	7.2	—
Midland	2854	916.7	1016.0	65	44	54.2	5.2	87	9	30	2	0	1	44	74	1.15	.44	.46	7	1	.0	0	8.8	ENE	*23	NE	16	5	9	14	7.0	--
Port Arthur	16	1016.6	1017.8	71	54	62.5	6.5	82	7+	36	21	0	0	55	81	.74	-3.45	.68	5	0	.0	0	12.2	S	35	S	3	5	8	15	6.8	43
San Angelo	1903	949.2	1016.7	65	46	55.7	4.0	90	9	34	23	1	0	46	76	.98	-.01	.36	7	0	.0	0	10.2	SW	*30	NNE	15+	6	8	14	6.7	--
San Antonio	792	991.9	1016.9	72	54	62.9	7.8	87	10	40	28	0	0	52	74	2.53	.95	1.34	7	2	.0	0	8.4	NE	32	N	26	6	8	14	6.8	49
Victoria	110	1012.2	1016.9	73	56	64.5	5.6	88	10	43	21	0	0	56	77	3.19	1.22	1.60	8	0	.0	0	10.8	---	%36	NNW	26	5	7	16	7.1	--
Waco	500	996.3	1017.6	66	49	57.3	5.6	86	9	36	21	0	0	50	80	2.41	-.22	1.10	9	1	.0	0	12.3	NNE	--	---	—	3	6	19	8.0	--
Wichita Falls	1020	981.0	1018.3	58	41	49.5	3.7	84	9	28	23	0	3	42	79	1.62	.13	.48	8	2	.0	0	9.1	NNE	*25	N	15	1	6	21	8.4	--
UTAH																																
Milford	5028	844.6	1016.3	48	25	36.2	5.3	63	26	-8	4	0	18	--	—	.21	-.50	.15	4	1	.1	8	----	---	—	---	--	6	5	17	7.1	--
Salt Lake City	4220	868.3	1018.6	50	30	40.3	6.9	59	19+	17	3	0	17	30	69	.72	-.51	.40	7	0	.3	4	7.9	S	32	S	20	7	6	15	6.4	56
VERMONT																																
Burlington	331	1004.7	1020.1	34	16	25.1	7.0	60	26	-6	12	0	27	14	63	.90	-.63	.79	7	0	1.3	5	8.8	S	32	S	3	7	5	16	6.9	54
VIRGINIA																																
Lynchburg	947	985.4	----	52	34	43.0	3.8	72	27	23	12	0	12	—	--	4.31	1.83	.80	17	0	.8	T	7.8	---	30	NW	14	3	9	16	7.3	42
Norfolk	26	1019.1	1020.5	53	37	44.6	2.6	70	4+	26	18	0	8	38	80	4.74	1.68	1.21	15	0	T	T	11.9	NNE	33	NE	28	2	8	18	8.1	42
Richmond	162	1014.9	1021.2	53	34	43.3	3.6	74	27	22	18	0	13	35	79	5.29	2.53	1.20	15	0	.7	T	7.8	NE	30	SW	10	4	5	19	7.6	35
Roanoke	1174	976.7	1020.5	53	34	43.4	4.2	70	27	22	21	0	11	32	70	5.31	2.75	1.10	16	0	1.4	1	8.6	SE	—	---	—	3	7	18	7.5	—
WASHINGTON																																
Olympia	190	1008.8	1015.6	46	32	39.0	-1.0	59	12+	18	2+	0	14	33	80	5.88	-.28	1.17	18	0	5.5	2	7.9	SSW	*37	S	24	4	5	19	8.0	--
Seattle (U)	14	-----	---	48	37	42.2	-1.3	58	16	25	2	0	6	--	--	5.51	1.77	1.43	15	0	6.8	4	11.4	---	38	S	23+	6	6	16	7.4	43
Seattle	14	1015.2	1015.9	--	--	----	- -	--	--	-		--	-	35	80	----	--	----	--	--	----	--	8.2	SSE	--	---	--	--	--	--	---	--
Seattle-Tacoma	376	1002.0	1016.4	46	33	39.5	-1.4	56	25	21	2	0	11	35	84	5.57	1.62	1.38	17	0	7.2	3	14.5	N	*44	SSW	26	6	2	20	7.7	--
Spokane	2357	947.5	1017.8	36	22	28.7	-1.0	54	26	-6	2	0	24	24	81	1.54	.08	.69	15	0	10.5	11	9.5	NE	47	S	10	3	9	16	7.8	35
Stampede Pass (R)	3958	875.7	1016.9	32	22	26.7	-.3	44	18	7	21	0	27	--	--	9.44	-1.63	2.09	20	0	72.7	113	----	---	--	---	--	6	1	21	7.7	--
Tatoosh (R)	101	1011.5	1014.5	45	37	40.8	-2.4	55	28	30	22+	0	4	34	79	7.29	-1.41	2.06	16	0	2.7	2	20.4	E	65	S	23	6	6	16	6.9	40
Walla Walla (U)	949	981.7	1018.3	45	31	38.0	-.3	63	25	13	21	0	13	--	--	1.10	-.43	.55	9	0	5.9	9	5.4	---	22	SW	11	4	6	18	8.0	34
Yakima	1061	978.0	1018.0	43	22	32.5	-1.7	64	26	3	2	0	27	25	74	.87	.06	.46	7	0	3.7	2	4.5	W	*32	SSW	9	6	5	17	7.0	--
WEST VIRGINIA																																
Charleston	950	983.4	1019.8	51	32	41.4	3.2	75	26	12	20	0	14	32	70	4.69	1.19	1.30	15	0	3.5	3	6.2	WSW	*35	W	9	2	6	20	8.1	—
Elkins	1970	----	-----	48	28	37.5	5.0	68	26	5	21	0	16	29	-	5.43	2.38	1.70	13	1	9.7	4	5.2	WNW	17	WNW	4+	1	6	21	8.3	--
Huntington (U)	565	------	- - -	52	33	42.5	3.5	75	26	16	20	0	13	--	--	3.60	.54	.94	10	0	.4	T	----	---	--	---	--	--	--	--	---	--
Parkersburg (U)	615	-----	----	48	31	39.5	4.0	73	26	16	20	0	15	-	--	3.44	.79	1.37	12	1	1.7	1	5.5	---	27	NW	14	4	5	19	7.7	41
WISCONSIN																																
Green Bay	689	996.6	1020.4	31	11	20.9	3.6	47	24	-3	20	0	27	16	78	.43	-.93	.17	9	0	4.2	4	11.3	SW	34	SW	6	6	8	14	6.4	49
La Crosse	652	995.3	1021.0	33	16	24.9	5.6	55	24	1	19	0	26	16	69	.20	-.91	.11	4	0	3.0	3	8.7	NW	*25	S	11+	8	5	15	6.6	—
Madison	857	983.7	1020.7	36	19	27.4	5.5	56	24	4	17+	0	27	20	74	.38	-.75	.29	8	0	1.1	3	10.6	SSW	34	W	15+	4	7	17	7.4	53
Milwaukee	672	994.6	1020.7	35	21	27.8	3.6	56	24	5	5	0	25	22	79	.96	-.31	.53	10	0	3.0	5	13.0	S	50	N	26	5	8	15	7.0	42
WYOMING																																
Casper	5322	834.7	1015.8	44	20	32.1	6.2	56	24	-2	21+	0	25	17	55	.15	-.57	.08	4	0	1.5	1	18.8	SW	*58	SW	23	9	6	13	6.1	--
Cheyenne	6131	809.3	1016.0	47	23	34.9	7.2	59	13	7	21	0	22	18	52	.08	-.57	.05	4	0	1.0	3	15.7	WSW	54	W	11	6	12	10	5.6	77
Lander	5563	838.8	1023.7	45	20	32.5	9.6	57	14+	5	4+	0	26	16	53	.04	-.57	.03	2	0	.3	1	7.3	---	77	SW	11	11	8	9	4.9	72
Sheridan	3942	883.5	1019.1	39	12	25.7	2.5	61	24	-19	21	0	26	15	63	.53	-.08	.34	7	0	11.1	9	8.1	WNW	70	W	11	8	11	9	5.5	60
PACIFIC AREA																																
Canton Island	9	1007.1	1007.4	88	78	83.1	.1	90	3	77	2+	1	0	72	73	.02	-.52	.02	1	0	.0	0	16.9	ENE	*28	E	27	1	6	21	8.6	--
Hilo	31	1011.9	1014.1	77	61	68.9	-1.8	81	20+	57	15+	0	0	61	78	8.95	-.53	2.56	21	0	.0	0	9.8	WSW	*29	N	22	7	9	12	6.5	46
Honolulu	7	1013.7	1014.1	77	64	70.6	-1.8	81	27+	58	19+	0	0	59	69	1.68	-.84	1.05	11	0	.0	0	10.7	ENE	63	W	20	9	10	9	5.7	68
Koror (R)	94	1006.4	1010.2	87	75	81.0	.6	88	4+	73	11+	0	0	74	81	2.42	-5.59	1.07	18	0	.0	0	----	---	--	---	—	1	2	25	9.2	--
Lihue	115	1008.5	1014.1	77	61	69.3	-.8	80	13+	53	21+	0	0	60	74	7.09	2.65	3.24	17	0	.0	0	11.2	NE	34	NE	8+	8	7	13	6.3	46
Majuro	10	1007.1	1007.5	85	77	80.6	---	87	1+	74	12+	0	0	75	83	18.34	----	6.28	14	2	.0	0	----	---	—	---	—	0	4	24	9.1	—
Ponape (R)	119	1002.7	1007.9	85	76	80.4	-1.5	88	5+	70	24	0	0	74	83	14.58	6.71	3.14	19	0	.0	0	----	---	--	---	--	0	1	27	9.5	--
Truk, Moen Is.	8	1008.5	1008.8	85	78	81.4	.4	88	20	75	2+	0	0	75	79	5.04	-2.06	1.43	21	0	.0	0	----	---	--	---	—	0	2	26	9.6	--
Wake Island	11	1013.9	1014.2	80	71	75.7	-1.6	85	3	68	7+	0	0	64	70	.39	-1.12	.22	8	0	.0	0	14.4	ENE	*28	NNE	6	13	12	3	4.5	--
Yap (R)	53	1008.1	1010.2	85	75	80.1	-.6	87	23+	72	17+	0	0	73	80	4.70	-.23	1.83	18	0	.0	0	----	---	--	—	--	0	0	28	9.9	--
WEST INDIES																																
San Juan, P.R.	15	1014.2	1016.6	83	67	74.8	---	87	21	63	16	0	0	66	77	1.29	----	.50	13	0	.0	0	8.0	ENE	26	E	3	5	22	1	5.0	79
San Juan, P.R. (U)	47	------	- ---	81	70	75.7	.8	86	14+	68	13+	0	0	--	--	1.22	-1.45	.53	8	0	.0	0	----	---	--	---	--	--	--	--	---	--
Swan Island	31	1013.0	-----	83	74	78.5	.3	85	21	70	11	0	0	--	--	1.65	.00	.61	8	1	.0	0	----	---	--	---	—	6	14	8	5.9	--
ALASKA																																
Anchorage	92	1006.1	1011.3	23	4	13.5	-5.1	39	28	-12	12	0	28	5	68	.67	.09	.19	10	0	11.8	9	6.9	N	*31	NNE	24	6	7	15	6.3	59
Annette	110	1010.5	1014.8	38	28	32.7	-3.4	47	18	7	23+	0	22	26	77	8.31	1.27	1.95	15	0	19.5	5	11.0	SE	*46	SSE	9	5	4	19	7.3	--
Barrow	22	1026.1	1026.4	-19	-31	-25.0	-7.1	26	4	-50	15+	0	28	-33	64	.34	.19	.18	8	0	3.4	20	13.4	W	40	E	21	7	6	15	6.3	--
Barter Island	39	1022.7	1024.5	-16	-32	-24.0	---	34	2	-51	17	0	28	-34	63	.49	----	.29	6	0	6.3	24	18.6	W	*58	W	2	7	6	15	6.7	--
Bethel	10	1013.2	1014.3	15	2	8.4	-.7	43	18+	-25	13	0	27	3	78	.47	-.35	.26	6	0	2.4	3	12.0	N	*32	NE	16+	9	1	18	6.5	--
Cold Bay	90	1006.8	1010.4	34	23	28.4	.0	50	21	5	25	0	22	23	83	2.76	.00	1.59	19	0	11.6	5	20.7	SSE	*50	SE	18	4	3	21	8.0	--
Cordova	40	1006.4	1008.2	35	13	23.9	-2.2	46	3	-8	11	0	28	15	72	3.76	-1.51	1.94	12	0	35.2	18	5.1	E	*35	ESE	14	6	7	15	7.0	--
Fairbanks	436	999.7	1017.8	10	-15	-2.6	.5	38	28	-47	11	0	28	-10	68	.56	.05	.24	8	0	9.3	32	4.7	NE	*24	SW	1+	3	7	18	7.5	--
Juneau	15	1011.5	1012.8	32	18	25.3	-2.0	40	17+	2	22	0	26	19	78	3.99	.64	1.04	16	0	54.3	22	8.4	ESE	35	SE	10	5	2	21	8.0	35
King Salmon	44	1009.8	1011.9	24	4	14.2	-3.8	46	19	-21	13	0	27	9	80	1.22	.10	.66	8	0	11.5	11	11.3	NNW	*37	NNW	24	11	2	15	5.9	--
Kotzebue	10	1020.7	1021.0	2	-13	-5.7	-1.0	32	1	-46	14	0	28	-10	75	.36	.04	.11	7	0	9.9	30	13.2	NE	*45	E	18	15	2	11	4.7	--
McGrath	334	1004.1	1017.5	[illegible]	-14	-3.0	-3.4	34	6	-44	14	0	28	-11	72	1.11	-.04	.26	10	0	11.7	24	3.7	NW	*21	SSW	28	10	3	15	6.2	--
Nome	13	1019.0	1019.2	12	-3	4.6	-1.1	39	20	-37	15	0	28	-3	71	.61	-.32	.30	7	0	3.7	20	11.1	NE	65	N	16	11	4	13	5.5	59
Northway	1713	950.6	1017.6	3	-19	-7.9	1.5	39	28	-59	12	0	28	--	--	.47	.13	.09	10	0	6.3	37	----	---	--	---	--	3	7	18	7.7	--
St. Paul Island	22	1012.2	1013.2	24	16	20.2	-3.6	39	5	-10	28	0	26	17	84	.60	-.53	.17	10	0	3.4	2	----	---	--	---	--	3	9	16	7.4	--
Yakutat	28	1008.5	1009.5	34	19	26.8	-1.2	40	6+	11	10+	0	27	24	89	7.09	-1.52	1.64	17	0	47.1	25	8.6	E	*44	SE	28	2	4	22	8.6	--

Data from airport unless otherwise specified. U indicates Urban, R indicates Rural, sites.

* Data entered in column "Fastest Mile" is the fastest mile observed. This station is not equipped with automatic recording wind instrument.

+ And also on a later date or dates.

% Peak gust.

a Maximum hourly average

# Number of days maximum 70° or above for Alaskan stations.

Ø Station pressures apply to elevation shown in Table 10b of the annual issue of this publication.

HEATING DEGREE DAYS

(Base 65°F.)

FEBRUARY 1957

State and station	Current season		Normals
	This month	Period July through this month	July through this month
ALABAMA			
Birmingham	281	1633	2244
Mobile	155	950	1343
Montgomery	198	1298	1769
ARIZONA			
Flagstaff	771	4743	5212
Phoenix (U)	114	1221	1255
Phoenix	117	1068	1428
Prescott	506	3055	3358
Tucson	128	1116	1453
Winslow	486	3399	3610
Yuma	67	662	849
ARKANSAS			
Ft. Smith	423	2381	2619
Little Rock	409	2139	2441
Texarkana	283	1744	1954
CALIFORNIA			
Bakersfield	263	1768	1730
Bishop	540	3114	3179
Blue Canyon	703	3532	3708
Burbank	198	960	1284
Eureka (U)	440	3303	3050
Fresno	321	2122	2040
Los Angeles (U)	146	686	1023
Los Angeles	172	802	1380
Mt. Shasta (R)	715	4194	4111
Oakland	361	2253	2190
Red Bluff	371	2013	1982
Sacramento (U)	328	1954	1997
Sacramento	353	2159	2142
Sandberg (R)	475	2772	2862
San Diego	146	671	1060
San Francisco (U)	302	2020	2045
San Francisco	334	2160	2288
San Jose	293	1683	1690
Santa Maria	289	2013	1936
COLORADO			
Alamosa	910	5853	6288
Colorada Springs	724	4278	4443
Denver	674	3974	4413
Grand Junction	948	4622	4488
Pueblo	643	3809	4248
CONNECTICUT			
Bridgeport	864	3984	4177
Hartford	926	4658	4508
New Haven	875	4199	4281
DELAWARE			
Wilmington	764	3571	3700
DIST. OF COLUMBIA			
Washington (U)	652	2988	3258
Washington	657	3120	3304
FLORIDA			
Apalachicola (U)	93	633	1090
Daytona Beach	72	533	720
Fort Myers	14	265	345
Jacksonville	115	678	1051
Key West (U)	0	18	70
Miami (U)	0	122	158
Miami	0	101	166
Miami Beach	0	57	114
Orlando	40	381	558
Pensacola (U)	124	792	1187
Tallahassee	126	863	1278
Tampa	38	335	572
West Palm Beach	0	151	215
GEORGIA			
Athens	345	1855	2253
Atlanta	291	1690	2269
Augusta	251	1475	1768
Columbus	216	1408	1951
Macon	199	1303	1712
Rome	376	2076	2516
Savannah	193	1146	1429
IDAHO			
Boise	848	4732	4377
Lewiston	822	4590	4122
Pocatello	929	5366	5082
ILLINOIS			
Cairo (U)	553	2708	3004
Chicago (U)			
Chicago	877	4264	4648
Chicago University	892	4243	
Moline	902	4604	4805
Peoria	847	4263	4591
Springfield	799	3953	4317
INDIANA			
Evansville	650	3276	3424
Ft. Wayne	903	4349	4618
Indianapolis	793	3846	4201
South Bend	927	4436	4775
IOWA			
Burlington	881	4391	4601
Des Moines	952	4667	4894
Dubuque	1022	5173	5402
Keokuk (U)	801	4024	
Sioux City	1008	4910	5326
KANSAS			
Concordia (U)	797	3892	4091
Dodge City	696	3636	3867
Goodland	832	4372	4650
Topeka (U)	771	3641	3830
Topeka	796	3837	4037
Wichita	705	3492	3564
KENTUCKY			
Lexington	683	3221	3746
Louisville	644	3106	3444
Pikeville (U)	†497		
LOUISIANA			
Baton Rouge	142	877	1332
Lake Charles	137	832	1293
New Orleans (U)	101	621	993
New Orleans	109	700	1096
Shreveport	249	1498	1784
MAINE			
Caribou	1380	7294	7209
Greenville (U)	1286	6806	
Portland	1062	5556	5438
MARYLAND			
Baltimore (U)	658	2865	3193
Baltimore	719	3352	3613
Frederick	759	3692	3707
MASSACHUSETTS			
Blue Hill Obs. (R)	944	4715	
Boston	842	4104	4130
Nantucket	854	3899	4047
Pittsfield	1070	5432	5503
MICHIGAN			
Alpena (U)	1135	5556	5583
Detroit	958	4381	4608
Detroit (Willow Run)	972	4506	4703
East Lansing (U)	1000	4614	
Escanaba (U)	1239	5930	6013
Grand Rapids	1025	4726	5081
Marquette (U)	1241	5998	5893
Muskegon	1038	4690	4970
S. Ste. Marie	1344	6593	6604
MINNESOTA			
Duluth (U)	1487	7233	6834
Duluth	1504	7251	7112
Internat. Falls	1646	7932	7763
Minneapolis	1241	5630	5867
Rochester	1188	5746	6032
St. Cloud	1404	6436	6612
MISSISSIPPI			
Jackson	241	1427	1822
Meridian	248	1435	1930
Vicksburg (U)	233	1323	1656
MISSOURI			
Columbia	707	3576	3940
Kansas City	719	3502	3811
St. Joseph	826	3979	4153
St. Louis (U)	667	3233	3478
St. Louis	686	3379	3642
Springfield	622	3253	3632
MONTANA			
Billings	1050	5205	5161
Glasgow	1465	6645	6549
Great Falls	1189	5708	5401
Havre (U)	1319	6170	6102
Helena	1202	6234	5983
Kalispell	1209	6289	5840
Miles City	1258	5728	5841
Missoula	1078	5862	5784
NEBRASKA			
Grand Island	902	4525	4805
Lincoln (U)	857	4114	4490
Norfolk	1008	4929	5320
North Platte	903	4811	4868
Omaha	904	4367	4733
Scottsbluff	843	4697	4955
Valentine (U)	1034	5235	5191
NEVADA			
Elko	877	5513	5266
Ely	855	5402	5265
Las Vegas	276	2035	2045
Reno	724	4543	4278
Tonopah	665	4067	4183
Winnemucca	741	4896	4619
NEW HAMPSHIRE			
Concord	1062	5578	5525
Mt. Washington Obs.	1541	9585	
NEW JERSEY			
Atlantic City (U)	721	3126	3331
Newark	795	3639	3883
Trenton (U)	783	3564	3760
NEW MEXICO			
Albuquerque	468	3229	3441
Clayton	607	3481	3781
Roswell	353	2498	2768
NEW YORK			
Albany	1006	5096	5080
Binghamton	1058	5209	5408
Buffalo	951	4498	4823
New York (U)	774	3484	3670
New York	755	3385	3631
Rochester	979	4722	4913
Schenectady	967	4794	
Syracuse	965	4710	4711
NORTH CAROLINA			
Asheville (U)	505	2628	3105
Charlotte	420	2010	2555
Greensboro	528	2615	2991
Hatteras (R)	395	1536	1802
Raleigh	494	2346	2649
Wilmington	351	1581	1865
Winston-Salem	519	2526	2921
NORTH DAKOTA			
Bismarck	1432	6630	6718
Devils Lake (U)	1557	7254	7345
Fargo	1465	6667	6917
Grand Forks	1531	7156	
Pembina	1653	7270	
Williston (U)	1391	6635	6713
OHIO			
Akron	935	4411	4497
Cincinnati (U)	674	3026	3465
Cincinnati	740	3690	3899
Cleveland	891	4053	4332
Columbus	792	3694	4179
Dayton	829	3868	4163
Sandusky (U)	912	4075	4235
Toledo	934	4447	4629
Youngstown	939	4415	4467
OKLAHOMA			
Oklahoma City	542	2836	2932
Tulsa	505	2701	2882
OREGON			
Astoria	625	3783	3346
Burns (U)	958	9430	5049
Eugene	613	3693	3394
Meacham	963	5480	5356
Medford	578	3739	3338
Pendleton	804	4439	3956
Portland (U)	589	3327	3012
Portland	648	3693	3331
Roseburg	576	3470	
Salem	618	3628	3262
Sexton Summit (R)	693	4002	4079
PENNSYLVANIA			
Allentown	892	4214	4356
Harrisburg	809	3789	3943
Philadelphia (U)	710	3139	3394
Philadelphia	765	3475	3656
Pittsburgh (U)	757	3474	3761
Pittsburgh	843	3998	4370
Reading (U)	785	3619	3790
Scranton	946	4654	4441
Williamsport	889	4282	4387
RHODE ISLAND			
Block Island	853	3789	3944
Providence	866	4299	4365
SOUTH CAROLINA			
Charleston (U)	238	1112	1466
Charleston	245	1367	1629
Columbia	283	1537	2012
Florence	310	1535	2090
Greenville	416	2059	2425
Spartanburg	404	2037	2430
SOUTH DAKOTA			
Huron	1240	5757	5923
Pierre	1177	5592	
Rapid City	1042	5274	5370
Sioux Falls	1157	5562	5911
TENNESSEE			
Bristol	524	2705	3203
Chattanooga	398	2127	2693
Knoxville	425	2198	2844
Memphis	414	2171	2547
Nashville	487	2377	2786
TEXAS			
Abilene	328	1896	2200
Amarillo	515	2865	3362
Austin	168	1157	1452
Brownsville	30	329	543
Corpus Christi	64	616	887
Dallas	288	1741	1909
Del Rio	117	1045	1239
El Paso	205	1866	2201
Ft. Worth	311	1830	1958
Galveston (U)	104	609	1005
Galveston	103	650	1029
Houston (U)	119	735	1083
Houston	129	809	1168
Laredo	64	590	710
Lubbock	421	2519	2869
Midland	301	1947	
Port Arthur	127	825	1267
TEXAS (Cont'd.)			
San Angelo	273	1738	1788
San Antonio	126	999	1355
Victoria	108	781	969
Waco	238	1513	1696
Witchita Falls	430	2234	2475
UTAH			
Milford	802	4684	4783
Salt Lake City	685	4348	4358
VERMONT			
Burlington	1112	5629	5698
VIRGINIA			
Lynchburg	610	2917	3193
Norfolk	564	2244	2630
Richmond	600	2751	3068
Roanoke	599	2893	3194
WASHINGTON			
Olympia	724	4066	3822
Seattle (U)	633	3361	3131
Seattle-Tacoma	706	3965	3700
Spokane	1011	5400	4981
Stampede Pass (R)	1069	6455	6175
Tatoosh Island (R)	672	4065	3803
Walla Walla (U)	751	4194	3737
Yakima	904	5019	4519
WEST VIRGINIA			
Charleston	657	3078	3357
Elkins	761	3862	4222
Huntington (U)	624	2923	3162
Parkersburg (U)	706	3316	3599
WISCONSIN			
Green Bay	1229	5952	5977
La Crosse	1116	5351	5739
Madison (U)	1047		5371
Madison	1047	5223	5476
Milwaukee	1036	5079	5141
WYOMING			
Casper	916	5264	5440
Cheyenne	838	4855	5181
Lander	903	5402	6012
Sheridan	1093	5497	5675
ALASKA			
Anchorage	1437	8538	7718
Annette	898	5153	4773
Barrow	2526	13785	13196
Barter Island	2496		
Bethel	1583	9574	8928
Cold Bay	1022	6399	
Cordova	1143	7122	6519
Fairbanks	1891	11431	10600
Juneau	1105	6489	6225
King Salmon	1421	8674	
Kotzebue	1980	11550	10802
McGrath	1903	11354	10472
Nome	1694	10039	9468
Northway	2042	12698	11591
St. Paul	1251	7332	6907
Yakutat	1065	6568	6301

Data from airport unless otherwise specified.
U indicates Urban, R indicates Rural, sites.
† 26 days. No obs. on 1st and 17th.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

FEBUARY 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories[1]		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MISSISSIPPI Camden community, Madison County	1	7 a.m.	1	100	0	0	3	1	Tornado	Tornado moving northeastward smashed 1 home and damaged several others; funnel observed by several residents.
MISSISSIPPI Winona (4miles southeast of), Montgomery County	1	7 a.m.		30	0	0	2	1	Tornado (suspected)	Tornado moving northeastward lifted roof and carried it 300 yards; no other damage in area.
WASHINGTON northern Puget Sound area	1	A.m.					5		Wind	Strong, northerly winds caused some power and communication outages and damaged barges and boats in unprotected areas.
PENNSYLVANIA eastern half	1	Daytime			5	10	3		Snow	Storm caused hazardous road conditions, resulting in many automobile accidents in which 5 persons killed and 10 others injured. Storm moved northeastward.
ALABAMA Dothan, Houston County	1	Evening			0	0	2	1	Tornado (suspected	Building in back yard destroyed, with no other damage such as TV antenna or surrounding trees. Winds struck with "roar like airplane".
	1									Minor storms also reported at Collinsville, Miss., and at Williamston, N.C.
CONNECTICUT, entire state	1-2	P.m. 1st-a.m. 2d			1	4			Snow	Snowfall of 6 inches along coast and somewhat lesser amounts inland resulted in chaos on highways. Severity of storm increased by its occurrence at height of evening rush hours. A great number of skidding accidents occurred throughout State and resulted in 1 fatality and 4 persons injured. Very bad traffic jams, especially on coastal parkways leading to and from New York City area. Small plane made successful forced landing on Merritt Parkway, which further complicated traffic movement.
MASSACHUSETTS eastern portion	1-2	Night				2	3	1	Snow and ice	Hazardous driving and walking conditions prevailed, as new snow covered pavements already coated with ice. Many minor automobile accidents with 1 injury. 1 pedestrian injured by fall on ice.
IOWA	1-7					11	4	1	Snow	Slippery highways resulted in more than 20 traffic accidents.
NEW YORK southeastern portion, Long Island and Metropolitan New York City	2	Most of day			2				Snow	Coastal low pressure area moving northeastward brought 6 to 12 inches of snow. Traffic snarled, cars abandoned, and numerous injuries in automobile accidents. 2 sisters killed in automobile accident as car skidded into trailer-truck.
	3									Minor storm reported in Walsenberg area, Colo.
IDAHO Wardner, Shoshone County	5				1	5	4		Snowslides	First slide at 4 a.m., killed 1 man and injured his wife. 3 more slides in next few hours injured 4 more persons, damaged several houses. In all, 4 houses destroyed, 2 suffered major damage and 3 minor damage.
	5									Minor storm also reported in eastern Kansas.
	8									Minor storm reported at Mt. Pleasant, Utah.
MAINE	9	Afternoon and night				1	4	1	Snow	2 to 7 inches of snow disrupted transportation schedules and caused numerous highway accidents and 1 serious injury. Most roads cleared for travel on the 10th.
WEST VIRGINIA north-central counties	9-11							1	Rain	Flood-producing rains
IOWA	10-12					2	3	1	Snow	Slippery highways resulted in at least 6 accidents.
SOUTH DAKOTA central and western portions	11	Day							Dust	Winds blew soil from plowed and summer-fallow fields. In Tripp County, visibility cut to 1/2 mile with damage to winter wheat fields.
PUERTO RICO, Utuado	13	3-3:20 p.m.						4	Hail and rain	Tobacco ready to be harvested suffered most damage. Local convective cloud moved west-northwestward.
SOUTH DAKOTA northern and western portions	14-15	Afternoon 14th-evening 15th							Wind and dust	Winds blew considerable soil from fall-plowed and summer-fallow fields. Winter wheat damaged in Lyman County. Elsewhere in State, enough moisture from previous snow remained to prevent blowing.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MISSOURI Jasper, Newton, and McDonald Counties	15	4:30-6:30 a.m.					2		Rain and hail	1-to 2-inch rain with scattered hail.
	15									Minor storms also reported near Lenox and at Springfield, Mo.
TEXAS Harlingen (5 miles west of), Cameron County	16	1:30 p.m.	1-1/2	200	0	0	2	0	Tornado	Small column extended from ground to cloud base, had appearance of very strong dust devil. 3 service poles damaged and 1 small, poorly constructed garage demolished. moved northwestward.
NEBRASKA Brule (1 1/4 miles west of), Keith County	17	1:45 p.m.				1	3	1	Wind	Car blown from course into truck and wrecked; 1 occupant injured.
MONTANA Missoula, Missoula County	18	8 p.m.				1	3	1	Wind	Wind blowing out of Hell-Gate Canyon caused damage in downtown Missoula. Windows broken, a chimney damaged, and 1 man injured when blown against building. Storm moved westward.
	19-20									Minor storms reported in Dade, Broward, and Palm Beach Counties, Fla.
KANSAS	19-23				1	6			Rain and glaze	Freezing drizzle and freezing rain reported from many localities, greatest accumulation on 22d and 23d especially in east and southeast where glaze thickness on trees, wires, roads, etc., was from 1/4 to 1/2 inch. Many traffic accidents resulted from hazardous streets and roads. Cattle in Franklin County stampeded, trampling down fences during storm. Cows refused to give down their milk, apparently from fright. Glaze generally melted by evening of 24th.
SOUTH DAKOTA entire State	20-23					5	4		Snow and wind	Drifting snow cover of 4 to 8 inches caused local ground blizzards in central counties. Heaviest falls on 21st. Damage and injuries from highway accidents, due to icy roads and low visibility. A few motorists stranded temporarily, but most roads stayed open. Rapid thawing took place several days later.
OREGON northwestern portion	21-23	Late afternoon 21st - morning of 23rd	100-150	* 75-100		Several	5	2	Ice	Very light snow on 20th and 21st gave way to sleet, freezing rain late on 21st and continued as such until early morning of 23d. Built up substantial coats of ice on all exposed surfaces, creating very hazardous driving conditions in northwest particularly in Willamette. Numerous traffic accidents resulted. Trees broken across powerlines and lines themselves gave way under loads of ice. Storm moved eastward.
IOWA	21-25				2	8	4	1	Snow	Slippery highways resulted in 30 or more accidents.
CALIFORNIA coastal areas	22-23				9	Many	6		Wind, rain, and flood	One of series of storm system (20th-28th) originating over eastern Pacific Ocean and moving across State accompanied by strong winds and heavy rain caused extensive flood damage in Los Angeles Basin and wind damage in Santa Barbara, Carmel, and San Francisco Bay areas on night of 22d. Communities principally affected in southern California; West Los Angeles, Glendale, Burbank, Santa Monica, Inglewood, Torrance, Pasadena, Hollywood, Whitter, Terminal Island, and Santa Barbara. Intersections flooded 5 to 12 feet, automobiles and basements of businesses and homes flooded, traffic halted, hillside roads and streets blocked by mudslides, debris, and water. Burbank; 150 automobiles stalled, trailer court awash. Glendale; $7,000 flood damage to motion picture studio. West Los Angeles; $40,000 flood damage to sporting goods store. Terminal Island; $20,000 loss to 4 racing sloops. Santa Barbara; sailing schooner washed ashore and utilities disrupted various areas. San Francisco Bay area; pleasure craft damage in various harbors, utilities disrupted in various areas, and wind damage to trees, store windows. San Francisco; 33 false burglar alarms set off by wind. Automobile accident deaths attributed to weather or wet pavement; Long Beach 4, West Los Angles 1, San Fernando Valley 1, Salinas-Monterey highway 1, San Benito County 1, south of Carmel 1. Numerous injuries and minor traffic accidents. Moraga highway near Orinda partially closed by large landslide. Other areas: U.S. Highway 101 near Willits closed by mudslide; U.S. Highway 40 near Oroville closed by water.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

FEBUARY 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
OKLAHOMA northwestern two-thirds	22-23				7	13		1	Rain and sleet	Northwestern two-thirds of State covered with coat of glaze and up to 2 inches of sleet was on ground in northwestern sections. 6 persons killed and at least 13 injured in automobile accidents and 1 person killed in plane crash believed to have been caused by icing. Considerable damage reported from Ponca City area, Kay County where trees, shrubs, and utilities quite badly broken.
WASHINGTON entire State	22-25						°6	C	Snow, wind, rain and flood	Series of storms associated with deep, low pressure system moved eastward through State from 22d to 25th. Snow, heavy precipitation, and high wind occurred as squall lines moved through Pacific Northwest during this period. Precipitation amounts in west ranged from 3 to 6 inches and from 1/2 to 1 inch over east. Runoff from rain and melting snow flooded basements, damaged highways, and caused serious flooding along small streams. Several of the larger rivers in west near or slightly above flood stage, however, flood damage along these streams rather small. High wind accompanied by heavy rainfall caused a large number of power and telephone failures. Landslides caused considerable property damage in Puget Sound area. Most serious flooding occurred in east as rising temperatures and rain caused rapid melting of snow cover. Residences and business establishments in low areas flooded when sewers, drainage ditches, small streams unable to carry runoff. Highways and railroad bridges damaged or washed out in several localities. Landslides also caused some damage in north. Greatest flood damage probably occurred along Crab Creek in Lincoln and Grant Counties. Entire population of Wilson Creek evacuated when flood water spread over town. Soil erosion in fields severe.
SOUTH DAKOTA Harding to Fall River Counties	23	Early morning-evening							Chinook	While temeratures were at subzero levels, a "Chinook" wind set in, causing rapid temperature climb to comfortable levels. At Rapid City it rose from - 3° to 59° in less than 12 hours, melting 3 inches of snow. At Deadwood a 9° rise in 10 minutes noted, while Lead had 43° rise in 7 1/2 hours.
IDAHO Sandpoint and Wallace, Bonner and Shoshone Counties	23	Throughout day							Rain and sleet	Ice to 1/4 to 1/2 inch thick on everything at Sandpoint. Roads slick in both areas; many minor traffic accidents.
OREGON coastal area and northwest	23-24	Late afternoon 23d-early morning 24th	200-300	*100-125	2		5	2	Wind	Very high winds particularly along north coastal area and considerable distance inland northwest reached speeds of 45 m.p.h., in gusts at Portland Airport, 62 m.p.h., at Astoria Airport, and considerably higher in some other areas on other than Weather Bureau anemometers. At Air Force installation at Naselle, Wash., 15 miles north of Astoria gusts of 150 miles obtained on Bendix T-451 anemometer taking observations every 5 minutes and with average speeds of 110-115 m.p.h., for several hours on late evening of 23d. Damage to trees, powerlines, and communication lines considerably increased by fact much of earlier ice was still on them when winds began. Communities full length of coast and considerable distance inland experienced power blackouts over areas of varying sizes, particularly extensive in Portland and surrounding suburbs. Considerable number of telephone outages. 2 men killed near Grants Pass when tree blown down across car in which they were riding. Storm moved northeastward.
OREGON entire State	23-26	Most of 4 days	300-400	*250-350	1		6	4	Rain and flood	Combination of warm winds, heavy rains, and sizable snow cover down to fairly low elevations over hills and mountains of east resulted in extremely heavy runoff. This came so rapidly huge quantities of ice were broken loose in headwater areas to be carried downstream forming ice jams against bridges and culverts. Hardest hit were Malheur, Baker, and Wallowa Counties. In Vale, greatest center of damage, water ran 4 feet deep through main street; 102 homes flooded; hundreds of head of cattle and sheep drowned in low-lying pastures and corrals in surrounding rural areas. Hundreds of thousands of dollars of damage to extensive irrigation systems. Man at Ontario died of heart attack while aiding in evacuations. Several homes and some businesses flooded at both Baker and Enterprise. Highways and bridges damaged in all 3 countries and to much lesser extent in other eastern and central areas. Some high water in western streams, but damage generally light, mostly confined to washing roads or causing slides. Farm land erosion in much of east extremely heavy. Storm moved northeastward.

See reference notes at end of table

STORM DATA AND UNUSUAL WEATHER PHENOMENA

FEBUARY 1957

Place	Date	Time	Length of path miles	Width of path yards	Number of persons Killed	Number of persons Injured	Estimated damage by categories † Property (exclusive of crops)	Estimated damage by categories † Crops	Character of storm	Remarks
FLORIDA Pensacola, Escambia County	25	Early a.m.			0	1	4		Wind and tornado (suspected)	Brief, localized, strong winds demolished drive-in theater screen and tipped over several house trailers in nearby trailer park. Storm moved northeastward.
SOUTH DAKOTA northern Black Hills, Lawrence County	26	Midnight-noon				1	3		Glaze	3 highway accidents, including an overturned gas tank truck, attributed to icy roads following rain and snow previous day.
FLORIDA Dade-Broward Counties	26	All day							Rains	Heavy rains caused local flooding in agricultural areas, disrupting harvest operations and causing considerable damage to crops in harvest stage, particularly to tomatoes and potatoes.
MAINE central and northeastern portions	26-27	Night						1	Glaze	Ice storm made travel hazardous in many areas; ice accumulation of 1/2 inch in Caribou, Presque Isle, and Ft. Fairfield sections damaged trees and utility lines.
TENNESSEE Knox County	27	Afternoon				1			Electrical	Lightning struck man, searing strip of skin from his body, melting 2-gallon zinc bucket in his hand, and knocking him unconscious.
PENNSYLVANIA statewide	28	Evening					4		Ice	Trees and utility lines felled by heavy coatings of ice. Streets and highways also made treacherous, resulting in numerous automobile accidents. Storm moved eastward.
CALIFORNIA southern portion	28						4		Rain, electrical and flood	Los Angeles Basin: Streets flooded, traffic and utilities disrupted, 20 utility pole fires started by lightning, some autos, businesses, and residences flooded. Principal communities affected: Culver City, Manhattan Beach, San Fernando, Torrance, North Hollywood, Hawthorne, Fontana, San Marino. Elsewhere, San Marcos Pass near Santa Barbara closed by rockslide, San Bernardino streets flooded and residential areas littered with debris and mud from overflowing creeks.
NEW JERSEY entire State, except extreme southeast coast	28-Mar.1	Late p.m.-a.m.							Rain, sleet and snow	Freezing rain, sleet, and snow during afternoon, night, and morning. Accumulation of sleet and snow up to 2 inches in north. Principal damage to trees, powerlines, telephone wires and poles. Many traffic accidents reported. Storm moved northeastward.
DELAYED REPORT										
CALIFORNIA San Diego and Mt. Soledad	Jan. 29	2:10-2:50 p.m.			0	0			Waterspout and tornado	Funnel cloud observed northwest of San Diego Airport by CAA Tower personnel and verified by Navy Aerology at North Island as waterspout Dissipated as it moved toward shore. Other calls from beach area residents, but no damage reported. Second funnel cloud reported in Mt. Soledad vicinity at 2:50 p.m.

* Miles instead of yards.
° Includes crop damage.
C Damage to crops.
† Storm damages are placed in categories varying from 1 to 9 as follows:

1 less than $50
2 $50 to $500
3 $500 to $5,000
4 $5,000 to $50,000
5 $50,000 to $500,000
6 $500,000 to $5,000,000
7 $5,000,000 to $50,000,000
8 $50,000,000 to $500,000,000
9 $500,000,000, to $5,000,000,000.

GENERAL SUMMARY OF RIVER AND FLOOD CONDITIONS

FEBRUARY 1957

Severe floods were reported in several small streams in the Snake River Basin during the latter part of February. The flooding on the Portneuf River in Idaho exceeded the previous floods of record. Flooding in central Washington was also severe as it occurred in an area that is generally arid to semiarid. Moderate to severe flooding occurred in several streams in the East Gulf of Mexico Drainage. Flooding elsewhere was mostly minor.

ST. LAWRENCE DRAINAGE

No damage was reported from the minor flooding on Black Creek at Churchville, N. Y., on February 27 and 28.

ATLANTIC SLOPE DRAINAGE

There were two periods of flooding in the rivers of eastern North Carolina during February. The first overflows were due to general rains during the last decade of January and the beginning of February. There was a large deficiency of rainfall until January 20, so that it was not until January 30 that there was sufficient runoff to cause streams to rise to above bankfull stage. The second overflows were due to heavy rainfall (1 inch) on the 25th-26th. Streams were at high levels before this storm due to intermittent rains during the middle of the month.

EAST GULF OF MEXICO DRAINAGE

Heavy to severe flooding occurred over the upper Oostanaula and moderate to severe flooding over the lower Oostanaula and upper Coosa Rivers during the first decade of February due to heavy rains. The heavy rains in northern Georgia and Alabama which reached a peak on January 31 were preceded by several days of shower and thunderstorm activity. Several stations reported rainfall on as many as 10 to 18 consecutive days. The rainfall was light to moderate on most days, with the heaviest rains occurring during the period January 30 to February 4. Both the Coosa and Oostanaula Rivers remained at high stages for over a week, and the flood waters receded rather slowly after the crests occurred.

Moderate to severe flooding occurred in the Tombigbee and the Black Warrior Rivers in Alabama and Mississippi during the latter part of January and the early part of February. The rains were nearly continuous from January 21 through February 7. In the upper Tombigbee at and above Columbus, Miss., several people were forced to leave their homes. There was damage to roads and dwellings in this area, but most of the damage was to agriculture and farmland.

The flooding in the upper reaches of the Pearl River in Mississippi was due to excessive rainfall on the 2d, 3d, 4th and 6th. No material damage was reported.

MISSISSIPPI SYSTEM

Upper Mississippi Basin.--The upper Mississippi River was steady throughout the month except for a slight rise near the end of the month due to premature melting of snow in the tributaries immediately above Dam 10. The monthly mean stage of the Mississippi River at Minneapolis, Minn., was 5.6 ft., 0.5 foot below the long-term mean. This was the lowest mean stage since 1950 when the mean was 5.5 ft. The mean stage of 4.5 ft. at La Crosse, Wis., was the lowest February mean stage since 1945. The stage of the Mississippi River at St. Louis, Mo., fluctuated between -3.0 ft. and +1.0 foot, and then began rising sharply in response to the storm of February 25 to 27, reaching a stage of 5 ft. at the end of the month. A 9-foot channel was available most of the month in the Mississippi waterway, and navigation conditions were the best since last September.

There was no substantial snowfall in the upper Mississippi Basin during the month and the accumulations on the ground continued to be generally deficient for the season. At the end of the month the snow cover was confined to the headwaters region of the Mississippi. The greatest water content reported was about 4 inches in the extreme upper sections of the Chippewa and Wisconsin River Basins.

A comparison of snow depths on February 28 with that of other years is given in the following table:

COMPARATIVE SNOW DEPTHS (inches)

STATION	1957	1956	1955
(MINNESOTA)			
Bimidji	14	22	25
International Falls	15	20	25
Duluth	22	28	27
Fargo, N. Dak.	1	7	6
Alexandria	4	12	10
New Ulm	0	6	7
Minneapolis	T	7	6
Rochester	T	6	1

The flooding of the Meramec and Bourbeuse River Basins in Missouri toward the end of the month and the beginning of March was due to heavy rainfall averaging 2.3 inches on the 26th and 27th. No damage resulted from the overflows.

Ohio Basin.--Moderate to heavy rains over the headwaters of the Monongahela Basin in West Virginia and Pennsylvania on the 9th and 10th caused overflows in streams in the basin between the 9th and 11th. Heaviest flood damage was reported from the West Fork Basin at Weston and Clarksburg, W. Va., where several hundred families were evacuated. Weston was completely isolated as all roads and highways were under water. Flood damage along the main stem of the Monongahela River was minor with navigation being disrupted for a short time.

This same storm caused flash floods in the Little Kanawha River in W. Va., on the 10th. The rainfall totaled 2 inches and fell on ground already saturated from previous rains. The stream rose rapidly during the night from a stage of 8.0 ft. at Glenville, W. Va., to a stage of 27.9 ft. by 7 a.m. on the 10th.

Minor flooding occurred on Paint Creek and the lower Scioto River in Ohio on the 10th and 11th from heavy rain on the 8th and 9th. No damage was reported.

Rain averaging more than 1 inch from the 6th to the 10th caused the White River to rise to a stage of 1.5 ft. above bankfull at Edwardsport, Ind., on the 12th and 13th. No flooding occurred as the area is protected by levees.

The high water on the Green River in Kentucky was due to rains during January plus an additional inch on the 1st and 2d. Crests were reached early in the month over the middle and upper reaches while over the lower section there was prolonged high water.

The flooding in the Cumberland Basin at Eddyville, Ky., was due to 4 days of heavy rainfall starting on January 28. Overflows continued at this point until February 18 with a crest 9.6 ft. above flood stage on the 6th.

The moderate to heavy rain over the French Broad Basin in North Carolina on January 30 and 31 and February 1 caused some minor flooding and minor damage. The rainfall ranged from 2 inches at Asheville, N. C., to 3.5 inches at Hot Springs, N. C., in the Laurel and Ivy River Basins. The Laurel River which empties into the French Broad River above Hot Springs, N. C., crested at an alltime record stage of 8.17 ft. The previous record was 7.94 ft. in March 1935. Four families in the Hot Springs area were evacuated. Also a considerable amount of highway equipment was moved in that area.

The flooding along the main stem of the Ohio River was confined to the reach at and below Dam 44, Leavenworth, Ind. Flooding continued for nearly 21 days with an average crest of 6.7 ft. above flood stage. Damage during this high water was at a minimum due to the time of the year. There was some loss of wheat, but this acreage was small compared to the total number of acres inundated. A number of county roads were washed out or flooded and there was some erosion to fields.

White and Red Basins.--The minor flooding in the lower White and Ouachita Rivers in Arkansas between the 2d and the 14th was due to moderate to occasionally heavy rains during the latter part of January and the beginning of February. Locally heavy thundershowers on the 25th caused a sharp rise of the Little Red River at Heber Springs, Ark., to slightly above flood stage. No damage resulted

Lower Mississippi Basin.--The flooding in the lower Mississippi Basin in Mississippi was due to rainfall that occurred during the last decade of January and the beginning of February. The rainfall during the period totaled approximately 9 inches over the Coldwater Basin, and 7 inches over the Yallobusha Basin. High stages were maintained on the principal tributaries of the Yazoo River throughout February, but the only flooding along the main streams was on the Tallahatchie at Swan Lake and the Coldwater at Sarah, Miss. Some flooding was reported in small headwater streams and on the Big Black River at Bovina, Miss., during the month, but no serious damage was reported. The high water on the Mississippi River at Caruthersville, Mo., from the 8th to the 20th was due primarily to the high flow from the Ohio River. Heavy rains in western Tennessee caused local streams to flood considerably before the Mississippi River lowlands in west Tennessee were flooded.

PACIFIC SLOPE DRAINAGE

California Coast Drainage.--Warm, moderate to occasionally heavy rains from the 20th to the 27th caused a sharp rise in tributary streams in the Sacramento Basin in California on the 23d and 24th with the major reservoirs rapidly rising into the established flood control space. Releases from Shasta Reservoir plus moderately high inflow below the reservoir brought the Sacramento River up to a level where overflow occurred at all eastside weirs into Sutter Bypass and at Fremont Weir into Yolo Bypass. Stations above Shasta Reservoir recorded between 15 and 17½ inches of rain during the 7-day period from the 21st through the 27th, while stations in the Sierra from the American River northward reported around 10 inches. There was a sharp cutoff in precipitation to the south of the American River--the Cosumnes and Mokelumne drainages received less than one-half of the precipitation recorded over the American.

The minor flooding on the Russian River at Gurneville, Calif., on the 24th-25th was due to moderate to heavy rains from the 20th to the 24th. Local flooding was reported in the reach above Gurneville in the vicinity of Geyserville and in the Alexander Valley area.

The flooding on the Eel River at Fernbridge, Calif., from the 24th to the 25th was due to moderate to heavy rains from the 20th to the 24th which continued until the 26th. Several thousand acres of farmland were under water at the peak of the flood.

Columbia Basin.--Flooding occurred in several streams in the Snake River Basin during the last 5 days of February due to a combination of snowmelt resulting from warm weather and ice jams. Precipitation during the period was light at Lava Hot Springs, Idaho, on the Portneuf River. The flooding was the worst ever known. The highway was cut and thousands of dollars damage was reported. At Topaz, Idaho, the crest on the 25th was 5.71 ft. (1020 c.f.s.) compared to the previous maximum of 902 c.f.s., April 1913. At Weiser, Idaho, on the Weiser River, Radio Station KWEI was completely surrounded by flood waters and would have been off the air if the flood had come up 3 inches higher. Parts of highways 30 and 95 were flooded in several places.

The Malheur River and Bully Creek in Oregon rose rapidly during the night of the 24th to produce 2 to 5 ft. of water and mud throughout the Vale area by the morning of the 25th. The crest was 14.6 ft. All stores, several hundred homes, and one school were flooded. A comparable flood was reported to have occurred in 1925. Damage was estimated at several million dollars. In the Ontario, Oreg., area about 20 square miles of farmland was covered with 2 to 5 ft. of flood water. Several homes were flooded. Three highway bridges were damaged, one of them a total loss. The total damage in this area was over 1 million dollars. At Harper and Juntura several million dollars damage was reported to homes, stores, irrigation ditches, roads and farms.

Heavy precipitation and warm temperatures produced slight flooding in streams in the Willamette Basin in Oregon during the latter part of the month. Flooding in central Washington was severe and was due to a combination of heavy rain and the melting of the entire snow cover on frozen ground. The area affected is generally arid to semiarid; consequently most of the towns and communities have been built in the lower parts of the general area. One of the towns hardest hit was Wilsonville in Grant County, Washington. Reports indicate that the Red Cross rushed bedding, food, milk and other necessities to some 300 people in this town who spent the night in schools, churches and homes after the town was covered with up to 5 ft. of water. Several people were also evacuated in the town of Wilson Creek. At Almira, Wash., Goose Creek ran 18 inches deep through the business district.

Grays Harbor and Puget Sound Drainage.--Heavy rain (up to 6 inches) and melting snow from the 23d to the 26th caused some minor flooding between the 25th and 27th along the Chehalis, Snohomish and Snoqualmie Rivers in Washington. Some lowland pastures and secondary roads in the Chehalis and Snohomish Valleys were under water, but only slight damage was reported.

FLOOD STAGE DATA

(All dates in February unless otherwise specified)

River and station	Flood stage	Above flood stages -dates		Crest*	
		From—	To—	Stage	Date
	Ft.			Ft.	
ST. LAWRENCE DRAINAGE Lake Ontario					
Black Creek: Churchville, N. Y.	5	27	28	5.6	28
ATLANTIC SLOPE DRAINAGE					
Roanoke: Williamston, N. C.	10	5 28	25 1/	11.1	17
Tar:					
Rocky Mount, N. C.	9	5	6	9.6	6
Tarboro, N. C.	19	5	9	#22.8	8
Greenville, N. C.	13	6	12	#15.5	9
Neuse:					
Neuse, N. C.	14	1 28	7 Mar. 4	19.5 #16.2	4 Mar. 2,3
Smithfield, N. C.	13	2 27	9 Mar. 6	19.0 18.0	7 Mar. 4
Goldsboro, N. C.	14	7	14	17.7	12
Kinston, N. C.	14	12	17	15.2	15
Cape Fear:					
Moncure, N. C.	20	2	2	20.9	2
Fayetteville, N. C.	35	3	4	#39.8	3
Lock No. 2, Elizabethtown, N. C.	20	2 28	7 Mar. 6	29.5 29.9	4 Mar. 4
EAST GULF OF MEXICO DRAINAGE					
Oostanaula:					
Resaca, Ga.	22	2	8	30.8	4
Rome, Ga.	25	6	7	26.0	6
Coosa: Gadsden, Ala.	20	3	12	23.4	6
Black Warrior: Tuscaloosa Lock and Dam, Ala.	47	2	5	47.6 52.9	1 4
Tombigbee:					
Tupelo, Miss.	%21	Jan. 31	2	24.2	1
Fulton, Miss.	%15	Jan. 8 Jan. 29	Jan. 9 [illegible]	15.6 16.7 19.6	Jan. 8 Jan. 30 2
Amory, Miss.	%19	Jan. 5 Jan. 29	Jan. 5 7	20.0 30.8	Jan. 5 3
Aberdeen, Miss.	34	1	8	41.7	3
Columbus, Miss.	29	4	8	33.5	6
Gainesville, Ala.	36	5	15	43.1	11
Lock 4, Demopolis, Ala.	42	2	17	56.6	11
Lock 3, Whitfield, Ala.	33	Jan. 29	19	54.9	12
Lock 2, Pennington, Ala.	46	Jan. 24	18	55.5	13
Lock 1, Jackson, Miss.	31	4	20	36.5	16
Pearl: Jackson, Miss.	18	7	13	19.8	10
MISSISSIPPI SYSTEM Upper Mississippi Basin					
Bourbeuse: Union, Mo.	15	28	Mar. 1	17.4	Mar. 1
Meramec:					
Sullivan, Mo.	11	27	28	13.2	27
Pacific, Mo.	11	27	Mar. 2	17.0	Mar. 1
Valley Park, Mo.	14	28	Mar. 2	17.3	Mar. 1
Ohio Basin					
Tygart:					
Belington, W. Va.	14	10	11	15.6	10
Philippi, W. Va.	17	10	11	21.3	10
West Fork:					
Weston, W. Va.	17	9	10	22.3	10
Clarksburg, W. Va.	7	10	11	11.4	10
Cheat: Parsons, W. Va.	11	9	10	13.5	10
Monongahela:					
Lock 7, Greensboro, Pa.	23	10	10	24.2	10
Lock 5, Brownsville, Pa.	23	10	11	25.2	10
Lock 4, Charleroi, Pa.	24	10	11	28.6	10
Lock 3, Elizabeth, Pa.	23	10	11	24.2	10
McKeesport, Pa.	12	10	11	13.7	10
Lock 2, Braddock, Pa.	26	10	11	27.2	11
Little Kanawha:					
Glenville, W. Va.	23	10	11	30.1	10

River and station	Flood stage	Above flood stages -dates		Crest*	
		From—	To—	Stage	Date
	Ft.			Ft.	
MISSISSIPPI SYSTEM (Cont'd.) Ohio Basin (Cont'd.					
Little Kanawha (Cont'd.): Creston, W. Va.	20	10	11	24.6	10
Paint Creek: Bourneville, Ohio	10	10	10	10.6	10
Scioto: Piketon, Ohio	16	10	11	16.9	10
Green:					
Munfordville, Ky.	28	Jan. 30	3	36.9	1
Lock 6, Brownsville, Ky.	28	Jan. 30	5	37.0	2
Lock 4, Woodbury, Ky.	33	Jan. 29	14	46.6	2
Lock 2, Calhoun, Ky.	23	Jan. 29	23	30.6	10
Wabash: (Skillet Fork) Wayne City, Ill.	15	10 27	12 1/	17.1 18.5	11 28
White: Edwardsport, Ind.	12	11	14	13.5	12-13
Cumberland: Eddyville, Ky.	50	Jan. 31	18	59.6	6
		22	22	50.1	22
French Broad:					
Marshall, N. C.	10	Jan. 31	Jan. 31	10.3	Jan. 31
Hot Springs, N. C.	13	Jan. 31	1	15.6	1
Ohio:					
Dam 44, Leavenworth, Ind.	53	15	15	53.5	15
Tell City, Ind.	38	4 12	9 18	40.1 41.0	7 16
Dam 47, Newburgh, Ind.	38	2	20	42.8 43.4	8 16
Dam 48, Cypress, Ind.	38	4	21	41.6 42.6	9 17
Mt. Vernon, Ind.	35	4	21	38.5 39.8	9 18
Dam 49, Uniontown, Ky.	37	6	21	39.1 40.7	10 18
Shawneetown, Ill.	33	3	23	39.2 40.7	11 18
Dam 50, Fords Ferry, Ky.	34		23	42.7 43.5	11 18
White Basin					
White:					
Clarendon, Ark.	26	4	8	26.2	6
St. Charles, Ark.	25	7	14	25.3	8-12
Red Basin					
Ouachita:					
Arkadelphia, Ark.	17	2	2	18.0	2
Camden, Ark.	26	3	10	29.6	5
Little Red: Heber Springs, Ark.	24	26	26	24.5	26
LOWER MISSISSIPPI BASIN					
Coldwater: Sarah, Miss.	18	Jan. 31	1	20.7	1
Tallahatchie: Swan Lake, Miss.	26	2	13	28.0	6
Big Black: Bovina, Miss.	28	8	17	32.7	12
Mississippi: Caruthersville, Mo.	32	8	20	34.0	14-15
PACIFIC SLOPE DRAINAGE California Coast					
Sacramento: Moulton Weir (Sutter By-pass), Calif.	76.8	25	26	78.5	26
Colusa Weir (Sutter By-pass), Calif.	61.8	25	28	65.2	26
Tisdale Weir (Sutter By-pass), Calif.	45.5	25	28	48.5	26
Freemont Weir (Yolo By-pass), Calif.	33.5	25	28	36.1	28
Russian: Gurneville, Calif.	29	24	25	30.8	25
Eel: Fernbridge, Calif.	17.5	24	25	19.25	25
Columbia Basin					
Santiam: Jefferson, Oreg.	13	25	27	16.8	26
South Yamhill: Whiteson, Oreg.	38	27	27	39.5	27
Tualatin: Dilley, Oreg.	12	25	27	12.85	26
Willamette: Harrisburg, Oreg.	12	26	27	12.8	26
GRAYS HARBOR AND PUGET SOUND DRAINAGE					
Chehalis: Grand Mound, Wash.	12.5	25	27	13.9	27
Snoqualmie: Carnation, Wash.	51	26	27	51.2	27
Snohomish: Snohomish, Wash.	23	26	27	24.8	27

* Provisional
# Highest stage observed
1/ Continued at end of month
% Tentative

RAWINSONDE DATA

Average monthly values

FEBRUARY 1957

Standard pressure surface (mb)	ALBANY, N. Y. (1009 MB.)						ALBUQUERQUE, N. MEX. (836 MB.)						AMARILLO, TEX. (892 MB.)						ANCHORAGE, ALASKA (1007 MB.)						ANNETTE, ALASKA (1011 MB.)					
					Wind						Wind						Wind						Wind						Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	28	86	- 2.4	77	290	2.5	28	1,619	10.0	45	32	2.9	28	1,099	7.7	61	173	5.2	28	30	- 7.5	70	16	3.7	28	37	0.7	75	119	3.7
1,000	28	159	- 2.2	66	271	4.3	28	117					28	134					28	84			13	5.1	28	121			92	4.3
950	28	570	- 3.0	65	278	9.5	28	562					28	565					28	493	- 5.0	52	14	7.0	28	530	- 1.7	69	139	3.9
900	28	994	- 5.0	66	288	15.0	28	1,019					28	1,016					28	911	- 5.6	50	17	7.8	28	960	- 4.2	70	198	2.7
850	28	1,442	- 5.8	57	291	17.1	28	1,495					28	1,492	8.8	55	205	9.9	28	1,357	- 7.3	52	8	7.0	28	1,408	- 6.9	68	286	1.7
800	28	1,916	- 6.7	52	289	19.4	28	2,000	8.5	42	319	3.9	28	1,992	7.5	52	249	13.6	28	1,827	- 9.4	52	356	5.6	28	1,880	- 8.6	64	289	3.3
750	28	2,424	- 9.0	49	288	23.7	28	2,536	4.6	47	286	9.7	28	2,528	4.9	48	269	17.3	28	2,330	-11.4	48	330	6.4	28	2,379	-10.9	60	314	7.4
700	28	2,949	-11.7	48	284	28.7	28	3,088	.4	51	273	15.0	28	3,081	1.5	45	279	19.4	28	2,850	-14.2	47	305	6.0	28	2,906	-13.5	51	316	11.3
650	28	3,521	-14.2	46	277	34.2	28	3,680	- 3.5	49	271	18.8	28	3,676	- 2.3	41	284	19.6	28	3,414	-17.2	46	280	8.4	28	3,467	-16.7	49	318	15.0
600	28	4,117	-17.5	43	274	40.4	28	4,306	- 7.5	48	273	23.3	28	4,304	- 6.2	38	286	21.2	28	4,004	-20.7	43	285	12.4	28	4,063	-19.6	48	302	16.3
550	27	4,772	-20.6		277	46.4	28	4,976	-11.5	48	276	26.6	27	4,975	-10.7	40	285	25.3	27	4,647	-25.2	43	257	8.5	28	4,706	-23.1	46	320	20.0
500	27	5,467	-24.7		276	51.7	28	5,703	-15.6	46	280	30.5	27	5,702	-15.7	43	285	27.4	27	5,330	-29.8		277	10.7	28	5,396	-27.7	44	317	22.1
450	27	6,236	-29.6		276	58.1	28	6,495	-21.0	43	290	31.9	27	6,493	-21.2	45	282	32.2	27	6,080	-35.1		270	14.4	28	6,154	-33.2	44	330	26.0
400	27	7,057	-35.1		275	63.9	28	7,349	-27.4	40	289	33.0	27	7,347	-27.3	44	276	36.1	27	6,884	-40.4		258	15.9	28	6,963	-38.9		359	17.9
350	27	7,975	-41.4		272	72.1	28	8,294	-34.7		296	32.2	27	8,291	-35.0		275	39.4	27	7,780	-46.2		264	20.0	28	7,865	-45.2			
300	27	9,004	-48.6		270	70.3	28	9,349	-43.2		297	40.2	27	9,345	-43.4		273	45.3	27	8,790	-51.6		264	25.3	28	8,876	-52.1			
250	26	10,181	-55.5		267	72.6	28	10,552	-51.1				27	10,547	-51.5		274	55.4	27	9,958	-55.9		268	25.6	28	10,038	-57.4			
200	25	11,589	-57.0		274	63.1	28	11,975	-57.7				27	11,970	-57.7		274	62.9	27	11,374	-55.5		273	27.2	28	11,440	-57.6			
175	23	12,432	-56.2		276	66.8	28	12,811	-59.8				27	12,806	-60.0		277	62.0	27	12,226	-53.9		281	23.9	28	12,284	-56.0			
150	23	13,409	-56.6		273	65.1	28	13,767	-61.8				27	13,763	-61.2		277	60.2	27	13,217	-53.1		289	31.1	28	13,263	-55.9			
125	23	14,561	-58.2		273	56.9	28	14,887	-64.3				27	14,886	-63.5		278	56.9	26	14,378	-53.9				28	14,417	-57.2			
100	22	15,956	-60.3		270	44.7	27	16,233	-67.8				27	16,244	-66.4		276	49.9	26	15,805	-54.9				24	15,832	-58.3			
80	21	17,344	-60.7		263	43.5	25	17,572	-68.6				25	17,591	-67.8		277	41.0	26	17,225	-55.9				23	17,242	-59.5			
60	19	19,133	-59.7		255	32.1	20	19,295	-68.2				21	19,313	-68.1		273	37.7	26	19,057	-55.2				19	19,110	-57.9			
50	17	20,264	-58.6		254	30.5	19	20,386	-68.2				19	20,408	-67.2		271	32.2	25	20,231	-55.5				19	20,257	-58.3			
40	15	21,645	-56.7				14	21,739	-66.0				16	21,742	-66.1		266	33.8	20	21,661	-53.7				16	21,682	-58.4			
30	10	23,488	-52.7				6	23,539	-61.8				15	23,497	-62.3		257	36.7	15	23,506	-52.2				11	23,576	-57.6			
20													14	26,027	-55.9		251	43.5												
15													8	27,915	-49.0															

Standard pressure surface (mb)	ATHENS, GA (990 MB.)						BARROW, ALASKA (1025 MB.)						BARTER IS., ALASKA (1023 MB.)						BETHEL, ALASKA (1015 MB.)						BISMARCK, N. DAK. (958 MB.)					
SURFACE	28	246	10.9	76	38	1.6	28	8	-30.8	66	325	2.7	28	15	-30.0		277	12.6	28	4	-11.0	78	11	6.4	28	505	-10.3	78	144	0.6
1 000	28	162					28	185	-28.3	64	317	5.8	28	175	-27.7	60	277	12.2	28	118			24	7.0	28	167				
950	28	597	11.5	62	205	.6	28	559	-24.5	66	333	8.7	28	548	-25.7	59	281	15.5	28	522	- 8.1	60	39	9.3	28	569			263	1.0
900	28	1,043	9.5	61	229	7.4	28	951	-22.8	66	331	9.9	28	937	-24.7	60	281	17.3	28	936	8.3	55	35	8.7	28	985	- 7.8	62	272	9.1
850	28	1,515	7.3	62	238	12.2	28	1,370	-21.9	63	320	10.3	28	1,354	-24.1	61	288	16.7	28	1,379	- 8.8	51	33	7.6	28	1,430	- 6.8	59	283	15.2
800	28	2,012	5.1	57	253	15.3	28	1,816	-22.0	62	319	12.2	28	1,796	-23.8	59	291	15.7	28	1,848	- 9.4	46	[illegible]	6.2	28	1,903	- 7.6	53	284	20.2
750	28	2,543	2.5	55	266	19.0	28	2,293	-22.6	61	315	14.6	28	2,271	-24.4	56	292	16.9	28	2,350	-11.2	41	344	4.3	28	2,411	-10.1	55	286	23.3
700	28	3,092	- .3	54	269	21.6	28	2,795	-24.0	57	311	15.9	28	2,768	-25.8	57	292	19.8	28	2,871	-13.9	43	358	3.5	28	2,931	-12.5	59	285	29.5
650	28	3,686	- 3.4	50	271	23.5	28	3,334	-26.2	52	316	15.9	28	3,309	-28.2	58	298	21.8	28	3,436	-17.1	46	201	2.7	28	3,504	-14.9	53	285	34.0
600	27	4,308	- 7.0	46	270	28.2	28	3,908	-29.1	48	316	15.0	28	3,874	-30.9	56	302	25.4	28	4,027	-20.2	49	241	6.0	28	4,096	-18.5	48	283	37.9
550	27	4,985	-11.0	40	268	32.8	28	4,529	-32.3	48	311	14.6	28	4,491	-34.2	55	302	28.9	28	4,669	-24.4	46	244	10.5	28	4,744	-22.7	45	284	37.9
500	27	5,707	-15.5	40	270	38.7	28	5,193	-36.0		302	16.7	28	5,149	-38.1		300	30.9	28	5,351	-29.8		255	14.0	28	5,431	-27.4	47	279	39.4
450	26	6,508	-20.8	43	267	43.7	28	5,923	-40.6		289	18.1	28	5,876	-42.0		305	36.5	28	6,102	-35.0		269	18.5	28	6,191	-32.9	45	288	39.0
400	26	7,359	-26.9	45	265	48.0	28	6,711	-45.6		290	15.5	28	6,658	-46.6		304	39.4	28	6,905	-40.4		258	16.7	28	7,000	-38.7		287	45.1
350	26	8,307	-34.4	47	264	51.7	28	7,590	-50.6		294	19.4	28	7,533	-51.5		307	38.5	28	7,804	-45.7		251	21.0	28	7,903	-45.4		285	46.8
300	26	9,365	-42.8		266	57.9	28	8,583	-54.9		326	18.5	25	8,518	-55.2		304	41.6	28	8,818	-50.8		251	22.9	27	8,914	-51.5			
250	25	10,576	-51.5		267	63.7	28	9,740	-56.7		320	16.7	24	9,665	-57.0		305	37.5	28	9,994	-53.6		258	23.9	27	10,080	-57.2			
200	25	12,000	-57.4		268	68.0	28	11,156	-55.3		311	18.8	24	11,078	-55.6		301	32.2	27	11,417	-51.5		281	25.1	26	11,494	-56.2			
175	25	12,841	-58.7		266	70.9	28	12,010	-54.0		310	24.1	23	11,932	-55.5		304	29.7	26	12,276	-50.0		272	20.6	26	12,344	-55.3			
150	24	13,805	-59.4		271	65.9	28	13,000	-53.1		307	22.1	23	12,913	-55.5		309	31.3	25	13,277	-49.9		279	20.6	26	13,324	-56.4			
125	20	14,945	-62.7		270	63.7	28	14,176	-52.4		298	25.4	23	14,075	-55.1		310	32.2	23	14,454	-49.6		284	19.6	25	14,477	-58.4			
100	19	16,305	-66.0		274	55.2	28	15,621	-51.3				21	15,498	-54.9		316	35.7	22	15,908	-50.5		291	18.5	25	15,872	-61.1			
80	14	17,634	-66.9		277	39.8	27	17,067	-49.9				18	16,964	-52.1		324	36.1	19	17,379	-51.0		298	19.4	25	17,250	-63.0			
60	11	19,370	-66.0		272	24.7	27	18,954	-48.3				16	18,847	-47.5		334	30.7	14	19,232	-50.1				24	19,015	-63.9			
50	8	20,485	-65.0				24	20,179	-46.8				16	20,059	-44.6		342	34.4	10	20,408	-49.3				22	20,155	-62.8			
40	8	21,852	-62.7				23	21,671	-46.0				15	21,569	-42.8		352	33.6							20	21,538	-61.3			
30	6	23,626	-60.3				18	23,547	-47.6				15	23,513	-41.7		7	34.6							16	23,351	-56.8			
20													11	26,311	-39.8															

Standard pressure surface (mb)	BOISE, IDAHO (917 MB.)						BROWNSVILLE, TEX. (1015 MB.)						BUFFALO, N. Y. (997 MB.)						BURRWOOD, LA. (1017 MB.)						CARIBOU, ME. (993 MB.)					
SURFACE	28	868	0.7	83	159	2.5	28	7	19.7	89	112	6.8	28	182	- 2.2	85	242	3.5	26	3	17.2	91	114	1.9	28	191	- 8.3	75	299	1.7
1,000	28	168					28	135	19.6	85	116	8.5	28	160			217	2.3	26	151	18.1	78	120	3.1	28	136			294	4.3
950	28	590					28	581	18.3	73	135	9.5	28	572	- 2.8	73	242	10.3	26	589	15.7	72	197	3.3	28	539	- 8.8	71	303	9.3
900	28	1,022	2.9	71	152	2.1	28	1,039	16.6	61	156	8.5	28	995	- 4.6	66	254	12.8	26	1,047	13.6	67	207	5.6	28	952	-10.1	75	300	11.7
850	28	1,485	1.4	65	202	3.7	28	1,524	14.1	54	186	6.0	28	1,444	- 5.5	60	261	16.9	26	1,526	11.1	61	241	6.8	28	1,391	-11.1	72	299	15.2
800	28	1,971	- .3	62	239	7.4	28	2,034	11.7	49	234	4.5	28	1,918	- 7.0	56	270	18.8	26	2,030	8.6	56	243	9.5	28	1,856	-12.8	66	303	18.5
750	28	2,488	- 3.1	57	260	12.4	28	2,579	9.0	39	279	6.4	28	2,426	- 9.1	55	271	22.1	25	2,564	6.1	44	257	10.7	28	2,352	-14.5	63	299	22.0
700	28	3,028	- 6.6	59	263	16.7	28	3,140	5.8	35	280	10.3	28	2,951	-11.8	55	274	25.1	25	3,123	3.4	39	264	10.9	28	2,867	-16.8	58	295	25.1
650	28	3,604	-10.0	52	266	18.6	28	3,749	2.2	32	260	10.7	28	3,522	-14.8	55	271	29.3	25	3,725	.3		267	15.0	28	3,426	-19.4	56	288	29.1
600	28	4,216	-14.0	51	267	21.8	28	4,384	- 1.7		262	12.0	28	4,117	-18.0	52	272	33.6	25	4,357	- 3.4		263	17.9	28	4,011	-22.8	52	285	31.5
550	28	4,871	-18.5	50	268	26.0	28	5,071	- 6.0		272	13.6	28	4,767	-21.5	43	273	40.0	25	5,040	- 7.7		266	21.0	28	4,649	-26.4	49	285	35.4
500	28	5,575	-23.4	47	269	27.0	28	5,811	-10.9		278	16.7	28	5,458	-26.1		270	45.8	25	5,773	-12.8		267	24.1	28	5,327	-30.8	49	283	38.1
450	28	6,345	-28.9	43	267	28.2	28	6,617	-16.8		261	15.5	28	6,222	-31.3		269	52.3	25	6,576	-18.7		271	27.0	28	6,076	-35.9	48	280	41.2
400	28	7,169	-35.1		268	31.5	28	7,485	-23.6		274	11.8	28	7,037	-37.0		268	58.7	25	7,434	-25.0		276	28.6	28	6,876	-41.2		272	46.0
350	28	8,085	-41.8		262	36.1	28	8,445	-31.1		291	7.4	28	7,950	-43.0		266	64.1	25	8,390	-32.5		272	29.1	28	7,772	-46.8		278	55.2
300	28	9,112	-49.1		270	32.6	28	9,518	-39.1		262	9.1	28	8,974	-49.6		269	67.6	25	9,459	-40.3		276	25.6	28	8,781	-51.9		275	62.0
250	28	10,287	-55.3		281	35.2	28	10,741	-47.7		260	9.7	28	10,152	-55.4		270	67.2	25	10,678	-48.5		276	24.3	28	9,951	-55.0		275	67.2
200	26	11,693	-55.2				28	12,184	-55.8		247	21.6	28	11,568	-56.2		270	66.0	25	12,120	-55.6		269	38.1	28	11,376	-54.4		275	67.4
175	25	12,547	-54.6				28	13,025	-59.2		248	29.7	28	12,418	-55.6		269	62.4	24	12,960	-58.9		266	35.5	28	12,232	-54.1		275	67.4
150	25	13,528	-56.2				28	13,981	-63.0		248	33.4	27	13,392	-56.6		270	58.7	24	13,920	-62.0		261	37.9	28	13,218	-55.0		274	65.9
125	24	14,676	-58.5				25	15,090	-67.7		246	36.1	27	14,544	-58.5		267	59.1	24	15,035	-66.0		259	38.7	27	14,380	-56.0		272	61.8
100	24	16,067	-61.6				22	16,414	-72.0		255	21.2	27	15,939	-60.7		270	54.0	23	16,371	-69.5				26	15,800	-56.7		269	57.9
80	23	17,444	-63.6				18	17,722	-73.6				25	17,326	-60.9		268	47.8	22	17,694	-70.6				24	17,227	-56.1		262	42.5
60	21	19,205	-65.1				18	19,403	-71.8				21	19,110	-60.7		264	33.8	19	19,404	-68.3				20	19,062	-55.1		251	34.8
50	20	20,312	-66.0				17	20,480	-68.8				16	20,251	-59.2		259	22.9	19	20,504	-65.9				17	20,226	-54.7		257	31.1
40	17	21,690	-65.3				15	21,812	-66.7				13	21,656	-56.1				19	21,861	-64.9				13	21,632	-52.1		239	22.5
30	13	23,441	-62.4				12	23,572	-63.8				11	23,505	-53.9				15	23,621	-62.2				7	23,439	-50.6			
20													6	26,151	-50.9				12	26,141	-57.1									

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

RAWINSONDE DATA

Average monthly values

FEBRUARY 1957

CHARLESTON, S. C. (1018 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	28	13	11.7	83	115	1.6
1,000--	28	166	13.8	72	115	3.3
950----	28	605	13.2	61	217	6.4
900----	28	1,053	11.2	60	253	10.1
850----	28	1,529	9.1	55	261	13.6
800----	28	2,029	6.3	50	264	16.3
750----	28	2,562	3.4	48	261	18.8
700----	28	3,113	.6	45	265	20.8
650----	28	3,714	- 2.1	41	268	22.0
600----	28	4,338	- 5.4	36	271	23.5
550----	28	5,021	- 9.6		264	28.2
500----	28	5,745	-14.3		265	31.3
450----	28	6,546	-19.8		267	32.1
400----	28	7,400	-26.3		272	36.1
350----	28	8,351	-33.9		275	36.7
300----	28	9,413	-42.3		275	38.9
250----	28	10,620	-51.4		278	48.4
200----	28	12,045	-57.8		273	45.6
175----	28	12,883	-59.2			
150----	28	13,846	-60.3			
125----	28	14,973	-63.9			
100----	27	16,328	-67.2			
80-----	25	17,665	-68.7			
60-----	23	19,392	-66.8			
50-----	21	20,492	-64.5			
40-----	21	21,856	-63.8			
30-----	18	23,636	-61.1			
20-----	5	26,145	-58.0			

COLD BAY, ALASKA (1007 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	28	29	0.8	82	72	1.2
1,000--	28	83			148	8.0
950----	28	498	- 2.2	68	335	2.7
900----	28	921	- 3.4	60	316	2.5
850----	28	1,371	- 5.2	55	235	3.9
800----	28	1,846	- 6.7	54	203	5.2
750----	28	2,356	- 8.2	50	218	7.2
700----	28	2,881	-10.7	46	219	11.7
650----	28	3,454	-13.9	43	226	16.7
600----	28	4,051	-17.6		219	12.8
550----	28	4,702	-21.7		225	18.5
500----	27	5,393	-26.4		241	21.4
450----	27	6,156	-31.4		238	19.0
400----	27	6,970	-37.2		237	14.4
350----	27	7,879	-43.6		245	16.1
300----	27	8,900	-49.6		233	15.9
250----	26	10,082	-53.5		213	7.6
200----	25	11,507	-51.8		241	8.4
175----	25	12,375	-50.1		259	10.1
150----	25	13,379	-50.5		270	13.0
125----	25	14,546	-50.8			
100----	25	16,013	-52.5			
80-----	23	17,449	-52.6			
60-----	22	19,315	-53.3			
50-----	17	20,505	-52.6			
40-----	12	21,981	-53.3			
30-----	6	23,844	-55.0			
20-----						

COLUMBIA, MO. (991 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	28	238	4.5	74	55	1.7
1,000--	28	163				
950----	28	585	4.1	66	189	1.7
900----	28	1,021	3.5	61	253	6.4
850----	28	1,484	1.9	58	270	10.1
800----	28	1,972	.4	52	280	13.8
750----	28	2,493	- 1.9	50	281	17.3
700----	28	3,033	- 4.8	49	278	22.1
650----	28	3,617	- 7.4	45	278	26.8
600----	28	4,233	-10.3	39	281	35.7
550----	28	4,898	-14.1		278	38.9
500----	28	5,615	-18.9		277	40.2
450----	28	6,397	-24.4		280	49.7
400----	28	7,239	-30.5	43	275	56.5
350----	28	8,173	-37.6		273	62.0
300----	28	9,217	-45.9		273	73.6
250----	28	10,406	-54.7		271	73.2
200----	28	11,812	-58.9		273	80.4
175----	28	12,650	-58.3		272	77.7
150----	28	13,620	-58.6		275	68.2
125----	26	14,758	-60.8		275	62.4
100----	26	16,134	-63.9		278	54.4
80-----	24	17,499	-65.2		278	44.3
60-----	22	19,244	-65.0		273	37.9
50-----	21	20,360	-63.4		268	33.8
40-----	18	21,723	-62.3		258	31.9
30-----	17	23,517	-58.4		247	30.1
20-----	6	26,112	-51.2			

DAYTON, OHIO (985 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	28	297	1.5	74	34	1.0
1,000--	28	171				
950----	28	586	1.0	70	264	2.1
900----	28	1,019	.2	60	267	7.4
850----	28	1,476	- .9	54	268	11.8
800----	28	1,958	- 2.7	54	273	16.5
750----	28	2,473	- 4.8	53	275	22.1
700----	28	3,008	- 7.4	50	273	26.4
650----	28	3,589	-10.2	49	273	30.9
600----	28	4,195	-13.1		273	37.1
550----	28	4,855	-17.0		275	42.5
500----	28	5,562	-21.2		276	47.6
450----	28	6,340	-26.5		273	55.6
400----	28	7,173	-32.0		272	63.3
350----	28	8,101	-39.0		272	68.6
300----	28	9,138	-46.7		273	75.8
250----	28	10,325	-54.1		272	82.8
200----	28	11,739	-57.9		272	88.0
175----	28	12,581	-57.2		273	82.6
150----	27	13,553	-57.8		276	74.4
125----	27	14,698	-59.6		275	66.8
100----	27	16,084	-61.9		270	63.7
80-----	27	17,458	-63.2		267	58.9
60-----	26	19,220	-63.7		263	42.9
50-----	24	20,345	-62.1		262	34.8
40-----	22	21,733	-59.8		254	25.4
30-----	20	23,533	-56.8		242	24.9
20-----	8	26,130	-52.5			

DENVER, COLO. (836 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	28	1,608	2.8	58	65	0.8
1,000--	28	125				
950----	28	556				
900----	28	1,005				
850----	28	1,475				
800----	28	1,972	5.4	40	249	1.7
750----	28	2,499	2.3	37	268	8.9
700----	28	3,049	- 1.5	39	270	14.4
650----	28	3,636	- 5.8	38	283	18.3
600----	28	4,257	-10.1	38	287	25.8
550----	28	4,923	-14.4	36	286	30.9
500----	28	5,637	-19.6	37	283	37.1
450----	28	6,418	-24.9	36	280	43.9
400----	28	7,257	-30.9	39	280	51.3
350----	28	8,190	-37.9		279	59.4
300----	28	9,232	-45.8		275	74.0
250----	28	10,420	-54.7		277	81.8
200----	27	11,830	-58.8		282	78.1
175----	27	12,665	-59.4		278	77.3
150----	25	13,634	-59.8		277	75.0
125----	22	14,765	-61.8		277	63.7
100----	21	16,133	-64.5		276	61.6
80-----	19	17,487	-64.7		273	48.0
60-----	17	19,235	-66.0		275	44.9
50-----	16	20,343	-65.6		273	38.7
40-----	11	21,698	-64.1			
30-----	10	23,454	-62.5			
20-----						

DODGE CITY, KANS. (926 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	28	792	3.9	63	126	3.7
1,000--	28	157				
950----	28	583				
900----	28	1,023	5.5	55	109	3.3
850----	28	1,491	5.8	48	241	2.9
800----	28	1,985	4.4	42	284	8.0
750----	28	2,515	2.2	39	288	11.5
700----	28	3,062	- 1.0	37	285	15.2
650----	28	3,653	- 4.6	30	283	18.6
600----	28	4,276	- 8.5		284	22.9
550----	28	4,946	-13.0		289	26.8
500----	28	5,665	-17.7		288	31.9
450----	28	6,451	-23.2		285	38.9
400----	28	7,297	-29.2	40	289	39.0
350----	28	8,236	-36.3		292	40.4
300----	28	9,286	-44.6		279	40.0
250----	28	10,479	-53.8		273	41.2
200----	27	11,890	-58.5			
175----	27	12,724	-60.2			
150----	26	13,683	-59.7			
125----	26	14,816	-61.7			
100----	24	16,177	-64.7			
80-----	22	17,534	-66.0			
60-----	18	19,278	-66.7			
50-----	14	20,373	-65.3			
40-----	11	21,760	-63.3			
30-----	9	23,522	-60.3			

EL PASO, TEX. (881 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	28	1,195	15.3	41	275	2.1
1,000--	28	107				
950----	28	559				
900----	28	1,019				
850----	28	1,504	15.6	37	273	3.1
800----	28	2,014	11.8	41	261	7.8
750----	28	2,555	7.9	44	265	11.7
700----	28	3,116	4.1	41	264	15.3
650----	28	3,721	.1	43	271	18.5
600----	28	4,351	- 4.1	41	274	17.3
550----	28	5,031	- 8.5		286	18.6
500----	28	5,764	-13.2	36	294	22.7
450----	28	6,565	-18.8	37	282	24.9
400----	28	7,425	-25.1		283	26.8
350----	28	8,380	-32.4		273	28.6
300----	28	9,449	-40.2			
250----	27	10,675	-49.1			
200----	26	12,103	-57.1			
175----	26	12,941	-59.8			
150----	26	13,898	-61.9			
125----	26	15,018	-64.6			
100----	24	16,378	-69.1			
80-----	19	17,703	-70.7			
60-----	12	19,417	-68.5			
50-----	10	20,517	-65.6			
40-----	8	21,882	-64.7			
30-----	5	23,655	-61.6			

ELY, NEV. (808 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	28	1,908	1.5	70	184	5.8
1,000--	28	153				
950----	28	588				
900----	28	1,032				
850----	28	1,498				
800----	28	1,992	3.5	62	183	5.2
750----	28	2,520	1.5	55	207	5.8
700----	28	3,066	- 2.2	53	250	9.7
650----	28	3,655	- 6.2	56	272	13.8
600----	28	4,272	-10.2	53	270	18.6
550----	28	4,942	-14.6	51	271	24.5
500----	28	5,653	-19.0	45	270	29.5
450----	28	6,441	-24.0	45	275	31.9
400----	28	7,278	-30.4	49	268	35.4
350----	28	8,212	-37.5		271	36.5
300----	28	9,257	-45.4		265	40.8
250----	28	10,449	-52.9			
200----	27	11,866	-57.1			
175----	27	12,709	-57.0			
150----	25	13,672	-58.1			
125----	25	14,810	-61.2			
100----	24	16,177	-64.1			
80-----	23	17,537	-64.9			
60-----	16	19,301	-65.8			
50-----	15	20,404	-65.9			
40-----	10	21,784	-64.4			
30-----	6	23,566	-61.4			

FAIRBANKS, ALASKA (1001 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	28	135	-15.9	69	15	2.5
1,000--	28	142			292	2.3
950----	28	535	-13.8	60	299	2.1
900----	28	941	-13.9	61	286	2.5
850----	28	1,374	-13.7	57	281	6.6
800----	28	1,835	-14.4	56	276	11.7
750----	28	2,326	-15.7	56	289	15.2
700----	28	2,840	-18.0	51	296	14.6
650----	28	3,396	-20.8	52	310	14.4
600----	28	3,979	-24.5	53	311	16.3
550----	27	4,620	-28.3	52	310	19.4
500----	27	5,294	-32.7		295	18.5
450----	27	6,039	-37.8		297	20.2
400----	27	6,831	-42.9		315	22.1
350----	27	7,719	-48.5		316	22.1
300----	27	8,721	-53.6		311	24.5
250----	27	9,882	-57.0		295	19.8
200----	27	11,291	-56.7		313	25.3
175----	27	12,139	-55.3			
150----	24	13,131	-55.1			
125----	23	14,283	-54.8			
100----	20	15,696	-55.7			
80-----	20	17,115	-55.7			
60-----	17	18,946	-51.9			
50-----	16	20,152	-49.5			
40-----	13	21,633	-46.8			
30-----						

FLINT, MICH. (992 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	28	234	- 2.3	74	221	2.1
1,000--	28	168				
950----	28	574	- 3.1	73	247	6.8
900----	28	1,002	- 3.8	64	265	10.1
850----	28	1,452	- 5.1	59	279	12.6
800----	28	1,927	- 6.6	52	281	16.9
750----	28	2,436	- 8.4	52	278	21.2
700----	28	2,963	-10.7	51	281	25.3
650----	28	3,533	-13.7	50	279	29.9
600----	28	4,133	-17.1	47	278	34.4
550----	28	4,780	-20.9		278	40.2
500----	28	5,478	-25.5		274	46.0
450----	28	6,236	-31.0		273	54.4
400----	28	7,058	-36.6		274	62.0
350----	28	7,971	-42.4		275	71.5
300----	28	8,998	-49.0		275	83.1
250----	28	10,176	-55.0		275	86.6
200----	28	11,593	-56.4		275	77.9
175----	28	12,441	-55.7		276	72.1
150----	26	13,414	-56.0		276	62.5
125----	24	14,564	-58.8		276	62.0
100----	24	15,956	-61.2		273	59.4
80-----	22	17,336	-62.1		274	53.4
60-----	21	19,124	-60.8		270	37.1
50-----	20	20,268	-59.4		264	34.2
40-----	16	21,658	-57.3			
30-----	16	23,493	-53.6			

FORT WORTH, TEX. (997 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	28	178	12.6	78	36	3.7
1,000--	28	152			29	5.1
950----	28	586	12.0	73	142	3.5
900----	28	1,035	11.0	72	194	5.4
850----	28	1,511	9.6	69	219	7.8
800----	28	2,013	7.5	63	253	9.9
750----	28	2,549	5.2	56	269	13.4
700----	28	3,103	2.2	50	272	16.5
650----	28	3,701	- 1.3	45	274	21.4
600----	28	4,330	- 5.3	42	277	23.7
550----	28	5,009	- 9.9	40	277	26.6
500----	28	5,737	-14.3		278	28.9
450----	28	6,535	-19.9	37	278	34.2
400----	28	7,389	-26.4		277	38.9
350----	28	8,338	-33.9		276	41.4
300----	27	9,394	-42.0		277	45.3
250----	27	10,604	-50.4		279	52.3
200----	27	12,036	-57.3		277	57.7
175----	26	12,874	-59.7		273	58.3
150----	26	13,833	-61.0		273	58.1
125----	24	14,951	-63.7		270	54.8
100----	21	16,312	-67.4		270	49.0
80-----	20	17,652	-69.1		270	37.7
60-----	18	19,381	-67.6		264	26.4
50-----	16	20,493	-65.3		248	20.8
40-----	9	21,850	-64.7			
30-----	7	23,641	-61.2			
20-----	5	26,214	-55.7			

GLASGOW, MONT. (934 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	28	695	-10.5	82	17	1.6
1,000--	28	168				
950----	28	568				
900----	28	985	- 7.8	67	300	9.1
850----	28	1,431	- 6.8	60	296	17.1
800----	28	1,903	- 8.2	56	298	20.6
750----	28	2,408	-10.3	58	292	24.1
700----	28	2,931	-12.7	60	289	28.7
650----	28	3,496	-15.7	58	284	32.2
600----	28	4,092	-19.2	58	285	36.3
550----	28	4,736	-23.2	54	285	41.2
500----	28	5,425	-28.0	52	285	40.0
450----	28	6,180	-33.3	49	279	44.9
400----	28	6,990	-39.1		276	48.8
350----	28	7,891	-45.6		276	46.2
300----	28	8,901	-52.0		277	49.0
250----	27	10,066	-57.2			
200----	26	11,468	-56.4			
175----	26	12,315	-56.2			
150----	26	13,292	-56.6			
125----	24	14,435	-58.0			
100----	22	15,836	-60.7			
80-----	18	17,238	-61.3			
60-----	13	19,049	-62.8			
50-----	11	20,225	-61.8			
40-----	9	21,644	-60.4			
30-----	6	23,534	-55.2			
20-----						

GRAND JUNCTION, COLO. (854 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	28	1,474	- 0.9	83	358	1.0
1,000--	28	189				
950----	28	611				
900----	28	1,050				
850----	28	1,508			344	1.0
800----	28	1,997	2.3	63	260	.6
750----	28	2,524	.5	60	213	5.2
700----	28	3,068	- 2.7	54	242	10.5
650----	28	3,653	- 6.5	48	262	15.0
600----	28	4,272	-10.5	45	273	19.2
550----	28	4,936	-14.8	44	278	23.5
500----	28	5,651	-19.3	45	278	29.9
450----	28	6,433	-24.5	44	280	36.1
400----	28	7,274	-30.5	46	278	40.8
350----	28	8,209	-37.2	48	276	45.6
300----	28	9,255	-45.2		282	39.2
250----	28	10,447	-53.2		278	43.3
200----	28	11,863	-58.2			
175----	28	12,703	-58.1			
150----	27	13,672	-59.3			
125----	25	14,811	-61.2			
100----	25	16,182	-64.8			
80-----	23	17,533	-66.4			
60-----	18	19,271	-67.5			
50-----	15	20,366	-67.1			
40-----	9	21,760	-64.4			
30-----	5	23,593	-60.1			
20-----						

GREAT FALLS, MONT. (886 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	28	1,123	- 6.0	66	244	7.8
1,000--	28	160				
950----	28	570				
900----	28	995				
850----	28	1,446	- 4.9	52	245	14.2
800----	28	1,921	- 6.5	55	256	19.8
750----	28	2,428	- 8.4	56	269	25.6
700----	28	2,956	-10.6	56	277	28.6
650----	28	3,528	-13.7	53	283	35.2
600----	28	4,126	-17.5	51	286	39.2
550----	28	4,776	-21.8	47	285	43.1
500----	28	5,466	-26.3	43	285	46.4
450----	28	6,224	-31.8	43	284	46.2
400----	28	7,040	-38.1		288	48.0
350----	28	7,944	-45.1		287	50.7
300----	28	8,957	-51.9		284	57.7
250----	28	10,120	-57.6		282	61.8
200----	28	11,528	-56.8		282	58.5
175----	28	12,373	-56.9		281	57.5
150----	28	13,347	-57.3		281	56.1
125----	28	14,497	-58.2		282	58.5
100----	27	15,889	-60.8		284	51.3
80-----	25	17,270	-62.6		288	43.9
60-----	22	19,072	-64.3		289	37.5
50-----	21	20,191	-64.4		291	35.9
40-----	14	21,626	-61.9		332	17.7
30-----	11	23,438	-56.7			
20-----	9	26,012	-50.8			

GREEN BAY, WIS. (993 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	28	210	- 5.7	76	283	4.3
1,000--	28	157				
950----	28	563	- 5.6	64	267	8.5
900----	28	983	- 6.2	60	275	11.1
850----	28	1,430	- 6.2	56	282	12.2
800----	28	1,903	- 7.5	58	284	16.3
750----	28	2,410	- 9.2	52	283	21.2
700----	28	2,935	-12.0	50	283	23.5
650----	28	3,506	-15.2	49	288	26.0
600----	28	4,099	-18.4	45	288	30.5
550----	28	4,748	-22.4	42	293	35.0
500----	28	5,436	-27.0	41	293	34.2
450----	28	6,195	-32.1		288	37.7
400----	28	7,007	-37.9		287	37.5
350----	28	7,916	-43.4			
300----	28	8,939	-49.3			
250----	28	10,117	-54.6			
200----	28	11,537	-55.7			
175----	28	12,389	-54.5			
150----	28	13,373	-55.4			
125----	27	14,524	-57.4			
100----	26	15,921	-59.4			
80-----	24	17,306	-61.0			
60-----	21	19,094	-60.6			
50-----	19	20,230	-58.8			
40-----	19	21,636	-56.5			
30-----	11	23,504	-55.3			
20-----						

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

RAWINSONDE DATA

Average monthly values

FEBRUARY 1957

GREENSBORO, N. C.
(988 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	28	273	7.0	78	37	1.2
1,000	28	176				
950	28	601	7.9	62	269	2.3
900	28	1,045	6.2	63	264	8.4
850	28	1,512	4.4	60	269	11.7
800	28	2,004	2.7	55	269	15.9
750	28	2,531	.2	53	270	20.4
700	28	3,075	- 2.5	54	268	24.1
650	28	3,664	- 5.1	54	270	25.6
600	28	4,286	- 8.5	52	271	29.5
550	28	4,958	-12.5	46	275	33.6
500	28	5,677	-17.3	44	273	36.5
450	28	6,469	-22.4	44	270	41.2
400	28	7,314	-28.4	44	268	44.3
350	28	8,256	-35.5	44	269	42.7
300	28	9,309	-43.5			
250	28	10,508	-51.9			
200	28	11,932	-57.0			
175	27	12,782	-58.2			
150	27	13,750	-58.8			
125	27	14,886	-61.4			
100	26	16,255	-64.4			
80	26	17,611	-65.9			
60	24	19,360	-64.1			
50	20	20,469	-63.3			
40	19	21,850	-61.1			
30	17	23,650	-58.8			
20	5	26,226	-57.2			

HATTERAS, N. C.
(1020 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	28	3	9.9	87	353	3.5
1,000	28	165	11.1	77	279	2.9
950	28	598	10.0	73	252	10.3
900	28	1,042	8.3	64	253	14.8
850	28	1,512	5.9	54	256	19.4
800	28	2,006	3.8	50	262	22.5
750	28	2,534	1.2	49	265	27.4
700	28	3,080	- 1.6	46	264	31.1
650	28	3,671	- 4.3	45	259	33.4
600	28	4,294	- 7.8	44	261	37.5
550	28	4,965	-11.8	41	265	44.1
500	28	5,689	-16.3	37	265	48.8
450	28	6,480	-21.6	38	264	56.9
400	28	7,330	-27.9		265	58.3
350	28	8,274	-34.8		268	63.3
300	28	9,331	-43.1		267	67.4
250	28	10,533	-51.8		269	68.0
200	28	11,958	-57.2		267	67.2
175	26	12,786	-57.2		273	69.5
150	26	13,757	-58.2		271	71.9
125	25	14,897	-60.8		272	63.1
100	22	16,276	-64.3		274	55.6
80	21	17,627	-66.0			
60	19	19,373	-64.0			
50	18	20,494	-62.7			
40	17	21,871	-61.1			
30	15	23,672	-59.1			
20	9	26,270	-54.5			

HILO, T. H
(1011 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	28	9	22.9	68	18	5.6
1,000	28	110	21.7	70	21	6.0
950	28	552	17.9	77	42	7.0
900	28	1,014	14.4	83	53	6.0
850	28	1,495	11.3	83	64	4.3
800	28	1,999	8.4	84	2	.8
750	28	2,536	6.6	63	298	4.1
700	28	3,095	4.2	40	283	7.6
650	28	3,699	1.5	33	287	11.5
600	28	4,335	- 2.2		277	15.7
550	28	5,024	- 5.3		275	21.0
500	28	5,764	- 9.3		281	27.6
450	28	6,580	-14.1		292	29.5
400	28	7,457	-19.2		290	36.1
350	28	8,436	-25.8		296	43.7
300	28	9,535	-32.9		284	49.7
250	28	10,793	-41.5		288	59.8
200	27	12,269	-52.2		294	68.6
175	27	13,119	-58.2			
150	25	14,074	-64.4			
125	22	15,173	-70.0			
100	15	16,503	-76.0			
80	14	17,781	-76.7			
60	10	19,475	-68.2			
50	10	20,576	-65.4			
40	6	21,933	-63.3			
30						
20						

INTERNAT. FALLS, MINN.
(975 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	28	360	-14.2	59	242	3.3
1,000	28	161				
950	28	554	-13.2	59	264	6.2
900	28	964	-13.4	60	275	10.7
850	28	1,399	-12.2	57	287	14.6
800	28	1,863	-12.2	54	293	20.6
750	28	2,360	-13.5	53	296	24.1
700	28	2,877	-15.7	55	298	28.4
650	28	3,440	-18.6	52	295	31.9
600	28	4,025	-21.6	47	294	35.2
550	28	4,666	-25.5	47	293	39.4
500	28	5,346	-30.0	48	295	42.5
450	28	6,098	-35.2		294	45.8
400	28	6,899	-40.6		294	50.1
350	28	7,795	-46.7		294	52.6
300	27	8,799	-53.0		293	56.5
250	27	9,961	-56.7		291	59.4
200	21	11,399	-56.1		292	66.4
175	19	12,262	-55.7		294	70.7
150	15	13,237	-56.5		293	73.8
125	11	14,400	-57.8		293	65.5
100	10	15,799	-59.3		290	59.8
80	8	17,191	-59.6			
60	7	19,010	-58.9			
50	7	20,157	-57.1			
40	7	21,570	-55.9			
30						
20						

JACKSON, MISS.
(1006 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	28	101	13.4	78	65	1.7
1,000	28	155	14.3	69	79	3.3
950	28	594	12.7	66	139	3.9
900	28	1,041	10.9	67	197	5.8
850	28	1,516	9.0	67	232	8.7
800	28	2,016	6.7	65	247	12.8
750	28	2,550	3.9	59	256	15.2
700	28	3,102	1.3	54	260	18.1
650	28	3,700	- 1.9	52	265	21.0
600	28	4,328	- 5.5	46	266	23.7
550	27	5,004	- 9.6		271	24.9
500	27	5,733	-14.4		272	28.2
450	27	6,531	-20.0		271	30.9
400	27	7,386	-26.4		272	37.7
350	27	8,335	-33.8		268	38.1
300	27	9,396	-41.7		271	43.3
250	27	10,609	-49.8		272	48.6
200	27	12,042	-56.4		272	56.7
175	27	12,882	-59.4		273	58.9
150	27	13,843	-60.7		271	57.9
125	27	14,969	-63.7		270	54.8
100	25	16,317	-68.1		269	42.2
80	25	17,650	-69.1		272	33.6
60	23	19,367	-67.8		267	23.5
50	23	20,467	-65.9		263	18.5
40	21	21,836	-63.6		243	16.1
30	19	23,593	-61.5		245	16.1
20	7	26,158	-55.6			

JACKSONVILLE, FLA.
(1019 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	28	6	15.7	86	89	1.7
1,000	28	168	17.2	74	133	1.7
950	28	605	15.5	64	201	4.3
900	28	1,062	13.1	58	225	5.1
850	28	1,540	10.2	58	242	8.0
800	28	2,042	7.3	57	250	11.3
750	28	2,578	4.8	50	256	12.0
700	28	3,131	2.3	40	261	12.4
650	28	3,733	.9		264	17.5
600	28	4,362	- 4.4		264	21.4
550	28	5,038	- 8.6		261	24.1
500	28	5,774	-13.5		261	28.2
450	28	6,573	-18.9		266	29.7
400	28	7,432	-25.4		267	32.8
350	28	8,386	-33.0		268	41.0
300	28	9,451	-41.6		268	42.2
250	28	10,663	-50.5		266	51.5
200	27	12,090	-57.5		271	53.6
175	27	12,929	-59.5		272	56.7
150	27	13,888	-61.5		270	59.1
125	26	14,999	-65.5		270	54.4
100	24	16,340	-69.1		271	47.8
80	24	17,665	-71.0		270	37.1
60	22	19,375	-67.8		266	26.8
50	19	20,474	-65.4		261	21.8
40	17	21,841	-64.5		246	17.1
30	16	23,604	-62.2		223	10.3
20						
15						

KING SALMON, ALASKA
(1011 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	28	15	- 6.9	75	348	4.7
1,000	28	99			359	3.9
950	28	504	- 4.9	56	358	6.0
900	28	927	- 5.3	50	356	5.6
850	28	1,374	- 6.5	49	342	6.4
800	28	1,848	- 7.1	44	311	5.1
750	28	2,354	- 9.5	43	275	6.2
700	28	2,879	-12.3	40	274	8.2
650	28	3,445	-16.0	39	278	10.3
600	28	4,040	-20.0	40	263	12.6
550	28	4,683	-24.1	39	270	17.3
500	28	5,369	-28.8		263	17.3
450	28	6,120	-34.0		260	21.4
400	28	6,930	-39.6		256	22.9
350	28	7,830	-45.5		258	28.7
300	28	8,844	-50.7		255	31.7
250	28	10,018	-54.5		252	26.0
200	27	11,440	-52.8		261	27.0
175	27	12,304	-51.4		267	24.9
150	27	13,303	-51.7		277	25.6
125	26	14,492	-52.5		283	23.9
100	24	15,935	-53.1		290	22.0
80	24	17,368	-53.5		304	21.0
60	23	19,209	-53.5		320	18.5
50	23	20,381	-53.5		329	16.9
40	20	21,803	-53.6		347	24.3
30	16	23,642	-53.5		14	17.5
20	10	26,256	-50.9			
15						

KOTZEBUE, ALASKA
(1022 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	28	5	-18.8	78	4	2.5
1,000	28	166	-17.2	71	352	3.3
950	28	559	-15.1	64	11	4.9
900	28	962	-14.5	60	352	5.1
850	28	1,395	-14.5	55	343	7.0
800	28	1,853	-15.4	53	329	7.2
750	28	2,344	-17.0	50	318	8.0
700	28	2,854	-19.1	50	305	7.8
650	28	3,409	-21.9	51	296	10.3
600	28	3,988	-24.9	48	289	11.7
550	28	4,615	-29.2		286	15.0
500	28	5,291	-33.5		274	17.3
450	27	6,019	-38.6		271	19.2
400	27	6,811	-43.7		268	18.1
350	27	7,697	-48.6		264	19.6
300	26	8,712	-53.1		277	23.1
250	25	9,885	-55.7		280	23.3
200	21	11,307	-53.0		296	23.5
175	19	12,167	-50.9		297	31.7
150	17	13,177	-50.6			
125	14	14,390	-50.5			
100	11	15,837	-50.2			
80	11	17,284	-51.4			
60	9	19,165	-52.4			
50	5	20,349	-51.8			
40	5	21,791	-52.5			
30						
20						
15						

LAKE CHARLES, LA.
(1017 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	28	5	15.7	86	119	0.6
1,000	28	149	15.8	76	121	3.5
950	28	590	14.2	73	146	4.7
900	28	1,041	13.0	66	184	5.2
850	28	1,520	10.9	66	230	6.0
800	28	2,024	8.5	63	242	8.0
750	28	2,561	6.1	55	265	11.7
700	28	3,118	2.9	47	259	14.4
650	28	3,718	.0		271	17.1
600	28	4,352	- 3.6		278	21.6
550	28	5,032	- 7.8		283	23.5
500	28	5,767	-12.6		275	25.3
450	28	6,567	-18.3		281	29.5
400	28	7,431	-25.0		281	33.0
350	28	8,385	-32.4		274	34.0
300	28	9,452	-40.6		276	33.6
250	28	10,669	-48.3		268	37.3
200	28	12,110	-55.8		270	42.5
175	28	12,952	-58.7		272	46.4
150	28	13,912	-61.4		266	54.8
125	28	15,033	-64.7			
100	27	16,378	-68.5			
80	27	17,704	-70.4			
60	23	19,408	-68.4			
50	22	20,506	-66.2			
40	21	21,860	-64.1			
30	18	23,619	-61.6			
20	13	26,155	-56.5			
15	5	28,012	-52.3			

LANDER, WYO.
(826 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	28	1,696	1.0	47	261	6.4
1,000	28	125				
950	28	551				
900	28	996				
850	28	1,460				
800	28	1,951	2.0	39	275	5.4
750	28	2,475	- .6	38	274	11.3
700	28	3,016	- 4.4	37	281	15.9
650	28	3,600	- 8.9	38	285	21.4
600	28	4,210	-12.9	37	287	29.5
550	28	4,868	-17.1		292	29.9
500	28	5,575	-22.2		286	33.6
450	28	6,346	-27.9		289	35.5
400	28	7,175	-34.4		289	41.4
350	28	8,094	-41.2		292	41.8
300	28	9,123	-48.6		297	46.2
250	28	10,301	-55.3			
200	28	11,715	-56.9			
175	28	12,561	-56.5			
150	28	13,537	-57.0			
125	27	14,688	-58.6			
100	27	16,081	-61.1			
80	25	17,464	-62.0			
60	21	19,232	-64.0			
50	18	20,345	-64.5			
40	13	21,717	-64.7			
30	7	23,538	-57.3			
20						
15						

LAS VEGAS, NEV.
(939 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	28	660	14.3	37	254	5.4
1,000	28	121				
950	28	559				
900	28	1,018	14.2	34	223	2.9
850	28	1,497	10.5	38	238	3.9
800	28	1,998	7.0	42	251	5.4
750	28	2,532	3.4	43	250	8.0
700	28	3,082	- .2	41	259	10.7
650	28	3,675	- 3.6	37	267	15.3
600	28	4,300	- 7.5		266	19.4
550	28	4,974	-11.7		262	22.9
500	28	5,696	-16.5		261	28.4
450	28	6,488	-22.0	46	261	34.2
400	28	7,335	-27.9	45	258	39.4
350	27	8,279	-35.2		262	47.8
300	27	9,334	-43.4		264	55.4
250	27	10,537	-51.5		266	66.4
200	27	11,962	-57.5		267	75.0
175	24	12,791	-58.6		267	72.6
150	21	13,758	-60.6		272	65.5
125	18	14,873	-62.9		272	56.7
100	16	16,246	-65.9		272	41.4
80	15	17,587	-67.8		272	37.9
60	15	19,318	-67.5		277	26.4
50	14	20,411	-67.8		269	27.0
40	13	21,755	-67.1		260	22.0
30	10	23,478	-65.9			
20						

LITTLE ROCK, ARK.
(1009 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	27	79	9.7	75	53	3.1
1,000	27	152	10.1	68	68	4.3
950	27	586	9.2	68	70	1.2
900	27	1,027	8.4	65	257	3.5
850	27	1,498	6.8	59	275	7.0
800	27	1,995	5.2	55	279	10.9
750	27	2,534	2.8	53	279	14.4
700	27	3,076	.1	54	278	17.9
650	27	3,674	- 3.0	51	276	19.6
600	27	4,296	- 6.6	50	274	22.1
550	27	4,977	-10.6	48	276	26.8
500	27	5,698	-15.3	48	280	29.9
450	27	6,496	-20.7	46	278	35.5
400	27	7,345	-27.3	47	277	38.7
350	27	8,292	-34.6	45	273	34.2
300	27	9,351	-42.7		273	32.1
250	27	10,558	-51.4		257	35.0
200	27	11,986	-57.7		259	44.3
175	27	12,824	-59.2			
150	25	13,784	-59.8			
125	24	14,912	-62.2			
100	22	16,279	-66.0			
80	20	17,621	-67.2			
60	17	19,359	-67.0			
50	15	20,453	-65.7			
40	12	21,818	-63.5			
30	8	23,596	-58.8			
20	5	26,163	-55.0			

McGRATH, ALASKA
(1004 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	28	103	-15.1	69	334	2.7
1,000	28	139			260	.8
950	28	533	-13.1	64	17	5.8
900	28	941	-11.2	59	26	7.4
850	28	1,380	-10.6	56	11	6.8
800	28	1,846	-11.1	53	350	7.2
750	28	2,341	-13.0	54	315	7.6
700	28	2.864	-15.2	52	305	10.9
650	28	3,421	-18.3	49	290	12.8
600	28	4,013	-21.8	46	286	14.2
550	28	4,646	-26.1	45	277	16.3
500	28	5,330	-30.6		280	18.5
450	28	6,074	-35.7		273	21.6
400	28	6,879	-41.3		258	20.2
350	28	7,772	-47.1		258	19.2
300	28	8,779	-51.7		280	19.8
250	28	9,948	-54.9		274	20.0
200	27	11,385	-54.2		273	24.1
175	26	12,257	-52.5		286	24.1
150	24	13,271	-52.2		291	24.1
125	22	14,457	-52.6		288	20.8
100	22	15,891	-53.7		306	19.0
80	20	17,314	-55.0			
60	15	19,169	-56.7			
50	13	20,338	-56.4			
40	12	21,749	-55.1			
30	5	23,581	-52.8			
20						

MEDFORD, OREG.
(968 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	28	401	7.6	75	205	2.1
1,000	28	134				
950	28	561	9.5	61	191	1.7
900	28	1,005	7.4	58	173	3.7
850	28	1,473	4.1	61	191	7.2
800	28	1,964	1.2	57	210	11.1
750	28	2,487	- 2.1	56	226	13.6
700	28	3,025	- 5.2	48	243	13.8
650	28	3,607	- 8.6	43	250	15.7
600	28	4,219	-12.4	41	263	16.3
550	28	4,878	-16.9	40	269	18.3
500	28	5,587	-21.8		272	19.2
450	28	6,359	-27.5		277	21.0
400	28	7,190	-34.1		282	21.4
350	28	8,110	-40.9		278	26.8
300	28	9,140	-48.3		263	37.7
250	28	10,320	-54.2		264	37.9
200	27	11,747	-55.1			
175	27	12,598	-55.4			
150	27	13,576	-56.7			
125	27	14,724	-59.2			
100	27	16,107	-62.4			
80	26	17,471	-64.4			
60	21	19,231	-65.6			
50	18	20,332	-66.0			
40	16	21,683	-67.3			
30	[illegible]	23,431	-64.8			
20						

MIAMI, FLA.
(1018 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	28	[illegible]	21.9	77	106	3.9
1,000	28	158	20.7	74	99	6.4
950	28	599	17.5	76	104	8.4
900	28	1,061	14.4	76	115	7.0
850	28	1,542	11.4	71	131	4.7
800	28	2,046	8.8	61	181	2.5
750	28	2,585	6.2	49	219	4.1
700	27	3,140	4.0	36	231	5.8
650	27	3,744	.7	33	248	7.4
600	27	4,378	- 2.7		266	8.0
550	27	5,060	- 6.7		264	11.1
500	27	5,800	-11.8		263	13.0
450	27	6,601	-17.6		270	15.5
400	26	7,471	-24.6		274	18.6
350	26	8,428	-31.8		275	22.3
300	26	9,498	-39.9		277	21.8
250	26	10,716	-48.8		273	30.5
200	26	12,154	-56.2		275	35.9
175	26	12,994	-59.0		271	40.8
150	26	13,950	-63.0		272	34.4
125	24	15,054	-67.7		272	27.6
100	21	16,374	-71.5			
80	19	17,680	-72.8			
60	17	19,379	-67.9			
50	16	20,477	-66.1			
40	14	21,833	-65.8			
30	11	23,601	-63.8			
20						

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

RAWINSONDE DATA

Average monthly values

FEBRUARY 1957

Standard pressure surface (mb.)	MIDLAND, TEX. (917 MB.)						MONTGOMERY, ALA. (1011 MB.)						NANTUCKET, MASS. (1018 MB.)						NASHVILLE, TENN. (999 MB.)						N.Y. INT. AP IDLEWILD (1020 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	28	871	12.3	75	93	3.7	28	61	14.7	79	130	0.8	28	14	1.2	79	327	4.9	28	177	8.8	77	76	1.2	28	5	2.3	69	297	2.7
1,000--	28	133					28	157	16.1	62	149	1.6	28	153	1.5	73	310	7.8	28	165			40	3.9	28	165	1.7	68	301	5.4
950----	28	571					28	596	13.8	62	195	6.4	28	566	- .1	67	313	12.0	28	595	8.2	64	207	2.1	28	581	- .3	69	298	8.5
900----	28	1,026	12.5	69	132	5.1	28	1,046	11.3	63	223	8.5	28	997	- 1.8	62	312	12.8	28	1,035	6.1	65	238	5.8	28	1,009	- 1.3	65	296	10.7
850----	28	1,506	12.4	61	204	8.4	28	1,522	9.1	63	238	9.1	28	1,451	- 2.5	56	296	14.2	28	1,503	4.7	60	247	8.0	28	1,464	- 2.1	57	293	14.2
800----	28	2,013	9.9	52	247	10.9	28	2,023	6.7	61	254	13.0	28	1,930	- 3.9	50	288	18.3	28	1,995	2.8	57	256	14.2	28	1,945	- 3.5	51	287	19.2
750----	28	2,552	6.7	47	265	14.0	28	2,556	4.1	54	262	15.3	28	2,441	- 5.6	49	285	21.6	28	2,519	.6	52	270	18.3	28	2,459	5.6	45	282	23.5
700----	28	3,109	3.3	45	273	16.1	28	3,109	1.4	51	261	19.2	28	2,976	- 8.6	46	286	26.0	28	3,067	- 1.7	51	272	21.0	28	2,991	- 8.3	45	278	27.6
650----	28	3,709	- .5	41	280	17.3	28	3,710	- 1.8	49	266	23.1	28	3,550	-11.9	43	285	30.9	28	3,656	- 4.7	50	270	21.8	28	3,570	-11.1	45	276	31.3
600----	27	4,341	- 4.6	37	284	22.0	28	4,335	- 5.2	43	267	25.4	28	4,156	-15.0		276	30.9	28	4,280	- 8.2	47	272	24.9	28	4,175	-14.1	41	274	36.9
550----	27	5,020	8.9	35	281	24.1	28	5,016	- 9.2		265	28.9	28	4,810	-18.8		278	32.6	28	4,951	-12.3	45	270	22.5	28	4,834	-18.0		275	42.5
500----	27	5,751	-13.7	34	286	25.3	28	5,744	-13.9		262	32.2	28	5,513	-23.1		275	34.4	28	5,672	-17.1	41	268	27.6	28	5,536	-22.4		274	48.8
450----	27	6,548	-19.4		278	28.0	28	6,545	-19.5		265	37.1	28	6,283	-28.2		282	37.5	28	6,460	-22.5	40	269	30.7	28	6,308	-27.7	43	275	53.4
400----	27	7,408	-25.7		275	30.1	28	7,399	-25.9		266	39.8	28	7,112	-33.8	45			28	7,308	-28.7	41	275	33.8	28	7,138	-33.7		273	56.3
350----	26	8,363	-33.0		272	31.9	27	8,356	-32.9		259	44.9	28	8,033	-40.6				28	8,249	-35.9		269	34.8	28	8,060	-40.4		273	65.1
300----	26	9,427	-41.4		264	35.7	27	9,423	-40.8		260	51.1	28	9,066	-47.5				28	9,302	-44.0		272	35.9	28	9,095	-47.3		273	69.7
250----	26	10,639	-49.6		269	45.5	27	10,638	-49.6		263	55.0	28	10,251	-54.1				28	10,500	-52.5		263	45.5	27	10,289	-55.0		273	76.3
200----	26	12,073	-56.8		268	44.1	27	12,072	-56.9		268	63.3	28	11,667	-56.9				28	11,918	-57.9				26	11,710	-57.4		274	72.1
175----	26	12,912	-59.5				27	12,913	-58.8		268	62.0	28	12,512	-56.8				27	12,754	-58.3				26	12,552	-57.9		274	68.0
150----	25	13,871	-61.1				27	13,877	-59.8		266	63.3	28	13,488	-56.9				27	13,722	-58.7				26	13,525	-57.6		276	64.1
125----	23	14,983	-64.3				27	15,007	-63.1		268	58.7	27	14,637	-58.0				25	14,858	-61.4				25	14,667	-59.4		274	59.1
100----	23	16,334	-67.8				27	16,364	-67.0		268	49.0	26	16,035	-60.2				23	16,237	-65.0				24	16,066	-61.4		273	51.9
80-----	16	17,671	-70.0				26	17,704	-69.0		266	41.6	26	17,422	-61.3				21	17,598	-66.5				23	17,446	-62.2		274	49.7
60-----	13	19,386	-69.4				22	19,423	-67.6		265	29.9	21	19,211	-59.7				16	19,325	-65.6				20	19,231	-61.4		267	33.4
50-----	12	20,473	-67.4				18	20,537	-65.3		261	26.4	18	20,346	-58.1				14	20,442	-64.0				16	20,357	-60.3		262	35.0
40-----	10	21,824	-65.3				15	21,894	-63.5		245	27.8	16	21,747	-56.7				12	21,807	-61.9				13	21,782	-57.6		259	15.7
30-----	9	23,572	-62.2				14	23,666	-60.4		238	21.4	10	23,545	-56.8				7	23,657	-59.2				10	23,607	-56.6		191	9.3
20-----							8	26,226	-56.4																					

Standard pressure surface (mb.)	NOME, ALASKA (1020 MB.)						NORFOLK, VA. (1020 MB.)						NORTH PLATTE, NEBR. (918 MB.)						OAKLAND, CALIF. (1017 MB.)						OKLAHOMA CITY, OKLA. (972 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	28	7	-13.8	73	53	6.2	28	9	6.0	85	1	3.5	28	848	- 0.2	63	136	1.7	28	6	11.8	81	264	2.7	27	391	7.0	84	67	2.5
1,000--	28	159	-11.9	67	53	3.7	28	170	6.7	76	321	3.5	28	153					28	145	11.9	76	249	2.5	27	155				
950----	28	554	-11.5	62	22	3.5	28	600	6.0	73	283	8.0	28	573					28	575	9.8	76	190	3.3	27	577	7.9	70	90	2.9
900----	28	965	-11.8	59	357	4.1	28	1,034	4.8	70	283	12.8	28	1,007	2.9	49	169	2.3	28	1,022	8.3	71	196	4.9	27	1,025	8.1	66	164	3.1
850----	28	1,401	-12.2	59	350	6.0	28	1,499	3.2	64	275	16.1	28	1,470	2.5	45	250	7.2	28	1,493	6.2	63	212	6.6	27	1,496	7.8	53	246	5.4
800----	28	1,864	-13.4	55	348	8.0	28	1,988	1.3	58	270	20.0	28	1,959	1.0	47	275	14.2	28	1,988	3.7	57	232	8.5	27	1,994	5.5	51	263	9.3
750----	28	2,361	-14.6	49	340	8.7	28	2,513	- .9	54	271	24.7	28	2,481	- 1.4	43	289	19.4	28	2,518	.8	50	233	11.3	27	2,530	2.7	54	271	13.2
700----	28	2,874	-16.7	42	323	6.8	28	3,054	- 3.5	54	266	29.1	28	3,022	- 4.8	44	297	24.3	28	3,063	- 1.9	42	237	14.8	27	3,075	.1	46	273	16.7
650----	28	3,434	-19.4	39	296	7.0	28	3,641	- 6.3	49	263	32.1	28	3,604	- 8.3	40	295	31.1	28	3,650	- 5.5	39	246	17.7	27	3,669	- 3.2	42	275	20.0
600----	28	4,018	-22.9	38	284	8.2	27	4,255	-10.1	47	262	34.8	28	4,218	-12.3	37	290	35.2	28	4,273	- 9.5	38	254	19.0	27	4,294	- 6.6		275	23.9
550----	28	4,656	-27.0	38	269	9.5	26	4,921	-14.7	46	267	38.7	28	4,879	-16.6		289	38.7	27	4,939	-13.7	42	258	22.1	27	4,970	-11.2		277	28.0
500----	28	5,331	-31.3		252	12.8	26	5,632	-19.1		267	45.3	28	5,588	-21.2	34	283	41.4	27	5,658	-18.5	43	258	26.4	27	5,692	-16.1	41	274	29.1
450----	28	6,080	-36.2		256	17.5	26	6,418	-24.1		267	53.0	28	6,363	-26.7		287	39.4	27	6,446	-24.1	46	257	34.2	27	6,486	-21.4	45	278	29.9
400----	28	6,877	-41.7		242	17.3	26	7,257	-30.1		266	59.2	28	7,196	-33.0		286	42.5	27	7,286	-30.0	44	259	41.6	27	7,334	-27.8	45	274	35.2
350----	28	7,770	-47.1		236	17.9	26	8,194	-37.2		266	66.8	28	8,121	-39.7		297	39.6	27	8,223	-37.2		257	50.7	27	8,278	-35.0		281	35.4
300----	28	8,778	-51.7		239	21.0	26	9,241	-45.3		268	72.8	28	9,157	-47.1		291	45.1	26	9,271	-45.2		257	56.5	27	9,333	-43.3		272	35.2
250----	28	9,952	-54.0		256	21.2	25	10,424	-53.5		270	80.4	28	10,340	-55.0				26	10,466	-52.7		258	70.1	27	10,535	-51.7		272	39.4
200----	28	11,386	-52.0		268	28.4	24	11,843	-57.5		268	79.3	28	11,750	-57.1				25	11,896	-56.6		258	69.2	27	11,957	-57.7		281	47.2
175----	28	12,254	-50.1		276	31.5	23	12,681	-57.7		270	78.3	28	12,594	-56.9				23	12,738	-57.2		260	64.5	27	12,794	-59.6			
150----	28	13,262	-49.5		279	35.4	23	13,652	-58.5		269	70.7	28	13,567	-57.5				21	13,717	-59.3		264	50.9	26	13,755	-59.6			
125----	28	14,456	-49.4		298	29.1	22	14,798	-61.1		267	65.5	28	14,712	-59.5				19	14,848	-61.1		268	45.5	26	14,887	-62.0			
100----	27	15,931	-49.5		301	25.6	22	16,170	-64.6		270	60.4	26	16,101	-61.9				18	16,225	-64.8		269	37.5	24	16,252	-65.8			
80-----	26	17,386	-49.7				19	17,517	-64.4		268	49.7	24	17,479	-63.6				17	17,579	-66.1		276	31.3	20	17,594	-67.0			
60-----	23	19,269	-49.7				18	19,282	-63.3		264	35.9	21	19,230	-64.6				14	19,328	-66.6		299	20.8	17	19,331	-65.9			
50-----	21	20,453	-48.5				16	20,401	62.1		253	34.8	18	20,366	-63.3				13	20,441	-66.9		310	18.1	16	20,436	-65.3			
40-----	20	21,921	-48.1				12	21,795	-59.9		245	29.9	16	21,751	-60.9				12	21,785	-67.3		306	17.9	15	21,795	-64.1			
30-----	17	23,824	-47.8				9	23,595	-58.1				12	23,540	-59.1				11	23,515	-66.1		312	15.9	12	23,553	-60.1			
20-----	5	26,505	-52.5																11	25,990	-61.9									
15-----																			9	27,859	-54.4									

Standard pressure surface (mb.)	OMAHA, NEBR. (971 MB.)						PEORIA, ILL. (996 MB.)						PHOENIX, ARIZ. (975 MB.)						PITTSBURGH, PA. (978 MB.)						PORTLAND, ME. (1016 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	28	403	- 1.4	71	49	0.6	28	201	1.3	75	350	1.2	28	341	18.1	55	326	0.8	28	353	1.3	78	289	1.9	28	20	- 2.5	72	313	4.9
1,000--	28	167					28	167					28	122					28	171					28	148	- 1.6	61	296	6.8
950----	28	583	- .4	62	299	.4	28	585	.1	69	279	2.9	28	567	18.7	43	317	3.5	28	588	1.0	75	263	4.5	28	559	- 2.8	58	292	13.4
900----	28	1,010	- .2	54	261	6.6	28	1,013	- .1	57	265	7.2	28	1,025	15.8	43	296	4.3	28	1,019	- .3	72	263	11.5	28	983	- 4.7	56	295	15.0
850----	28	1,468	.1	47	271	11.1	28	1,470	- .8	49	271	12.4	28	1,507	12.6	40	275	3.1	28	1,474	- 2.1	62	268	15.3	28	1,431	- 6.2	57	298	16.5
800----	28	1,952	- 1.5	43	278	16.7	28	1,953	- 2.5	45	277	15.3	28	2,013	9.2	38	264	5.2	28	1,954	- 3.9	58	269	19.2	28	1,904	- 7.5	53	291	19.6
750----	28	2,470	- 3.8	45	284	21.0	28	2,469	- 4.7	46	281	19.4	28	2,551	5.7	38	263	9.3	28	2,466	- 5.7	57	269	22.5	28	2,409	- 9.3	50	285	23.9
700----	28	3,006	- 6.6	41	286	25.6	28	3,003	- 7.4	44	281	24.5	28	3,105	2.6	34	269	13.6	28	3,001	- 8.1	57	270	26.4	28	2,935	-11.8	46	284	27.0
650----	28	3,584	- 9.6	40	283	28.6	28	3,580	-10.5	43	278	29.9	28	3,709	- .9		272	17.3	28	3,580	-11.4	54	270	33.2	28	3,502	-14.9	42	281	31.5
600----	27	4,195	-12.7	41	283	35.5	28	4,189	-13.5	37	278	33.6	28	4,335	- 4.9		274	20.4	28	4,183	-14.6	46	271	37.9	28	4,101	-18.1	41	276	36.7
550----	27	4,853	-16.5		281	40.4	28	4,848	-17.5	36	276	40.0	27	5,023	- 9.1		270	27.0	28	4,839	-18.5	40	272	42.9	28	4,748	-21.6		272	43.9
500----	27	5,563	-21.4		281	45.3	28	5,553	-22.1	38	273	45.1	27	5,748	-14.4		279	24.7	28	5,542	-23.0		273	49.7	28	5,443	-25.5		272	47.6
450----	27	6,337	-27.1		279	52.3	28	6,328	-27.0		267	51.5	27	6,549	-20.1	39	279	28.0	28	6,313	-28.1		272	57.5	28	6,206	-30.7		272	52.3
400----	27	7,169	-33.4		277	56.3	28	7,158	-32.7		268	57.7	27	7,401	-26.2	39	286	30.1	28	7,141	-33.9		276	61.6	28	7,026	-36.1		274	59.8
350----	27	8,092	-40.2		278	62.7	28	8,086	-39.5		270	55.2	27	8,353	-33.0		268	32.1	28	8,062	-40.4		277	65.1	27	7,932	-42.6		276	68.8
300----	27	9,125	-47.6		276	72.1	28	9,123	-47.2		271	54.8	27	9,418	-41.3		274	33.8	28	9,094	-47.8		277	69.3	27	8,957	-49.2		274	70.5
250----	27	10,306	-55.3		276	78.5	28	10,306	-55.4		268	47.6	27	10,631	-50.1		274	36.7	28	10,276	-54.7		273	75.2	27	10,136	-54.3		275	66.0
200----	25	11,715	-57.8		273	81.6	28	11,715	-58.4		266	59.1	26	12,065	-56.9				27	11,697	-58.5		276	65.9	26	11,555	-54.8		275	62.5
175----	25	12,557	-56.9		276	76.0	28	12,557	-56.8		272	55.2	25	12,915	-59.4				23	12,540	-58.2		278	64.3	26	12,410	-54.3		272	61.0
150----	24	13,534	-56.9		279	69.9	28	13,531	-57.6		273	49.9	25	13,873	-62.1				21	13,529	-58.3				26	13,397	-54.8		272	61.6
125----	23	14,686	-59.3		279	62.5	28	14,676	-59.9		274	48.6	24	14,988	-64.4				15	14,673	-60.1				26	14,557	-56.3		269	60.4
100----	21	16,068	-62.2		275	47.8	28	16,058	-62.6		278	42.5	21	16,339	-67.4				12	16,057	-61.6				26	15,969	-57.6		267	55.4
80-----	20	17,445	-62.7		278	41.4	27	17,426	-63.8				20	17,676	-68.8				10	17,440	-63.6				26	17,374	-58.1		264	52.8
60-----	14	19,223	-63.7		277	32.1	21	19,199	-63.7				17	19,401	-68.1										26	19,187	-57.6		259	41.8
50-----	13	20,341	-62.1				19	20,317	-62.5				16	20,494	-67.6										25	20,343	-56.7		252	35.2
40-----	10	21,708	-62.1				14	21,695	-60.7				6	21,905	-65.9										23	21,755	-55.1		238	20.2
30-----	8	23,529	-58.2				10	23,497	-56.5																15	23,576	-51.1		240	25.3
20-----																									7	26,141	-50.5			
15-----																									5	27,996	-51.0			

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

RAWINSONDE DATA

Average monthly values

FEBRUARY 1957

RAPID CITY, S. DAK. (904 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	28	966	- 4.2	68	6	2.7
1,000	28	160				
950	28	576				
900	28	1,003			12	2.9
850	28	1,458	- 1.9	51	286	7.2
800	28	1,939	- 2.6	54	276	15.3
750	28	2,455	- 4.9	57	284	22.9
700	28	2,988	- 7.9	55	287	29.7
650	28	3,562	-11.6	50	283	32.8
600	28	4,168	-15.8	46	283	34.6
550	28	4,820	-20.3	41	286	38.1
500	28	5,518	-25.3	41	284	42.2
450	28	6,287	-30.6		287	49.5
400	28	7,102	-36.5		283	56.1
350	27	8,008	-43.6		283	61.4
300	27	9,027	-50.9		281	70.3
250	25	10,192	-57.0		279	68.6
200	23	11,584	-55.7		277	72.3
175	23	12,434	-55.6		278	77.3
150	22	13,414	-56.9		277	77.3
125	18	14,543	-59.7		278	71.3
100	17	15,927	-62.9		276	69.9
80	13	17,278	-64.5		275	70.9
60	7	19,027	-66.0			
50						
40						
30						
20						

ST. CLOUD, MINN. (981 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	28	316	- 9.1	71	285	2.9
1,000	28	165				
950	28	570	- 8.1	67	297	4.7
900	28	984	- 7.6	62	277	8.4
850	28	1,429	- 7.0	57	271	13.6
800	28	1,902	- 7.6	57	276	16.9
750	28	2,407	- 9.2	52	280	21.6
700	28	2,933	-11.9	52	281	25.3
650	28	3,502	-15.0	52	282	28.7
600	27	4,096	-18.3	48	283	33.6
550	27	4,743	-22.3	47	283	35.5
500	27	5,434	-26.9	45	281	34.6
450	27	6,190	-32.3	41	279	37.3
400	27	7,006	-38.2		280	35.7
350	27	7,912	-44.6			
300	27	8,928	-51.0			
250	27	10,097	-56.2			
200	27	11,516	-55.2			
175	27	12,367	-55.4			
150	27	13,348	-56.4			
125	27	14,500	-58.2			
100	27	15,895	-60.8			
80	25	17,290	-62.5			
60	24	19,066	-62.3			
50	23	20,192	-61.8			
40	20	21,593	-59.0			
30	17	23,423	-54.3			
20	10	26,062	-50.6			

ST. PAUL IS., ALASKA (1013 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	28	10	- 5.5	83	42	6.8
1,000	28	108			49	8.7
950	28	515	- 6.0	70	73	6.8
900	28	933	- 7.1	62	74	4.7
850	28	1,378	- 7.6	53	74	4.9
800	28	1,848	9.2	47	308	1.0
750	28	2,348	-11.4	43	281	2.1
700	28	2,871	-13.9	39	250	4.1
650	28	3,433	-17.0	36	219	6.0
600	28	4,027	-20.4		226	6.8
550	28	4,667	-24.2		226	9.3
500	28	5,354	-28.5		228	14.0
450	28	6,105	-33.4		238	16.5
400	28	6,918	-39.0		250	20.4
350	28	7,821	-44.3		219	15.9
300	28	8,840	-49.5		212	13.0
250	26	10,036	-52.2		251	15.7
200	26	11,485	-49.5		246	18.6
175	26	12,361	-48.2		254	18.1
150	26	13,375	-48.4		262	17.1
125	26	14,571	-49.1		274	17.3
100	26	16,031	-49.6		284	17.3
80	24	17,481	-50.1		285	12.4
60	20	19,341	-50.4		322	14.0
50	18	20,540	-50.3		342	17.5
40	13	21,964	-49.8			
30						
20						

SALEM, OREG. (1008 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	28	61	6.8	81	197	2.9
1,000	28	128			208	2.9
950	28	551	5.2	76	198	7.8
900	28	989	3.9	75	208	13.4
850	28	1,452	1.8	71	222	17.7
800	28	1,939	.7	65	231	19.0
750	28	2,454	- 3.3	59	237	20.2
700	28	2,994	- 6.3	54	246	19.4
650	28	3,573	- 9.7	50	252	20.0
600	28	4,183	-13.7	47	258	22.3
550	28	4,839	-18.2	46	262	24.3
500	28	5,544	-23.3	43	268	25.1
450	28	6,308	-29.0	40	270	26.4
400	28	7,137	-35.3		268	29.7
350	28	8,053	-42.4		268	32.8
300	28	9,075	-49.9		273	35.9
250	28	10,247	-55.7		272	41.0
200	28	11,663	-55.2		269	45.5
175	28	12,515	-55.1		271	46.4
150	27	13,499	-55.9		274	46.4
125	27	14,651	-58.6		273	44.9
100	27	16,039	-62.0		280	44.3
80	23	17,434	-62.9		280	36.3
60	18	19,249	-64.4		298	20.2
50	15	20,385	-64.3		316	18.6
40	12	21,762	-64.4		334	13.2
30	9	23,515	-60.9			
20						

SALT LAKE CITY, UTAH (872 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	28	1,288	1.4	71	198	2.9
1,000	28	156				
950	28	587				
900	28	1,033				
850	28	1,498	5.3	57	191	5.1
800	28	1,991	3.0	52	201	9.1
750	28	2,514	- .5	51	230	10.3
700	28	3,059	- 4.5	55	258	12.4
650	28	3,643	- 8.4	55	270	17.5
600	28	4,255	-12.3	54	273	22.5
550	28	4,919	-16.7	51	272	29.5
500	28	5,623	-21.4	52	274	33.4
450	28	6,402	-26.7	49	271	40.0
400	28	7,232	-32.4	46	271	48.8
350	28	8,160	-39.4		272	55.7
300	28	9,197	-47.3		271	60.6
250	28	10,381	-54.7		267	74.0
200	27	11,786	-57.5		273	75.8
175	27	12,630	-56.8		275	69.3
150	26	13,601	-58.5		277	58.7
125	26	14,742	-60.7		277	54.4
100	25	16,120	-63.9		278	46.8
80	23	17,487	-64.9		277	40.4
60	20	19,251	-65.7		301	21.0
50	18	20,355	-65.7		312	18.6
40	17	21,717	-65.1		341	12.4
30	8	23,509	-61.7			
20	5	26,040	-54.3			

SAN ANTONIO, TEX. (988 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	28	243	17.0	73	81	3.7
1,000	28	141				
950	28	585	16.3	70	103	8.9
900	28	1,038	14.0	71	139	5.8
850	28	1,519	12.1	69	199	5.8
800	28	2,026	10.2	55	255	8.0
750	28	2,569	7.3	45	272	10.9
700	28	3,124	4.2	39	274	12.4
650	28	3,730	.6	37	279	14.8
600	28	4,361	- 3.3	36	279	16.7
550	28	5,042	- 7.8	33	278	19.8
500	27	5,778	-12.4		275	25.4
450	27	6,584	-18.0		275	27.6
400	27	7,443	-24.7		275	28.7
350	27	8,398	-32.2		273	31.5
300	27	9,466	-40.4		279	37.9
250	27	10,684	-48.5		272	35.2
200	27	12,123	-56.7		268	36.1
175	27	12,961	-59.4		268	35.7
150	27	13,921	-61.6			
125	25	15,045	-65.4			
100	22	16,392	-69.8			
80	19	17,715	-72.0			
60	18	19,415	-70.1			
50	18	20,506	-66.9			
40	18	21,861	-64.1			
30	11	23,622	-62.0			
20						
15						

SAN DIEGO, CALIF. (1002 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	28	124	13.2	87	343	3.9
1,000	28	136			344	4.3
950	28	576	13.0	61	330	3.5
900	28	1,022	11.4	54	328	2.3
850	28	1,499	9.9	47	310	3.7
800	28	2,001	8.0	40	287	6.4
750	28	2,540	5.0	38	276	8.9
700	28	3,091	1.6	38	268	12.0
650	28	3,693	- 1.8		260	15.9
600	28	4,318	- 5.3		260	19.0
550	28	5,002	9.7		262	21.8
500	28	5,726	-14.5	35	261	26.4
450	28	6,530	-20.1	43	259	30.7
400	28	7,380	-26.2	42	256	34.8
350	27	8,328	-33.2	41	258	42.3
300	27	9,393	-41.3		259	49.7
250	27	10,606	-49.8		261	60.0
200	27	12,039	-56.9		263	66.2
175	27	12,877	-60.0		262	64.1
150	27	13,835	-62.2		262	54.8
125	27	14,952	-65.5		262	51.5
100	27	16,299	-68.3		260	39.8
80	24	17,630	-68.9		264	33.6
60	22	19,349	-68.4		270	21.2
50	22	20,441	-68.3		266	17.7
40	20	21,791	-67.5		265	20.0
30	18	23,535	-64.3		261	13.6
20	14	26,058	-58.3		259	10.3
15	7	27,919	-53.2			

SAN JUAN, P. R. (1017 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	27	6	22.1	83	113	5.8
1,000	27	155	22.5	76	105	13.0
950	27	602	19.5	77	101	18.6
900	27	1,064	16.4	75	103	17.9
850	27	1,548	13.4	71	97	17.7
800	27	2,056	10.8	62	94	14.8
750	27	2,601	8.7	44	95	14.4
700	27	3,162	6.9		100	13.0
650	27	3,779	4.5		94	12.6
600	27	4,415	.8		87	9.5
550	27	5,110	- 4.1		91	6.2
500	27	5,852	- 9.2		105	2.9
450	27	6,671	-14.7		244	3.1
400	27	7,540	-21.2		278	8.5
350	27	8,511	-27.9		281	19.2
300	27	9,601	-35.7		276	36.5
250	27	10,843	-44.8		271	49.7
200	27	12,300	-55.2		270	49.9
175	27	13,141	-60.7		269	45.5
150	26	14,085	-65.8		276	35.4
125	26	15,176	-71.2		282	26.0
100	22	16,483	-75.8		294	13.0
80	20	17,766	-77.2		48	6.0
60	18	19,437	-71.0		85	19.8
50	18	20,528	-67.2		85	19.2
40	18	21,881	-64.9		91	25.1
30	14	23,649	-61.6		85	11.7
20	7	26,180	-56.1			
15						

SANTA MARIA, CALIF. (1009 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	28	74	12.3	82	299	3.5
1,000	28	145	12.4	79	311	3.7
950	28	579	12.0	69	23	3.5
900	28	1,028	10.5	63	20	1.6
850	28	1,503	8.6	57	309	3.3
800	28	2,002	6.2	52	265	6.6
750	28	2,535	2.9	50	272	9.9
700	28	3,084	- .2	44	269	15.0
650	28	3,681	- 3.5	38	265	17.5
600	28	4,303	- 6.9	37	259	21.2
550	28	4,981	-11.4	40	258	25.3
500	28	5,700	-16.3	43	258	28.6
450	28	6,494	-21.7	43	258	29.5
400	28	7,342	-27.9	44	260	33.4
350	28	8,286	-35.0	45	262	37.5
300	28	9,344	-42.7		262	40.0
250	28	10,549	-51.4		268	42.5
200	28	11,978	-56.9		263	46.6
175	28	12,820	-58.2			
150	28	13,785	-60.4			
125	27	14,908	-63.0			
100	26	16,272	-66.2			
80	25	17,617	-67.3			
60	24	19,350	-66.8			
50	22	20,453	-67.1			
40	21	21,801	-67.0			
30	17	23,543	-65.4			
20						
15						

SANTA MONICA, CALIF. (1013 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	28	38	13.8	79	256	2.3
1,000	28	144	13.8	75	251	2.9
950	28	580	13.5	59	237	2.7
900	28	1,031	11.5	55	8	.6
850	28	1,507	9.6	51	281	1.7
800	28	2,009	7.5	45	269	6.6
750	28	2,541	4.3	43	267	9.7
700	28	3,096	.9	42	264	13.2
650	28	3,690	- 2.7	42	253	15.5
600	28	4,318	- 6.4	38	255	21.4
550	28	4,995	-10.8		257	25.6
500	28	5,719	-15.8	39	263	28.7
450	28	6,512	-21.4	46	260	32.1
400	28	7,364	-27.4	47	260	34.8
350	28	8,310	-34.7	49	258	38.9
300	28	9,367	-42.7		258	44.7
250	27	10,574	-51.2		262	52.6
200	27	12,002	-57.0		262	59.6
175	27	12,842	-59.5		259	55.9
150	27	13,800	-62.2		264	52.1
125	27	14,918	-65.1		265	40.6
100	26	16,267	-68.1		263	35.0
80	25	17,605	-67.9		269	30.9
60	24	19,332	-68.3		277	18.6
50	23	20,429	-67.6		285	18.3
40	23	21,773	-67.2		280	14.2
30	20	23,518	-64.3		283	7.6
20	18	26,042	-56.6		329	6.0
15	7	27,859	-52.8			

S. STE. MARIE, MICH. (992 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	28	221	- 7.9	89	309	1.4
1,000	28	157				
950	28	560	- 7.7	73	260	5.8
900	28	976	- 8.7	68	257	8.2
850	28	1,418	- 9.3	62	265	13.6
800	28	1,886	-10.3	54	271	16.3
750	28	2,385	-12.2	53	272	19.0
700	28	2,906	-14.5	54	275	24.1
650	28	3,469	-17.5	52	276	27.8
600	27	4,054	-21.4	51	277	30.7
550	27	4,694	-25.2	48	276	35.5
500	27	5,376	-29.7	48	277	39.6
450	27	6,125	-34.8	49	277	44.3
400	27	6,932	-40.6		276	47.8
350	27	7,828	-46.8		278	54.8
300	27	8,834	-52.9		274	61.2
250	26	10,004	-56.8		270	69.3
200	26	11,414	-56.2		270	73.0
175	25	12,265	-55.6		271	71.1
150	24	13,244	-56.3		272	70.9
125	21	14,406	-57.9		273	67.0
100	17	15,794	-60.0		275	53.8
80	14	17,175	-60.8			
60	11	18,959	-59.0			
50	[illegible]	20,103	-57.2			
40						
30						
20						
15						
10						

SEATTLE, WASH. (1001 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	28	124	4.2	83	306	0.4
1,000	28	130			307	.2
950	28	551	3.4	74	212	6.2
900	28	984	1.2	75	214	11.3
850	28	1,442	- .7	71	233	14.2
800	28	1,924	- 3.2	67	242	16.7
750	28	2,440	- 5.8	60	247	18.1
700	28	2,970	- 8.9	59	261	18.8
650	28	3,549	-11.7	59	266	21.8
600	28	4,150	-15.3	56	269	25.8
550	28	4,801	-19.8	57	273	25.8
500	28	5,502	-24.8	55	275	28.7
450	28	6,264	-30.4	53	278	30.5
400	28	7,086	-36.6	49	279	33.0
350	28	7,995	-43.8		277	36.5
300	28	9,012	-51.4		282	37.5
250	28	10,176	-57.0		288	40.2
200	25	11,591	-57.0		280	45.1
175	24	12,440	-56.4		280	45.6
150	23	13,419	-57.0		281	48.0
125	23	14,565	-59.2		284	47.6
100	22	15,956	-62.0		286	45.8
80	22	17,326	-64.2		288	45.6
60	20	19,072	-66.0		288	42.3
50	19	20,158	-67.0		288	37.1
40	19	21,503	-66.7		288	34.0
30	15	23,270	-62.6		305	33.4
20	15	25,820	-54.5		314	15.0
15	11	27,601	-45.5			
10	6	32,015	-40.4			

SHREVEPORT, LA. (1009 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	28	76	13.5	78	74	2.7
1,000	28	148	13.6	70	72	4.5
950	28	584	12.4	66	143	4.3
900	28	1,032	10.7	64	190	3.7
850	28	1,507	9.2	64	236	7.6
800	28	2,007	6.5	64	259	10.3
750	28	2,541	4.1	57	263	14.6
700	28	3,093	1.3	50	264	17.5
650	28	3,694	- 1.8	47	270	19.2
600	28	4,318	- 5.5	44	274	23.1
550	28	4,998	- 9.6	38	278	25.3
500	28	5,724	-14.2		278	30.1
450	28	6,522	-19.9		275	33.0
400	28	7,377	-26.1		278	36.1
350	28	8,328	-33.8		278	39.8
300	27	9,394	-42.2		279	43.5
250	26	10,610	-50.6		278	51.9
200	26	12,039	-58.0		273	58.9
175	25	12,881	-61.0		276	60.2
150	25	13,836	-62.5		275	62.5
125	25	14,953	-65.4		273	57.1
100	25	16,299	-68.9		273	48.2
80	23	17,623	-70.5		273	38.7
60	20	19,333	-69.2		274	26.0
50	20	20,426	-67.5		275	22.1
40	18	21,779	-65.6		262	15.7
30	16	23,531	-62.0		257	18.3
20	8	26,067	-56.7			
15						
10						

SPOKANE, WASH. (931 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	28	722	- 1.4	83	213	4.1
1,000	28	146				
950	28	561				
900	28	990	- .8	71	217	8.9
850	28	1,446	- 2.1	63	242	9.5
800	28	1,925	- 4.3	61	255	12.2
750	28	2,436	- 6.7	56	264	15.2
700	28	2,967	- 9.9	56	266	17.9
650	28	3,541	-13.3	59	276	21.8
600	28	4,139	-17.1	63	281	27.0
550	28	4,789	-20.8	60	281	31.5
500	28	5,483	-25.6	59	287	34.8
450	28	6,241	-31.0	55	286	38.5
400	28	7,062	-37.2	53	287	41.2
350	28	7,970	-44.1		291	40.8
300	28	8,986	-51.5		287	44.1
250	28	10,149	-57.2		286	49.1
200	28	11,556	-56.9		286	52.4
175	27	12,396	-55.5		284	50.5
150	27	13,376	-55.9		286	53.0
125	27	14,530	-57.7		285	51.7
100	23	15,936	-60.6		287	48.2
80	20	17,353	-61.7		292	40.6
60	17	19,136	-62.8		299	33.6
50	14	20,292	-61.9		309	27.2
40	11	21,700	-62.4		323	21.6
30	8	23,613	-57.9			
20						
15						
10						

TAMPA, FLA. (1019 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	28	7	17.9	82	35	2.1
1,000	28	166	18.0	74	59	2.7
950	28	610	16.4	68	120	4.1
900	28	1,064	13.7	68	168	4.7
850	28	1,543	10.6	68	191	5.1
800	28	2,046	7.8	62	216	6.0
750	28	2,586	5.2	54	230	7.2
700	28	3,138	3.2	44	249	9.1
650	27	3,740	.2		259	11.3
600	27	4,372	- 3.5		256	15.0
550	27	5,055	- 7.7		266	17.1
500	27	5,789	-12.8		270	20.4
450	27	6,590	-18.8		264	24.3
400	27	7,451	-25.0		270	28.2
350	27	8,407	-32.5		278	28.6
300	27	9,475	-40.9		272	26.6
250	27	10,690	-49.9		267	25.6
200	27	12,126	-56.5		267	37.9
175	27	12,967	-59.3		271	43.1
150	25	13,929	-62.7		275	39.4
125	19	15,030	-66.6			
100	15	16,388	-70.3			
80	14	17,708	-72.8			
60	14	19,412	-68.5			
50	14	20,511	-65.8			
40	14	21,869	-64.6			
30	12	23,635	-62.1			
20	7	26,162	-56.4			
15						
10						

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

RAWINSONDE DATA

Average monthly values

Standard pressure surface (mb.)	TOPEKA, KANS. (988 MB.)						TUCSON, ARIZ. (926 MB.)						WASHINGTON, D. C. (1011 MB.)						WINNEMUCCA, NEV. (869 MB.)						YAKUTAT, ALASKA (1009 MB.)					
					Wind						Wind						Wind						Wind						Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	28	270	2.8	74	43	1.4	28	781	17.1	50	283	1.9	28	88	4.1	75	282	1.4	28	1,310	4.0	71	1	0.2	28	12	- 1.7	91	90	4.7
1,000--	28	167					28	114					28	173	3.4	68	275	2.1	28	149					28	83			101	3.5
950----	28	586	3.0	63	21	1.0	28	561					28	593	2.8	68	281	8.0	28	575					28	498	- 1.6	68	121	8.5
900----	28	1,023	3.5	57	227	4.1	28	1,023	17.0	43	301	5.1	28	1,026	1.5	67	284	12.4	28	1,018					28	921	- 3.5	66	138	8.5
850----	28	1,486	2.7	53	265	8.7	28	1,507	13.9	43	275	4.9	28	1,485	.2	60	274	15.9	28	1,490	6.0	51	183	1.9	28	1,371	- 6.1	66	145	7.0
800----	28	1,975	.9	50	276	13.0	28	2,015	10.3	45	239	6.4	28	1,969	- 1.5	53	279	21.0	28	1,985	2.8	52	228	6.6	28	1,843	- 8.2	60	213	4.1
750----	28	2,496	- 1.3	45	288	17.1	28	2,552	6.6	43	244	7.0	28	2,489	- 3.5	48	281	20.2	28	2,510	- .9	55	235	10.9	28	2,350	-10.7	57	225	4.3
700----	28	3,038	- 3.9	43	289	20.8	28	3,111	3.3	39	258	9.7	28	3,025	- 5.7	45	276	24.5	28	3,051	- 4.5	53	252	14.2	28	2,869	-13.8	57	245	6.0
650----	28	3,623	- 6.8	40	289	26.0	28	3,710	- .4		262	13.4	28	3,607	- 8.7	47	274	31.1	28	3,637	- 8.1	50	263	16.1	28	3,437	-17.3	55	281	8.4
600----	28	4,241	-10.0		284	30.9	28	4,343	- 4.4		266	17.1	28	4,219	-12.2	46	275	34.8	28	4,249	-12.0	46	265	18.5	28	4,024	-20.7	53	287	12.6
550----	28	4,908	-14.3		285	33.2	28	5,020	8.7		264	21.2	28	4,883	-16.1		273	40.6	28	4,913	-16.2		265	20.4	28	4,666	-24.6	51	288	15.9
500----	28	5,623	-19.2		285	38.1	28	5,755	-13.6		265	25.4	28	5,591	-20.8	44	273	38.7	28	5,620	-21.2		266	26.0	28	5,350	-29.0	47	291	20.6
450----	28	6,404	-24.7		283	45.5	28	6,553	-19.3		265	29.3	28	6,371	-26.0		275	45.6	28	6,398	-26.6		267	32.8	28	6,105	-34.0		288	26.0
400----	28	7,244	-30.8		280	52.8	28	7,413	-25.1		268	33.0	28	7,204	-31.5	41	279	51.1	28	7,229	-32.5		265	40.4	28	6,910	-39.6		320	29.7
350----	28	8,177	-37.8		276	59.2	28	8,368	-32.2		270	35.5	28	8,135	-38.3		277	55.2	27	8,158	-39.5		266	46.4	28	7,810	-45.9		322	36.7
300----	28	9,219	-45.9		274	71.7	28	9,436	-40.5		269	41.2	28	9,177	-45.9		279	58.9	27	9,196	-47.1		266	54.0	28	8,819	-52.4		313	40.8
250----	28	10,407	-54.6		276	77.3	28	10,654	-48.9		272	49.0	28	10,367	-53.5		281	63.7	26	10,382	-54.3		268	55.6	28	9,983	-56.7		311	41.8
200----	28	11,812	-59.3		276	81.8	28	12,092	-56.0		274	60.0	28	11,785	-57.1		278	65.3	25	11,789	-56.3		270	55.2	28	11,394	-56.0		324	43.7
175----	28	12,648	-58.5		277	74.8	28	12,935	-58.9		273	59.2	28	12,628	-57.2		271	63.1	24	12,637	-55.9		273	58.1	28	12,243	-54.7		314	46.2
150----	27	13,612	-59.0		278	71.3	28	13,895	-61.8		270	52.8	28	13,600	-58.0		274	63.1	23	13,615	-57.4		273	51.3	28	13,227	-55.0			
125----	26	14,745	-60.6		280	66.6	28	15,015	-64.4		267	48.6	27	14,740	-59.6		274	62.4	23	14,759	-60.4		277	45.5	26	14,381	-56.1			
100----	26	16,121	-63.8		276	54.6	28	16,365	-68.2		267	42.0	27	16,126	-62.2				23	16,138	-64.0		280	41.0	23	15,797	-58.8			
80-----	24	17,479	-65.3		275	50.1	28	17,696	-69.6		269	34.2	26	17,491	-63.5		273	44.5	22	17,503	-65.2		280	35.7	21	17,225	-58.7			
60-----	20	19,232	-66.0		276	36.7	28	19,410	-68.7		274	22.9	26	19,259	-62.6		278	27.4	19	19,263	-66.0		292	27.0	18	18,986	-59.8			
50-----	14	20,360	-64.7		265	31.7	25	20,506	-67.4		268	18.8	24	20,386	-61.3				18	20,375	-67.0		302	14.0	16	20,133	-60.6			
40-----	10	21,740	-63.2				21	21,864	-65.6		261	17.9	24	21,774	-59.5		257	11.1	14	21,713	-67.5		313	15.7	13	21,467	-59.8			
30-----	5	23,513	-60.5				16	23,635	-63.2		253	8.5	23	23,584	-57.0		206	7.6	9	23,486	-62.4				9	23,219	-55.5			
20-----													8	26,108	-53.3				5	26,038	-53.5									
15-----													7	27,959	-52.4															

Note: All observations scheduled at 0300, G.C.T. except at Mazatlan, Merida and Veracruz, where they are taken near 0200, G.C.T. "Number of observations" refers to those of dynamic height only. Temperature, humidity or wind data may be missing for one or more pressure surfaces of some observations. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Relative humidity data are not published for standard pressure surfaces having less than 16 actual observations.

Relative humidity data beginning with October 1, 1948, were computed and expressed in these tables on the basis of vapor-pressure over water. Upper air values of relative humidity at levels with temperatures less than 0°C, have formerly been computed and expressed on the basis of the vapor-pressure over ice. All relative humidity observations are obtained by electric hygrometer and have been adjusted to compensate for the value occurring below the operating range of the humidity element.

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

SOLAR RADIATION DATA

Solar radiation intensities, tabulated in langleys per minute on a surface normal to the direction of the sun.

Date	Sun's zenith distance A. M. 78.7°	A. M. 75.7°	A. M. 70.7°	A. M. 60.0°	0.0°	P M 60.0°	P M 70.7°	P M 75.7°	P M 78.7°
MADISON, WIS.									
Air mass	4.84	3.87	2.90	1.94	0.97	1.94	2.90	3.87	4.84
Feb.									
4------	S1.04	S1.12	S1.24	----	----	----	----	----	----
12-----	----	----	----	----	----	----	S1.26	S0.98	S0.82
14-----	.86	S.98	S1.15	S1.33	S1.38	Ci<45°	----	----	----
16-----	----	S1.10	S1.16	S1.10	----	----	----	----	----
18-----	----	----	----	----	----	S1.43	S1.26	S1.10	S.99
19-----	S1.03	S1.09	S1.20	S1.31	S1.40	S1.36	S1.15	S1.03	S.91
28-----	MK.93	S1.05	S1.15	----	----	----	----	----	----
Averages	.97	1.07	1.18	1.25	1.39	1.40	1.22	1.04	.91
BLUE HILL, MASS.									
Air mass	4.89	3.92	2.94	1.96	0.98	1.96	2.94	3.92	4.89
Feb.									
2------	----	----	----	----	----	----	----	----	0.72
6------	0.91	1.00	1.11	1.27	1.23	----	----	----	----
8------	----	----	----	----	----	----	----	0.87	.73
11-----	----	----	----	----	----	----	----	.74	.66
15-----	----	----	----	----	----	----	1.05	.91	.82
16-----	.63	.79	1.00	----	----	----	----	----	----
20-----	----	----	1.02	----	----	1.29	1.15	1.02	.91
21-----	.91	----	1.18	1.23	1.37	1.30	1.21	1.11	1.05
Averages	.82	(.90)	1.08	(1.25)	(1.30)	(1.30)	1.14	.93	.81

Date	Sun's zenith distance A. M. 78.7°	A. M. 75.7°	A. M. 70.7°	A. M. 60.0°	0.0°	P M 60.0°	P M 70.7°	P M 75.7°	P M 78.7°
TABLE MOUNTAIN, CALIF.									
Air mass	3.85	3.08	2.31	1.54	0.77	1.54	2.31	3.08	3.85
Feb.									
1------	----	----	----	1.59	----	----	----	----	----
19-----	----	----	----	MH1.48	----	----	----	----	----
25-----	----	----	----	IH1.48	----	----	----	----	----
Averages	----	--	----	1.52	----	----	----	----	----
ALBUQUERQUE, N. MEX.									
Air mass	4.19	3.35	2.51	1.67	0.84	1.67	2.51	3.35	4.19
Feb. 1-23	Recorder inoperative February 1-23.								
24----	----	----	----	----	----	1.26	----	1.06	----
25----	----	----	----	----	Cloudy	----	----	----	----
26----	----	----	----	----	Cloudy	----	----	----	----
27----	----	----	----	----	Cloudy	----	----	----	----
28----	----	----	1.13	1.25	----	----	----	----	----
WASHINGTON, D. C. (WBCO)									
Air mass	5.00	4.00	3.00	2.00	1.00	2.00	3.00	4.00	5.00
Feb.									
17----	----	----	----	SK1.21	----	SK1.15	SK0.88	SK0.67	----
18----	MH0.62	MH0.74	MH0.92	----	----	----	----	----	----
20----	----	SK1.12	SK1.24	----	SH1.44	SH1.29	SH1.08	----	----
21----	SH.86	SH.98	SH1.13	SH1.32	SH1.38	----	----	----	----
Averages	.74	.95	1.10	1.26	1.41	1.22	.98	.67	----

MK	moderate smoke	SH	slight haze
S	slight haze - indeterminable	SK	slight smoke
MH	moderate haze	IH	intense haze

NOTE: Beginning with February 1957, air mass values are computed from the formula $m = (p/p_0)\ (M)$, where m is air mass, p is long-time mean station pressure, p_0 is standard sea-level pressure of 29.92 inches of mercury, and M is air mass at sea-level, as shown in the Smithsonian Meteorological Tables, 6th revised edition, page 422. Values of p, based on data available to date, are the following: Albuquerque, N. Mex., 25.05"; Madison, Wis., 28.97"; Washington, D. C., 29.93"; Tucson, Ariz., 27.31"; Honolulu, T. H., 29.96"; Lincoln, Neb., 28.74"; Table Mountain, Calif., 23.03"; Blue Hill, Mass., 29.29".

Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station listed in Table 30 appears in Monthly Weather Review, Volume 75, No. 3, March 1947, p. 47.

SOLAR RADIATION DATA

FEBRUARY 1957

Daily totals and average daily totals by weeks of solar and sky radiation, plus the radiation reflected from the ground, as received on a vertical surface facing south at Blue Hill, Mass. during the month

								Avg								Avg								Avg
Date------------	5	6	7	8	9	10	11		12	13	14	15	16	17	18		19	20	21	22	23	24	25	
Langleys--------	385	534	74	498	34	265	256	292	232	89	268	166	187	476	499	274	462	548	611	394	244	409	176	406
Date------------	26	27	28	1	2	3	4																	
Langleys--------	263	140	66	79	471	511	577	301																

Daily totals and average daily totals by weeks of diffuse (sky) radiation as received on a horizontal surface at Blue Hill, Mass. during the month

								Avg								Avg								Avg
Date------------	5	6	7	8	9	10	11		12	13	14	15	16	17	18		19	20	21	22	23	24	25	
Langleys--------	121	61	82	82	58	109	156	95	147	154	179	119	141	125	92	137	104	95	63	187	157	134	194	133
Date------------	26	27	28	1	2	3	4																	
Langleys--------	143	135	130	109	128	100	91	119																

Note: Langley is the unit used to denote one gram calorie per square centimeter.

NET RADIATION

Net radiation in langleys per day (midnight to midnight) at Raleigh, N. C., during the month

FEBRUARY 1957

Date.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langleys. . .	*56	*106	*23	*170	*-15	*69	*25	*-7	*31	*65	*79	130	*83	37	148	*48	163	152	**	178	141	142	149	151	*104	*104	114	*-16				90

* Estimated values owing to occurrence of rain during period. While rain is falling, radiation is assumed to be zero

** Radiometer inoperative.

The measurement is made with a Beckman and Whitley net exchange radiometer over a plot of Bermuda grass. the value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the North Carolina State College at Raleigh. The instrument with which they were measured has not been checked by the Weather Bureau.

SOLAR RADIATION DATA

Daily totals and weekly averages of solar radiation (direct and diffuse) received on a horizontal surface, tabulated in langleys.

	Aklavik, MacKenzie	Albuquerque, N. Mex.	Annette, Alaska	Apalachicola, Fla.	Astoria, Oreg.	Atlanta, Ga.	Barrow, Alaska	Bethel, Alaska	Bismarck, N. Dak.	Blue Hill, Mass.	Boston, Mass.	Brownsville, Tex.	Canton Island Pacific Area	Caribou, Me.	Charleston, S. C.	Cleveland, Ohio	Columbia, Mo.	Davis, Calif.
1957																		
Feb. 5	16	(432)	96	228	83	153	9	28	205	276	254	---	595	253	323	126	62	302
Feb. 6	14	395	26	414	101	127	8	26	263	314	268	---	664	237	160	285	57	138
Feb. 7	22	409	56	449	92	193	30	50	265	102	121	---	---	253	237	54	86	29
Feb. 8	27	359	29	443	60	366	30	49	178	311	293	---	678	301	312	270	68	254
Feb. 9	26	399	33	407	179	262	14	112	232	70	53	---	682	167	---	30	101	155
Feb. 10	24	370	71	426	47	367	20	176	263	215	162	---	669	169	198	82	257	129
Feb. 11	33	374	66	261	174	432	39	178	199	235	159	---	703	330	180	157	298	229
Average	23	(391)	54	375	105	272	21	88	229	218	187	---	665	244	235	143	133	176
Feb. 12	47	452	33	336	285	454	40	115	313	226	245	---	658	353	432	97	378	148
Feb. 13	22	424	75	470	77	464	24	191	248	170	166	---	---	304	407	335	364	224
Feb. 14	52	---	141	497	168	455	29	91	171	259	205	---	688	175	449	195	317	348
Feb. 15	40	362	33	470	307	384	67	200	311	174	221	---	(695)	188	435	380	235	356
Feb. 16	50	389	112	300	312	346	67	54	256	195	191	---	---	206	46	232	400	203
Feb. 17	58	233	68	519	320	500	56	120	270	319	344	---	637	158	472	215	372	161
Feb. 18	68	---	249	224	309	199	41	117	345	360	362	---	549	295	415	84	232	200
Average	48	372	102	402	254	400	46	127	273	243	248	---	(645)	240	379	220	328	234
Feb. 19	46	331	262	453	155	52	24	51	206	341	316	---	522	285	182	255	391	163
Feb. 20	76	---	250	437	273	244	42	171	188	390	344	---	598	236	373	314	289	70
Feb. 21	81	424	248	465	234	507	53	165	390	404	371	---	617	238	252	425	370	69
Feb. 22	37	345	293	308	57	489	39	176	215	330	259	---	540	350	451	255	115	87
Feb. 23	43	292	245	364	97	228	60	192	243	260	241	---	(429)	253	366	124	92	124
Feb. 24	92	463	105	263	148	246	65	193	356	353	332	---	583	370	355	184	105	54
Feb. 25	99	373	129	335	57	61	67	141	277	219	188	---	654	111	110	309	84	219
Average	68	371	219	375	146	261	50	156	268	328	293	---	(563)	263	298	266	207	112
Feb. 26	109	464	157	498	145	191	51	220	358	255	255	---	554	133	455	31	51	32
Feb. 27	93	444	127	193	156	295	109	107	346	180	216	---	688	154	169	178	466	261
Feb. 28	66	477	301	211	318	64	107	124	279	141	147	---	626	369	262	356	427	69
Mar. 1	101	---	324	562	187	544	102	39	419	113	94	367	700	214	153	355	453	91
Mar. 2	101	350	321	540	150	525	64	210	405	390	364	340	637	227	(519)	287	406	286
Mar. 3	124	320	219	122	204	120	39	75	411	428	379	453	712	308	73	272	474	55
Mar. 4	143	500	353	204	52	51	126	184	153	474	422	555	672	320	69	310	458	38
Average	105	426	257	333	173	256	93	137	339	283	268	429	656	246	(243)	256	391	119

	Dodge City, Kans.	E. Lansing, Mich.	Edmonton, Alberta	El Paso, Tex.	Ely, Nev.	Fairbanks, Alaska	Ft. Worth, Tex.	Fresno, Calif.	Glasgow, Mont.	Grand Lake, Colo.	Grand Junction, Colo.	Great Falls, Mont.	Greensboro, N. C.	Griffin, Ga.	Hatteras, N. C.	Indianapolis, Ind.	* Ithaca, N. Y.	Lake Charles, La.	Lander, Wyo.
1957																			
Feb. 5	404	238	(145)	391	370	28	116	(308)	224	385	347	332	46	254	26	30	229	341	341
Feb. 6	341	171	(180)	389	298	18	(149)	238	152	379	256	185	147	142	121	84	303	296	368
Feb. 7	68	73	---	435	235	30	111	52	285	279	214	271	68	205	207	36	280	334	322
Feb. 8	235	239	---	459	160	52	342	81	150	87	112	245	49	314	81	71	318	304	322
Feb. 9	(303)	48	(142)	491	364	89	411	112	237	213	235	288	113	298	282	71	9	298	370
Feb. 10	305	54	127	461	314	81	371	116	316	249	252	263	306	184	122	263	66	369	370
Feb. 11	252	347	174	494	357	110	288	141	272	183	281	305	256	320	151	161	356	229	373
Average	(273)	167	(149)	446	300	58	(255)	(150)	234	254	242	270	141	245	141	102	223	310	352
Feb. 12	419	77	138	485	277	49	285	136	285	413	396	278	383	390	(339)	150	342	162	359
Feb. 13	429	269	130	503	276	58	333	178	283	403	378	300	342	403	331	261	86	458	308
Feb. 14	335	300	225	538	336	48	200	63	277	389	371	292	326	398	370	248	238	447	318
Feb. 15	407	282	225	208	319	47	317	135	298	427	238	342	390	362	349	69	211	254	390
Feb. 16	433	285	---	415	320	108	160	80	325	416	321	345	303	309	30	309	99	274	426
Feb. 17	359	274	---	---	311	49	347	177	160	296	381	306	417	439	508	377	127	142	403
Feb. 18	284	322	---	354	364	61	69	243	167	402	312	94	361	238	494	86	158	203	419
Average	381	258	179	417	315	60	245	144	256	392	342	280	360	363	(346)	214	180	277	375
Feb. 19	129	386	269	290	401	118	62	307	259	416	161	267	42	82	67	280	168	116	131
Feb. 20	120	376	195	542	308	86	(422)	181	363	281	145	343	350	188	415	387	194	371	241
Feb. 21	97	360	(271)	430	206	145	426	188	384	277	252	391	424	445	181	355	198	517	328
Feb. 22	207	102	297	301	424	123	241	218	352	393	384	369	407	449	408	147	324	427	409
Feb. 23	462	145	128	406	134	95	71	244	276	366	57	364	330	163	475	183	73	60	257
Feb. 24	---	67	206	563	397	140	(153)	194	307	356	387	312	347	148	(462)	206	200	211	313
Feb. 25	460	95	308	529	---	113	(235)	431	321	203	324	268	185	74	402	274	199	178	171
Average	246	219	(239)	437	312	117	(230)	252	323	327	244	331	298	221	(344)	262	194	269	264
Feb. 26	513	54	(188)	585	217	84	343	145	273	314	339	194	268	247	---	43	87	263	262
Feb. 27	289	400	292	529	330	124	447	243	234	221	92	158	281	230	203	---	75	436	265
Feb. 28	297	437	324	485	(405)	100	387	78	357	255	435	344	43	49	66	404	329	524	290
Mar. 1	407	324	331	500	266	113	440	172	---	484	373	437	310	479	---	409	113	478	397
Mar. 2	264	265	338	537	242	102	150	247	415	513	200	415	423	477	---	362	283	413	325
Mar. 3	136	278	158	478	419	180	(265)	324	178	271	229	331	405	76	---	458	299	103	152
Mar. 4	64	473	350	448	222	159	342	319	330	342	473	234	224	37	---	411	300	240	356
Average	281	319	(283)	509	(300)	123	(339)	218	298	343	306	302	279	228	---	348	212	351	293

Note.--Langley is the unit used to denote one gram calorie per square centimeter.
Values in parentheses are interpolated.

* See page 449 of December 1956 issue for corrected data for July, August and September.

SOLAR RADIATION DATA

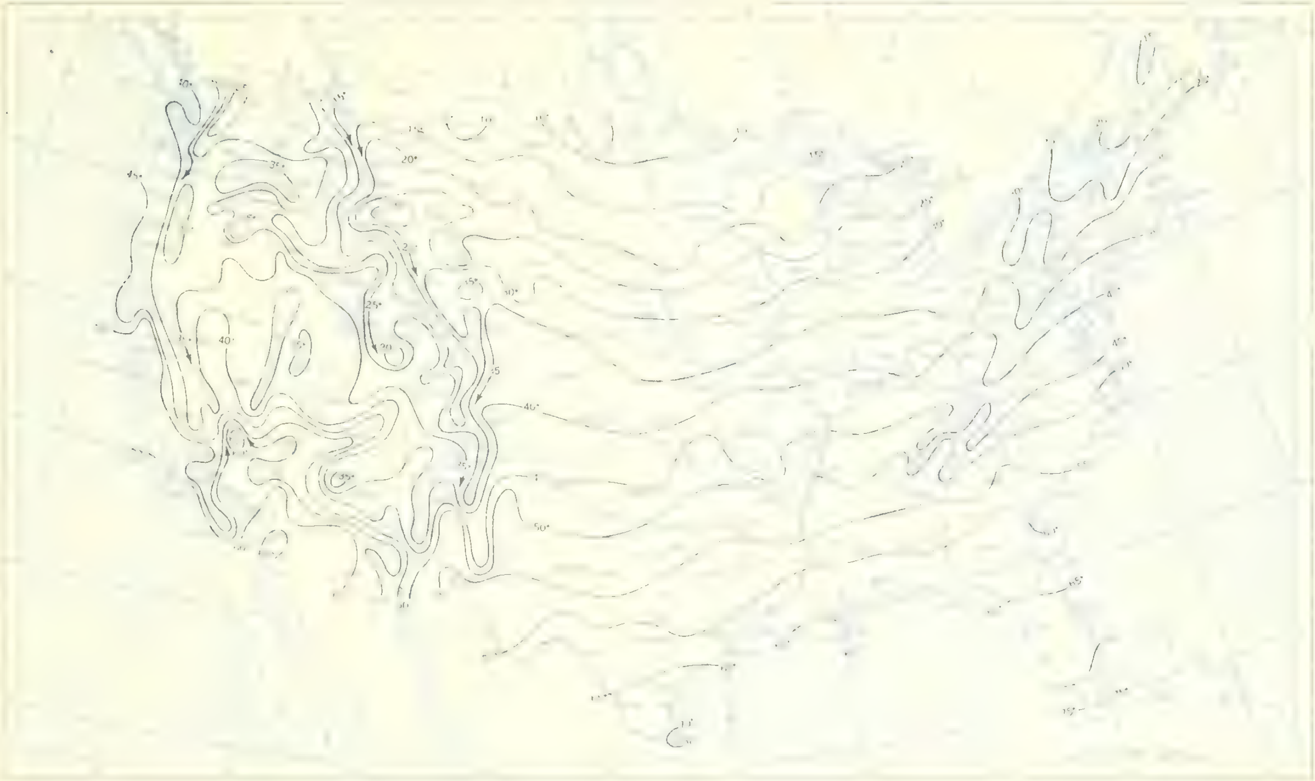
Daily totals and weekly averages of solar radiation (direct and diffuse) received on a horizontal surface, tabulated in langleys. - Continued

1957	Las Vegas, Nev.	Little Rock, Ark.	Los Angeles, Calif. (urban)	Los Angeles, Calif.	Madison, Wis.	Matanuska, Alaska	Medford, Oreg.	Miami, Fla.	Midland, Tex.	Nashville, Tenn.	Newport, R. I.	New York, N Y.	Oak Ridge, Tenn.	Oklahoma City, Okla.	Ottawa, Ontario	Phoenix, Ariz.	Prosser 4 NE, Wash.	Portland, Me.
Feb. 5------	396	58	390	367	278	75	241	404	288	73	257	158	53	101	284	394	68	301
Feb. 6------	309	53	348	310	134	30	204	330	177	52	180	110	47	111	246	347	275	---
Feb. 7------	308	136	164	144	201	14	181	415	143	77	83	94	49	86	99	348	156	325
Feb. 8------	198	199	85	89	24	117	137	423	382	97	308	218	33	254	308	294	186	---
Feb. 9------	327	271	250	234	60	---	307	436	403	204	75	30	169	308	50	304	300	118
Feb. 10------	230	371	264	251	57	115	316	477	394	220	219	178	315	377	279	384	169	---
Feb. 11------	370	374	137	124	138	125	289	478	423	139	209	254	248	---	335	393	320	408
Average-------	305	209	234	217	127	79	239	423	316	123	190	149	130	206	229	352	211	288
Feb. 12------	347	389	369	348	210	63	192	439	432	303	305	342	379	---	276	363	301	348
Feb. 13------	416	417	410	423	176	49	84	433	164	347	265	120	423	375	121	430	108	445
Feb. 14------	397	319	372	365	324	26	184	401	334	359	303	80	366	356	224	397	280	350
Feb. 15------	384	58	69	41	72	57	273	493	393	99	301	340	280	229	336	372	281	288
Feb. 16------	403	393	45	50	311	64	332	446	148	351	200	79	367	260	142	321	286	310
Feb. 17------	308	428	68	120	287	130	335	504	55	364	348	360	457	419	221	439	164	175
Feb. 18------	411	61	165	245	354	81	355	418	187	169	379	323	269	81	218	265	53	364
Average-------	381	295	214	227	248	67	251	447	245	284	300	235	363	287	220	370	210	326
Feb. 19------	428	288	53	169	358	---	285	450	65	136	296	210	61	107	375	174	121	307
Feb. 20------	255	350	199	212	325	---	65	346	140	336	409	359	385	216	355	384	337	299
Feb. 21------	418	449	372	424	82	194	142	351	434	388	419	400	443	276	350	140	---	391
Feb. 22------	431	386	314	258	130	207	73	491	97	321	358	257	387	36	252	476	---	282
Feb. 23------	353	321	338	348	81	209	177	374	124	202	214	146	262	112	126	94	---	221
Feb. 24------	487	130	359	333	147	114	89	417	487	221	363	297	175	118	201	445	---	246
Feb. 25------	482	130	407	413	85	128	97	---	516	115	317	167	185	264	59	496	---	132
Average-------	408	293	292	308	173	170	133	405	266	246	340	262	271	161	245	316	---	268
Feb. 26------	398	88	346	150	281	115	243	---	523	124	176	68	171	373	39	480	---	329
Feb. 27------	486	51	380	302	370	50	300	---	384	51	120	151	310	464	397	458	359	129
Feb. 28------	317	457	90	103	307	---	242	---	513	44	206	130	34	395	421	401	404	365
Mar. 1------	320	448	263	303	308	101	177	535	422	330	142	107	482	436	135	404	368	104
Mar. 2------	382	68	230	416	439	97	262	585	509	298	416	230	313	55	378	506	53	371
Mar. 3------	514	141	396	458	421	108	85	571	431	398	468	470	469	204	404	504	410	331
Mar. 4------	505	309	477	434	245	163	42	457	391	269	489	455	195	57	428	514	279	456
Average-------	418	223	312	309	339	105	193	537	453	216	288	230	282	283	315	467	312	298

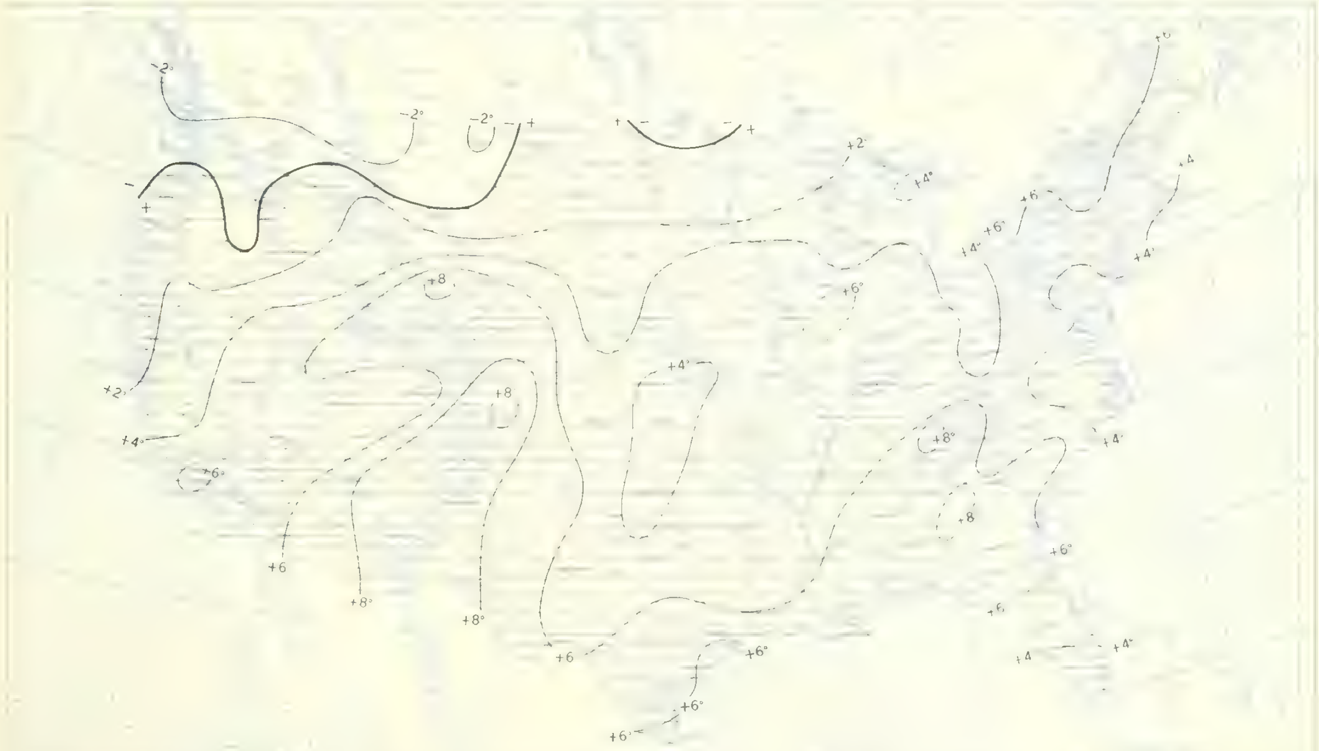
1957	Rapid City, S. Dak.	Riverside, Calif.	St. Cloud, Minn.	San Antonio, Tex.	Santa Maria, Calif.	S. Ste. Marie, Mich.	Sayville, N. Y.	Schenectady, N. Y.	Seabrook, N. J.	Seattle-Tacoma, Wash.	Spokane, Wash.	State College, Pa.	Tampa, Fla.	Tucson, Ariz.	Toronto, Ontario	Upton, N. Y.	Wake Island Pacific Area	Washington, D. C. (Silver Hill Obs.)	Winnipeg, Manitoba
Feb. 5------	(365)	444	279	205	398	203	239	215	92	47	135	112	470	398	216	239	518	75	218
Feb. 6------	331	376	211	310	354	172	116	267	82	44	216	72	440	355	215	117	502	64	181
Feb. 7------	(274)	281	290	270	127	318	139	244	64	123	143	147	360	409	61	156	455	65	235
Feb. 8------	254	110	70	366	97	301	275	256	138	---	127	262	332	402	271	284	312	94	188
Feb. 9------	333	371	87	437	203	92	31	50	36	214	303	41	453	408	31	44	361	67	206
Feb. 10------	353	399	123	451	148	281	255	185	268	42	177	203	474	419	316	267	406	351	228
Feb. 11------	233	222	147	400	177	346	383	286	169	191	407	311	431	349	331	360	535	125	123
Average-------	(306)	315	172	348	215	245	205	215	121	110	215	164	423	391	206	210	441	120	197
Feb. 12------	327	356	323	208	294	93	430	283	347	261	444	299	422	436	186	339	504	376	242
Feb. 13------	344	469	234	95	219	241	263	196	122	---	177	250	458	458	261	242	563	300	268
Feb. 14------	324	367	312	198	447	350	174	98	202	(62)	111	100	481	436	28	182	423	149	168
Feb. 15------	387	202	190	430	126	225	388	280	303	(188)	256	199	485	400	79	376	---	---	256
Feb. 16------	387	134	340	84	97	220	114	84	83	293	313	168	503	412	237	118	677	199	275
Feb. 17------	300	71	221	84	83	309	369	176	326	294	214	317	435	394	247	363	431	368	155
Feb. 18------	278	118	330	164	72	---	384	235	352	284	56	313	347	354	54	380	608	378	246
Average-------	335	245	279	181	191	240	303	193	248	(231)	225	235	447	413	162	293	534	295	230
Feb. 19------	147	217	365	140	78	---	220	250	104	40	228	178	369	180	321	223	769	88	277
Feb. 20------	181	212	142	224	161	---	447	288	385	343	325	410	64	368	284	422	---	447	183
Feb. 21------	448	380	171	360	466	189	466	327	388	335	296	393	285	266	350	437	---	419	316
Feb. 22------	327	400	314	51	188	314	379	187	331	70	167	340	378	470	267	346	563	338	304
Feb. 23------	308	421	219	385	362	351	180	132	198	38	109	99	354	75	117	200	(592)	254	154
Feb. 24------	363	386	122	209	(323)	37	376	249	327	75	232	323	417	484	128	383	621	367	235
Feb. 25------	277	463	270	523	399	152	321	92	217	79	263	247	372	515	209	---	730	168	332
Average-------	293	354	229	270	(282)	208	341	218	278	140	231	284	320	337	239	335	(655)	297	257
Feb. 26------	409	476	439	543	269	404	129	164	62	(147)	252	50	337	518	62	---	615	43	311
Feb. 27------	344	357	300	470	472	---	173	31	151	(184)	245	77	160	484	396	210	621	236	125
Feb. 28------	347	142	248	---	179	311	137	229	38	329	237	64	489	471	146	(147)	611	37	270
Mar. 1------	433	426	374	523	390	224	134	81	71	202	296	182	521	410	223	---	614	93	248
Mar. 2------	479	253	407	329	115	325	247	215	---	72	136	259	574	466	268	286	(356)	312	322
Mar. 3------	407	282	402	75	439	451	525	327	---	(183)	86	473	402	438	262	502	566	485	324
Mar. 4------	135	456	208	484	399	396	499	356	---	---	158	493	74	495	330	514	437	458	325
Average-------	365	342	340	404	323	352	263	200	81	(186)	201	228	365	469	241	(332)	(545)	238	275

Note.--Langley is the unit used to denote one gram calorie per square centimeter.
Values in parentheses are interpolated.

Chart I. A. Average Temperature (°F.) at Surface, February 1957.

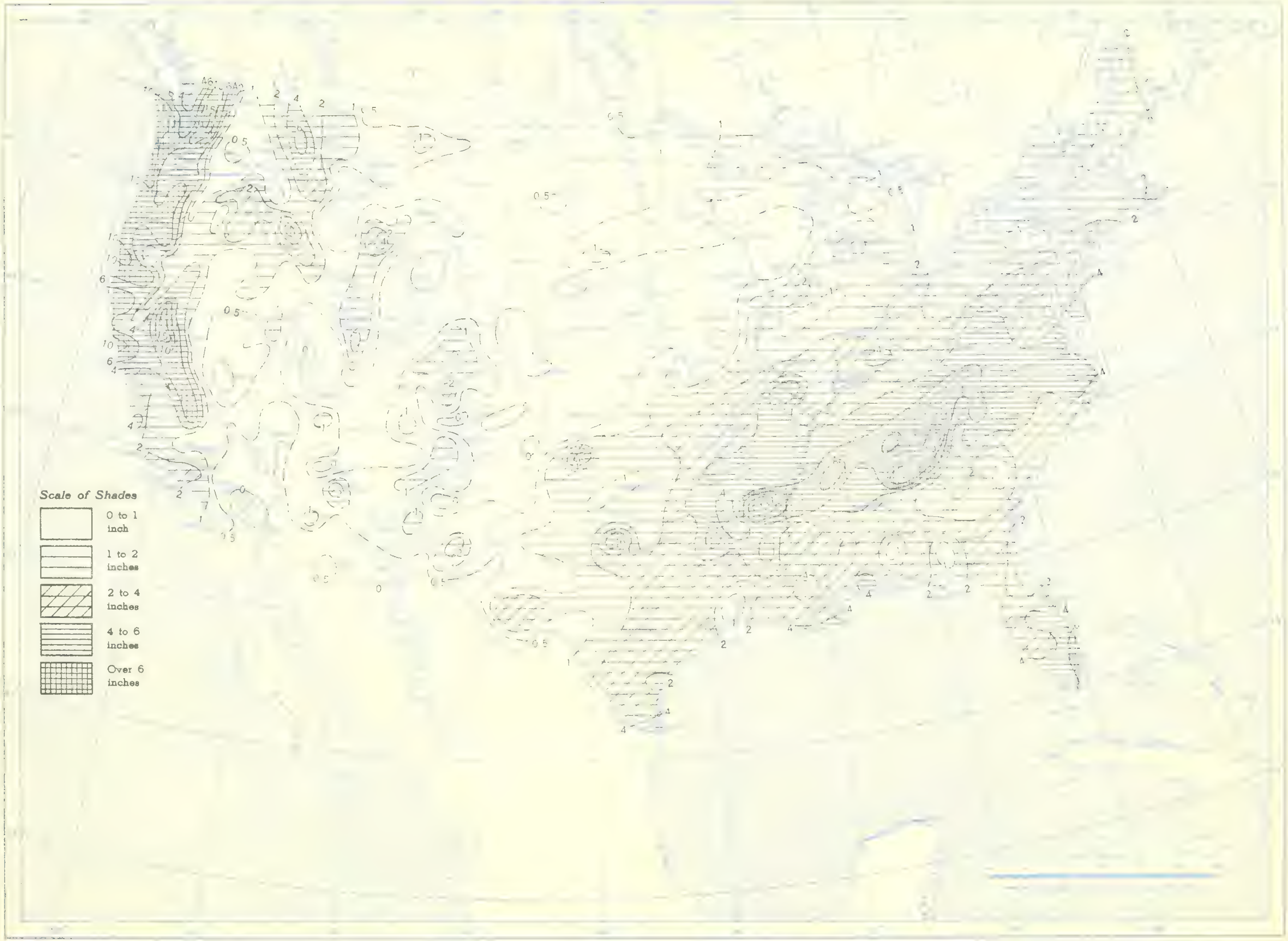


B. Departure of Average Temperature from Normal (°F.), February 1957.



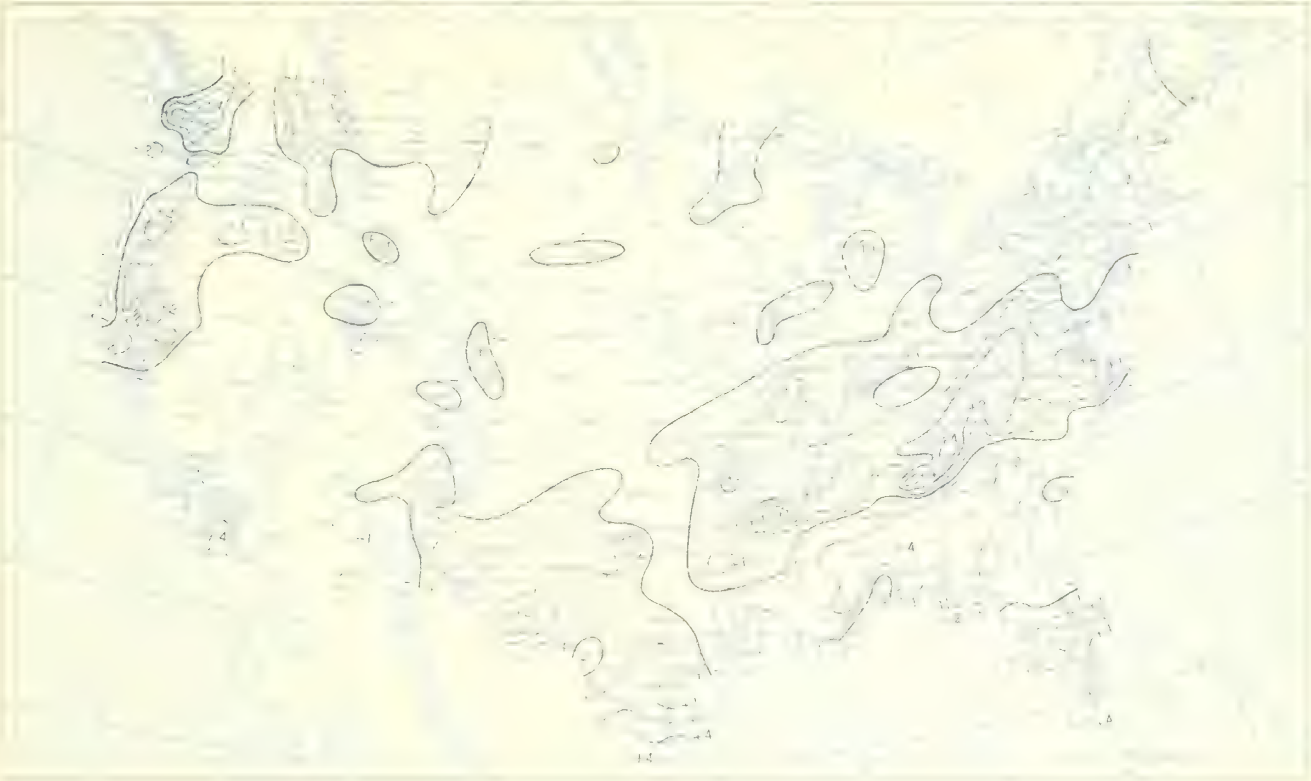
A. Based on reports from over 900 Weather Bureau and cooperative stations. The monthly average is half the sum of the monthly average maximum and monthly average minimum, which are the average of the daily maxima and daily minima, respectively.
B. Departures from normal are based on the 30-yr. normals (1921-50) for Weather Bureau stations and on means of 25 years or more (mostly 1931-55) for cooperative stations.

Chart II. Total Precipitation (Inches), February 1957.

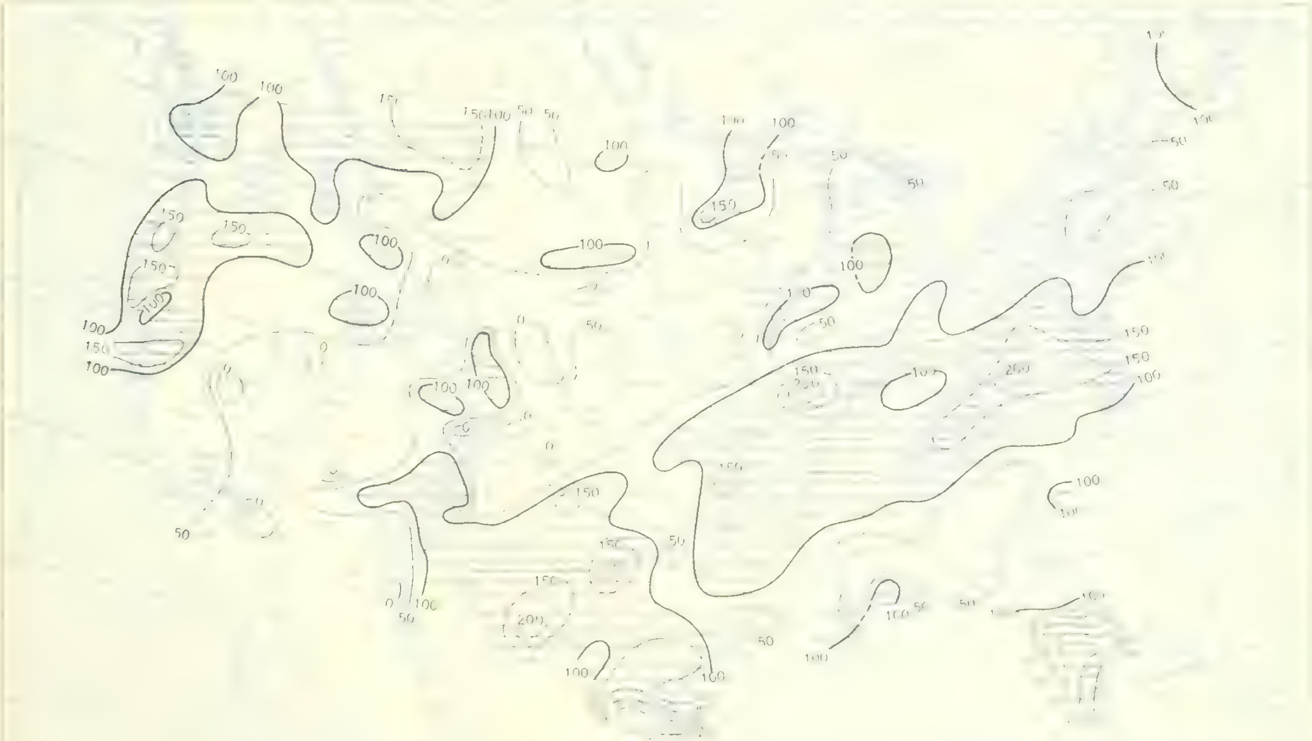


Based on daily precipitation records at about 800 Weather Bureau and cooperative stations.

Chart III. A. Departure of Precipitation from Normal (Inches), February 1957.

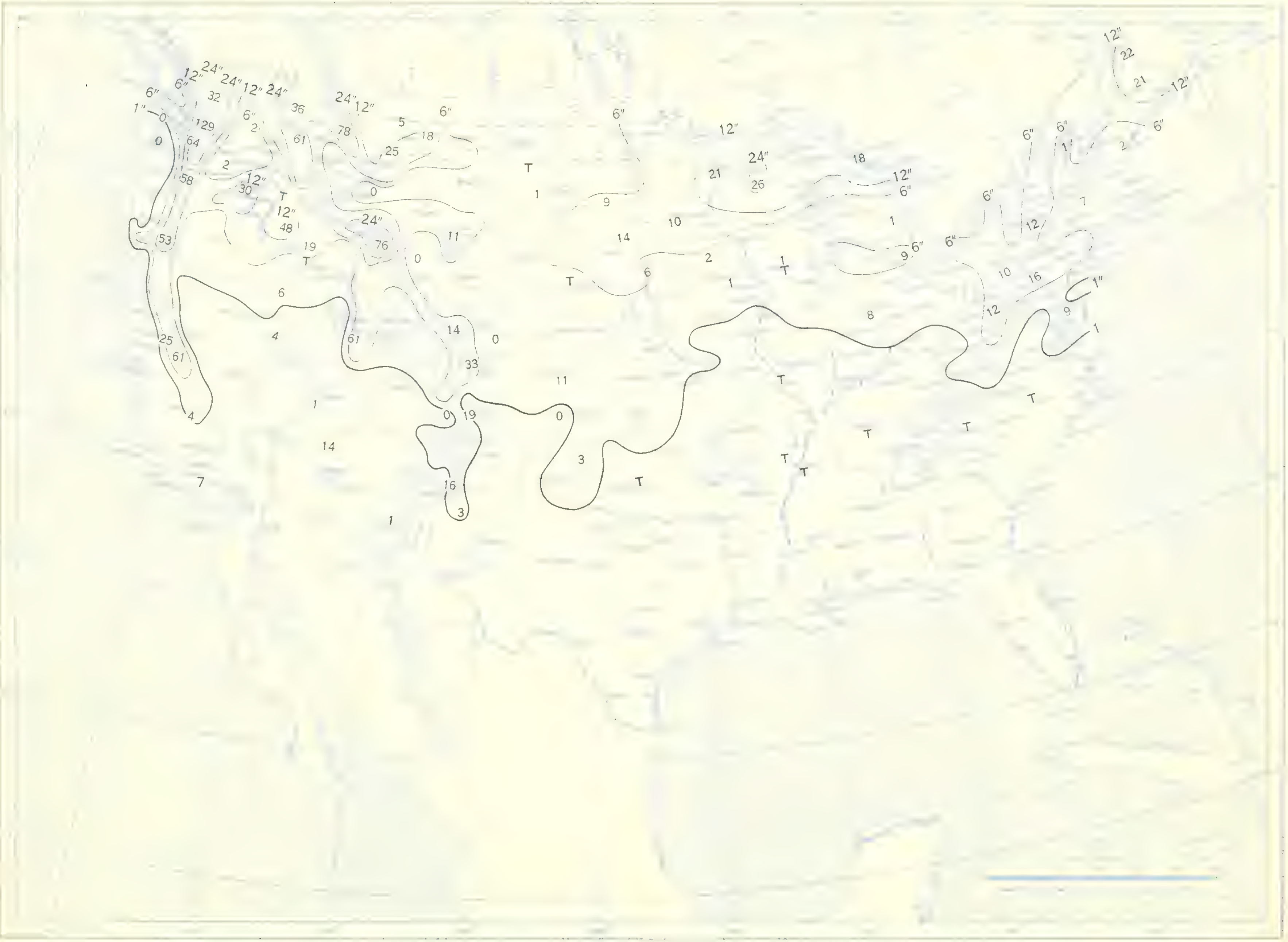


B. Percentage of Normal Precipitation, February 1957.



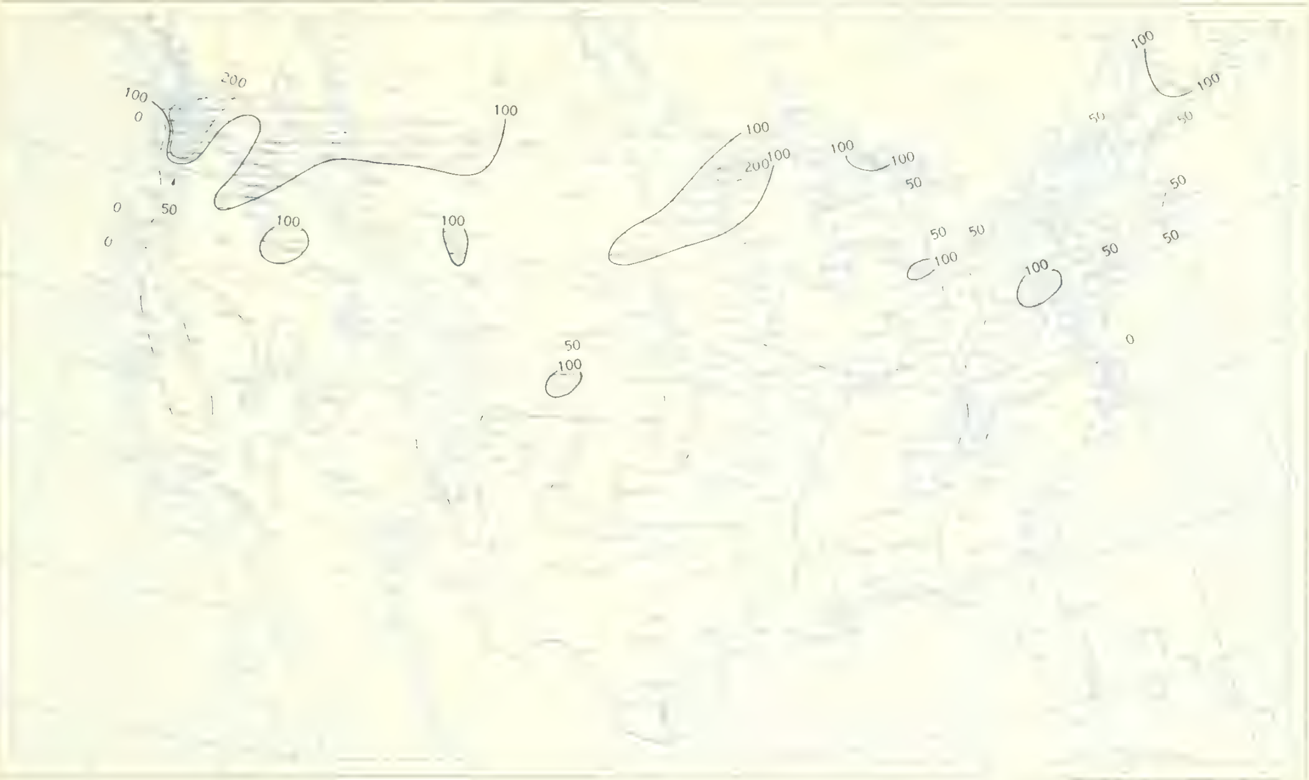
Normal monthly precipitation amounts are computed from the records for 1921-50 for Weather Bureau stations and from records of 25 years or more (mostly 1931-55) for cooperative stations.

Chart IV. Total Snowfall (Inches), February 1957.

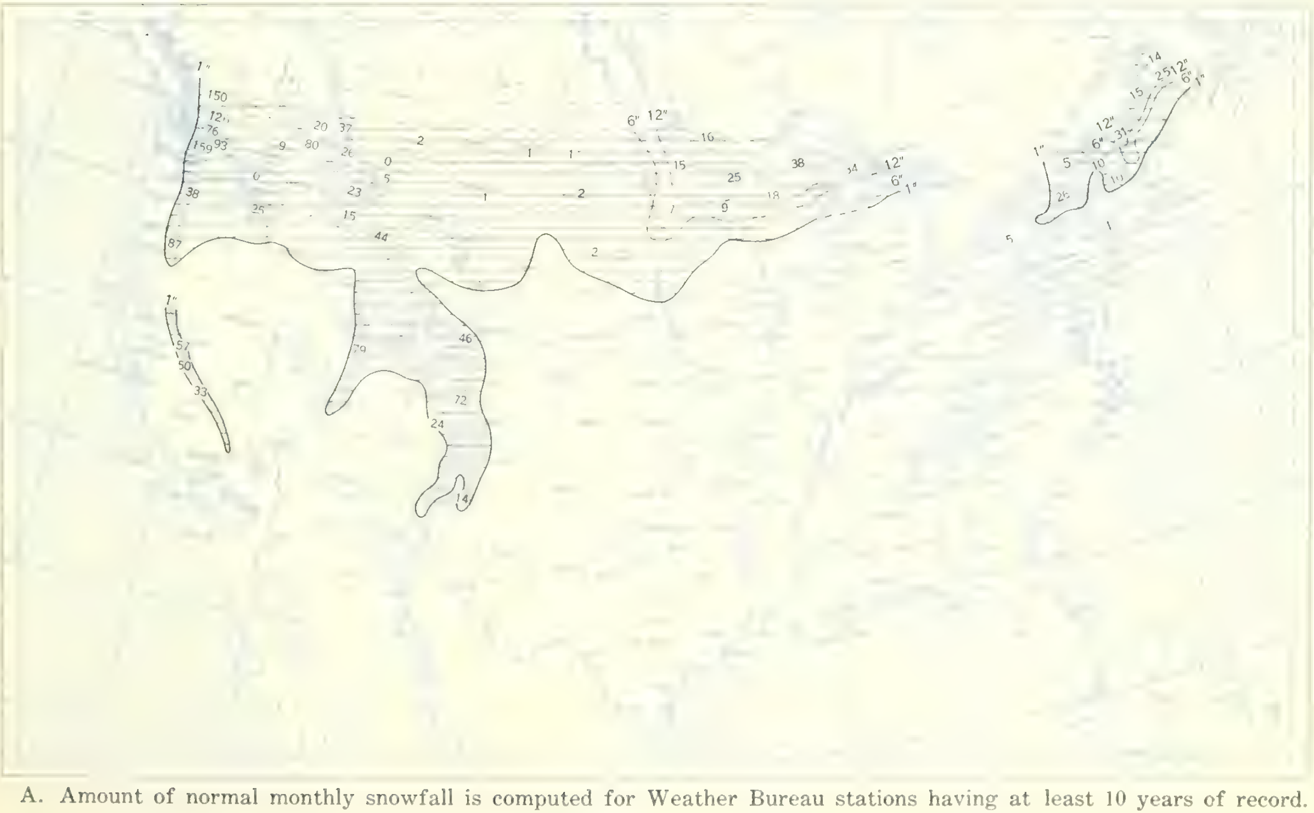


This is the total of unmelted snowfall recorded during the month at Weather Bureau and cooperative stations. This chart and Chart V are published only for the months of November through April although of course there is some snow at higher elevations, particularly in the far West, earlier and later in the year.

Chart V. A. Percentage of Normal Snowfall, February 1957.

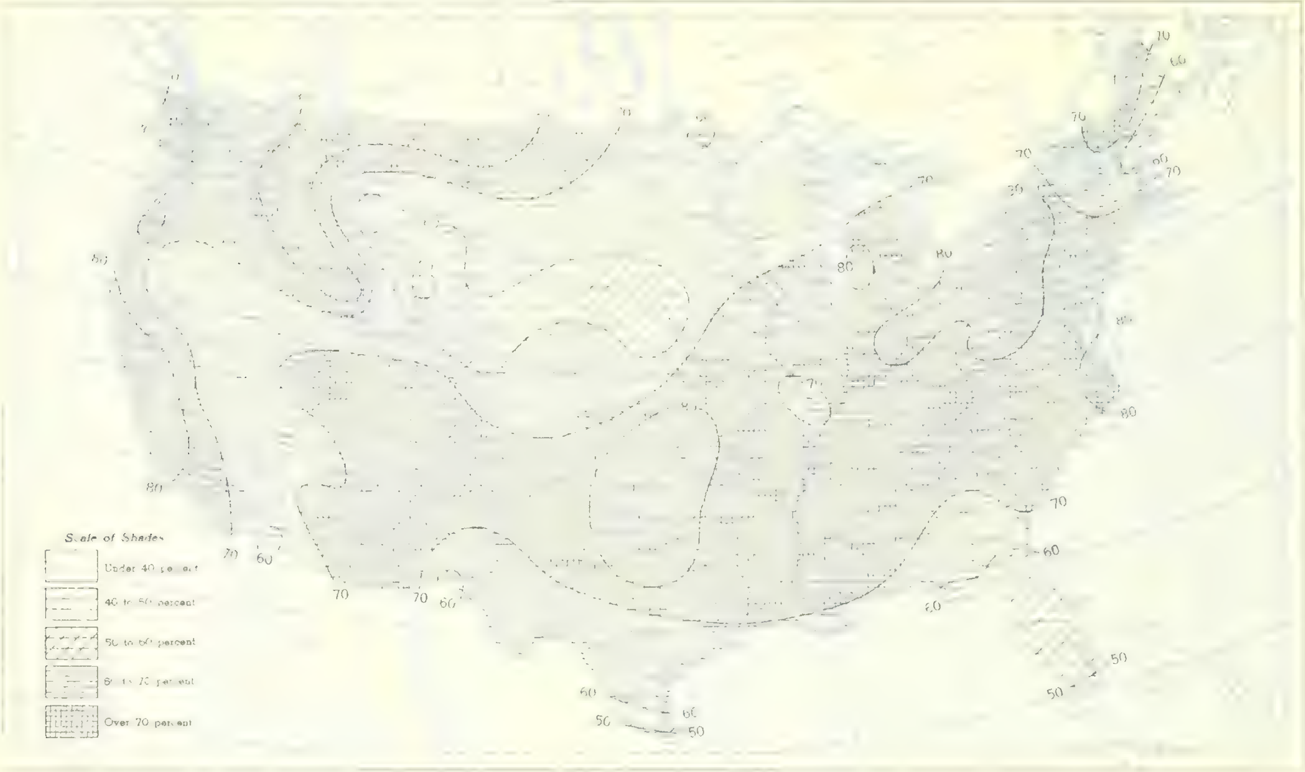


B. Depth of Snow on Ground (Inches). 7:30 a. m. E. S. T., February 25, 1957.

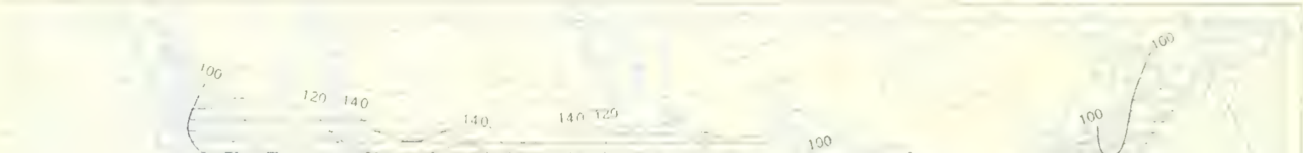


A. Amount of normal monthly snowfall is computed for Weather Bureau stations having at least 10 years of record.
B. Shows depth currently on ground at 7:30 a. m. E. S. T., of the Monday nearest the end of the month. It is based on reports from Weather Bureau and cooperative stations. Dashed line shows greatest southern extent of snowcover during month.

Chart VI. A. Percentage of Sky Cover Between Sunrise and Sunset, February 1957.

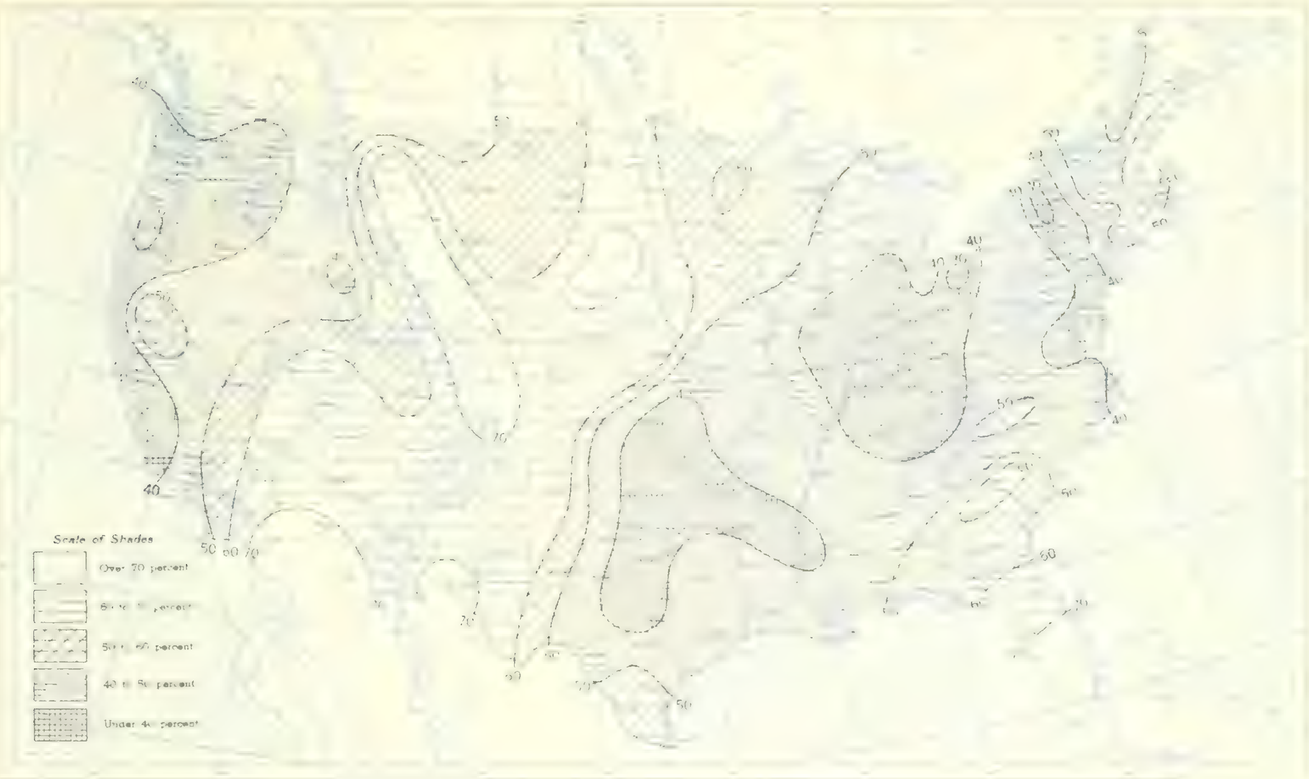


B. Percentage of Normal Sky Cover Between Sunrise and Sunset, February 1957.

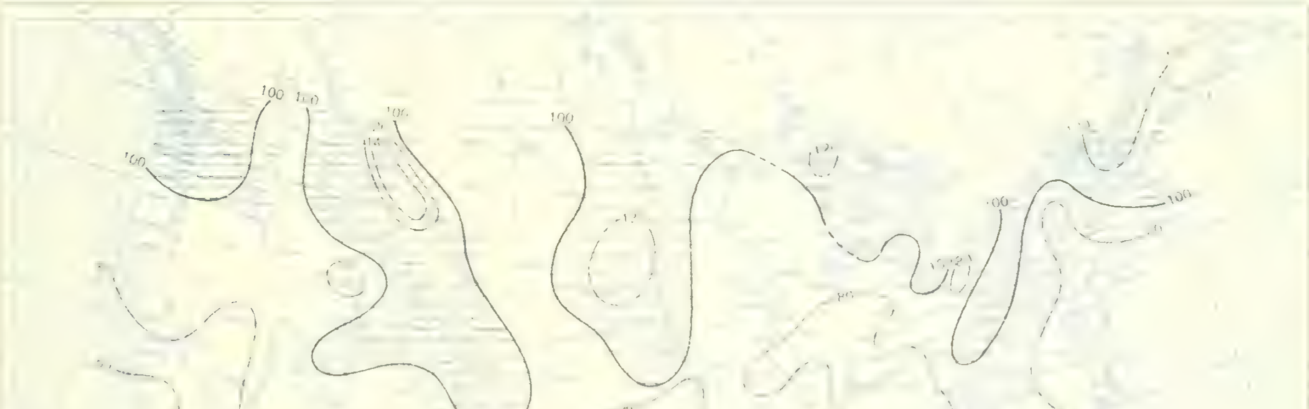


A. In addition to cloudiness, sky cover includes obscuration of the sky by fog, smoke, snow, etc. Chart based on visual observations made hourly at Weather Bureau stations and averaged over the month. B. Computations of normal amount of sky cover are made for stations having at least 10 years of record.

Chart VII. A. Percentage of Possible Sunshine, February 1957.



B. Percentage of Normal Sunshine, February 1957.



A. Computed from total number of hours of observed sunshine in relation to total number of possible hours of sunshine during month. B. Normals are computed for stations having at least 10 years of record.

Chart VIII. Average Daily Values of Solar Radiation, Direct + Diffuse, February 1957. Inset: Percentage of Mean Daily Solar Radiation, February 1957. (Mean based on period 1951-55.)

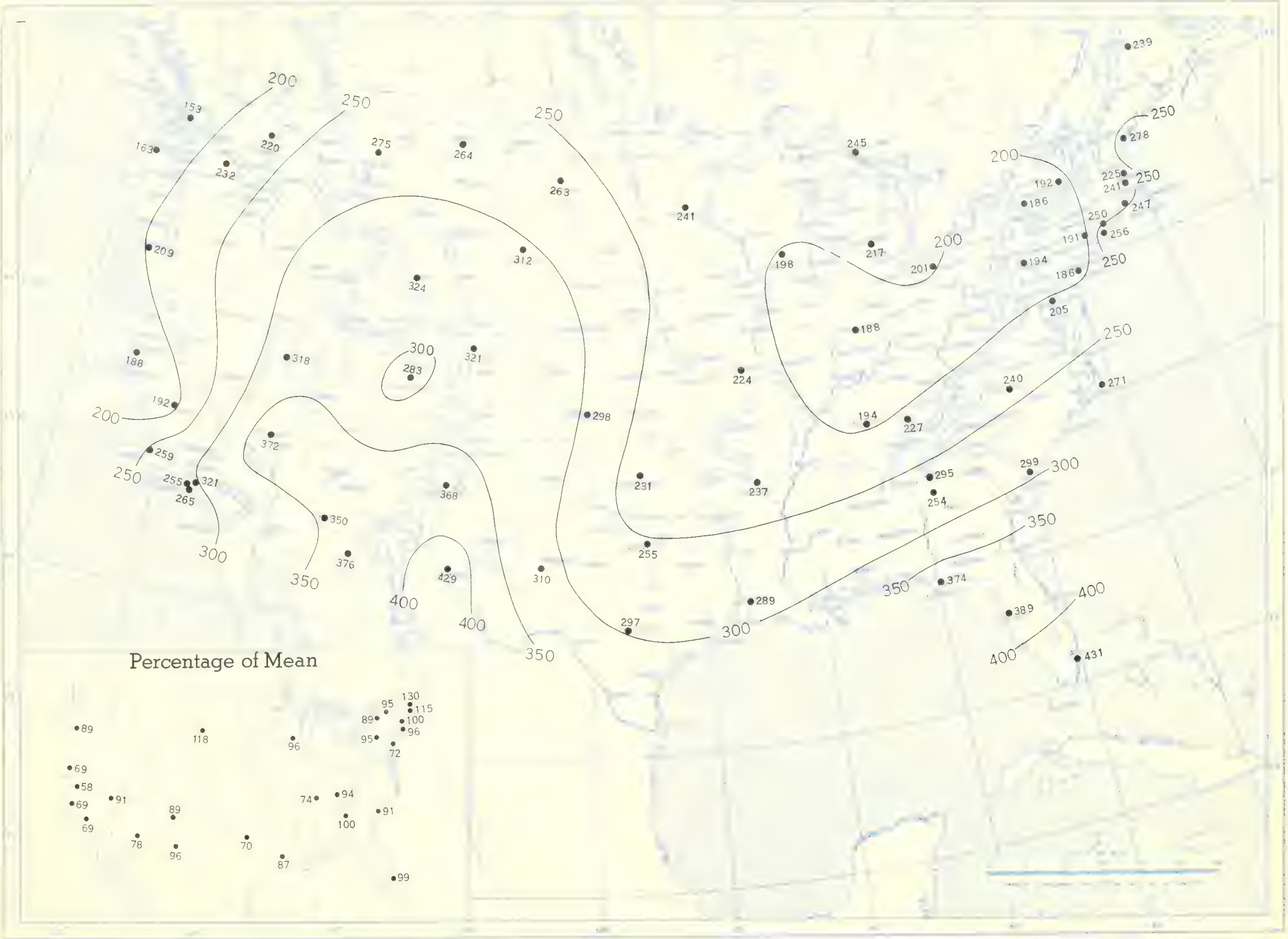
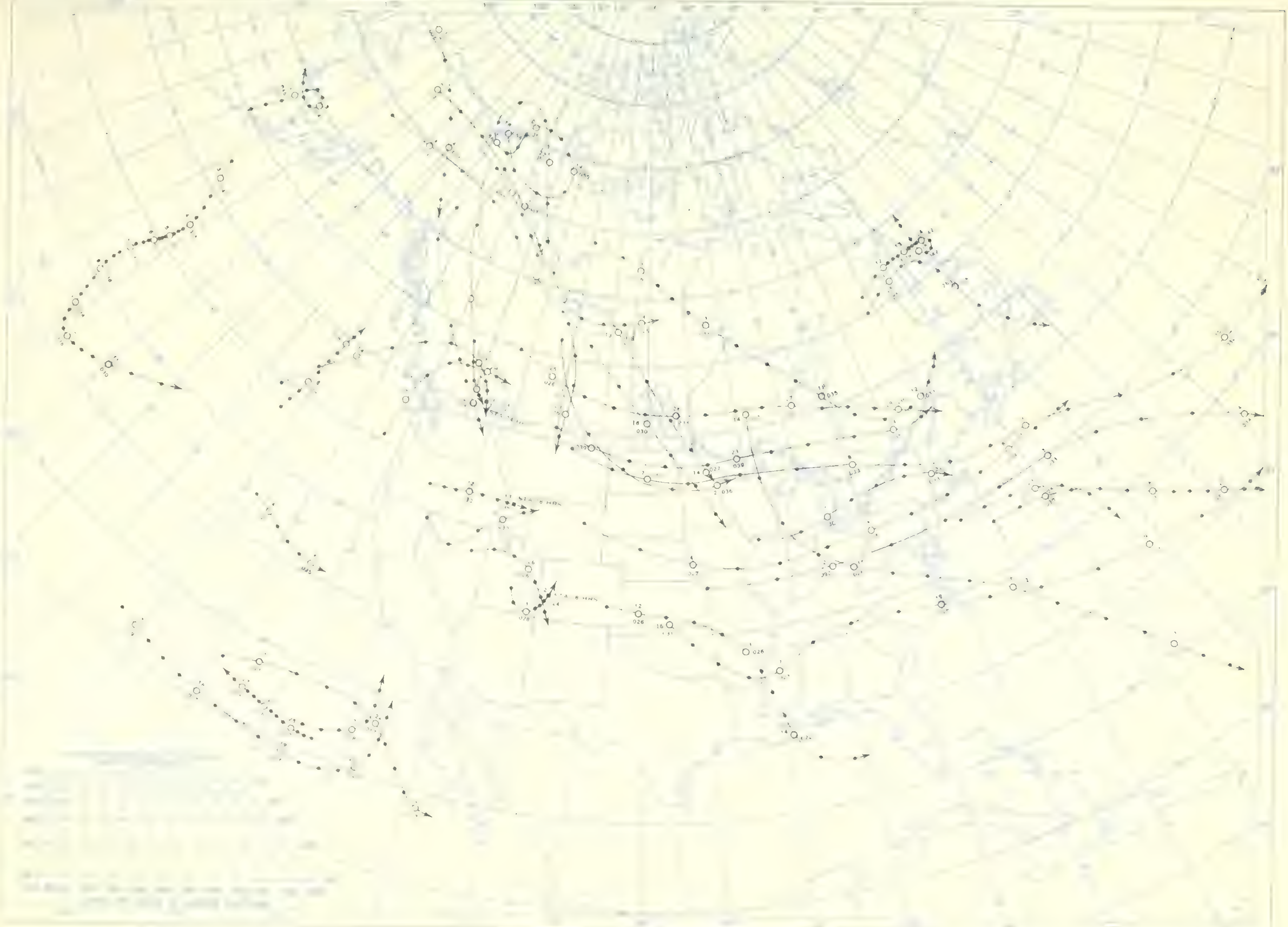


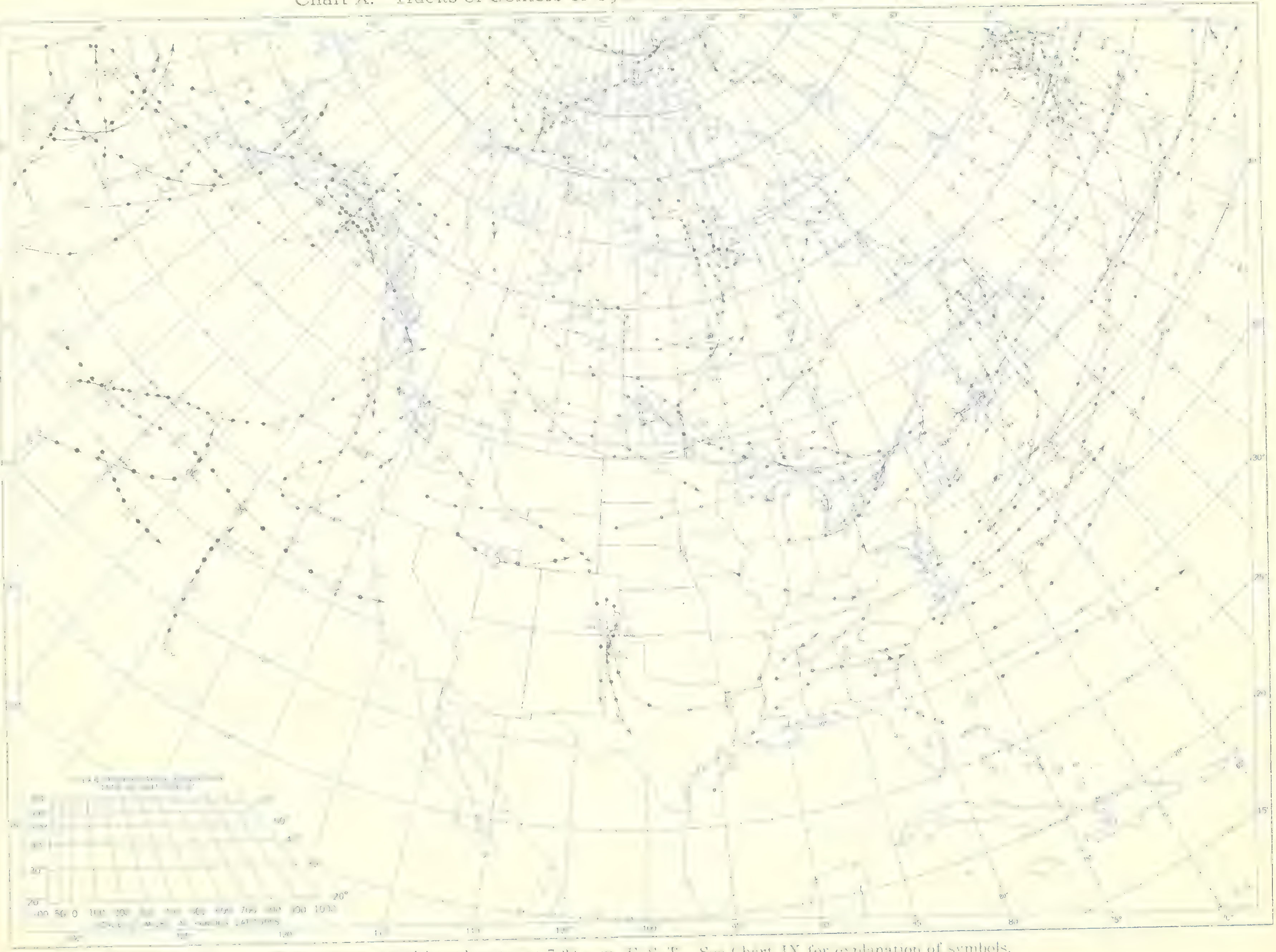
Chart shows mean daily solar radiation, direct + diffuse, received on a horizontal surface in langleys (1 langley = 1 gm. cal. cm.$^{-2}$). Basic data for isolines are shown on chart. Further estimates are obtained from supplementary data for which limits of accuracy are wider than for those data shown. The inset shows the percentage of the mean based on the period 1951-55.

Chart IX. Tracks of Centers of Anticyclones at Sea Level, February 1957.



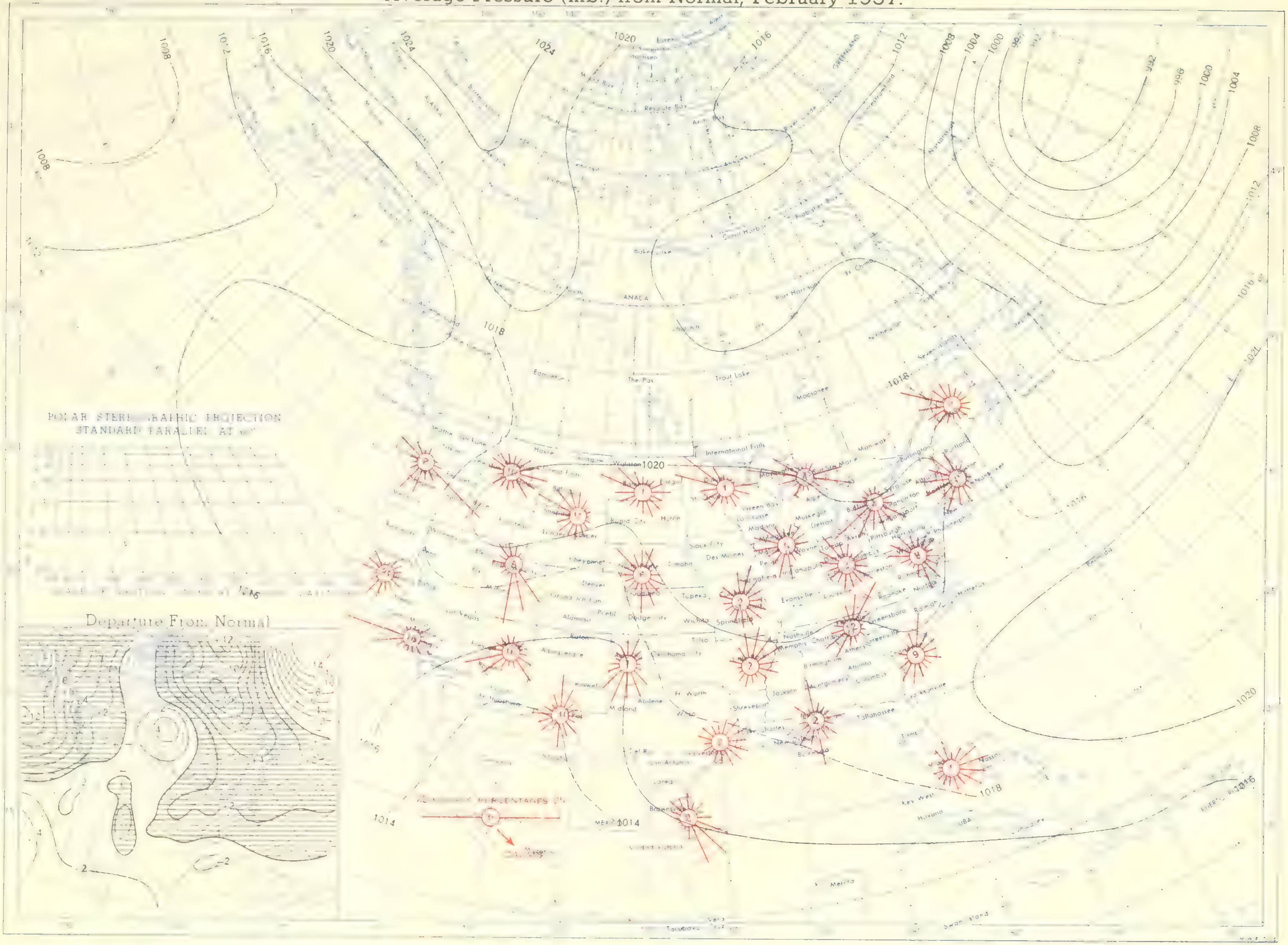
Circle indicates position of center at 7:30 a. m. E. S. T. Figure above circle indicates date, figure below, pressure to nearest millibar. Dots indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.

Chart X. Tracks of Centers of Cyclones at Sea Level, February 1957.



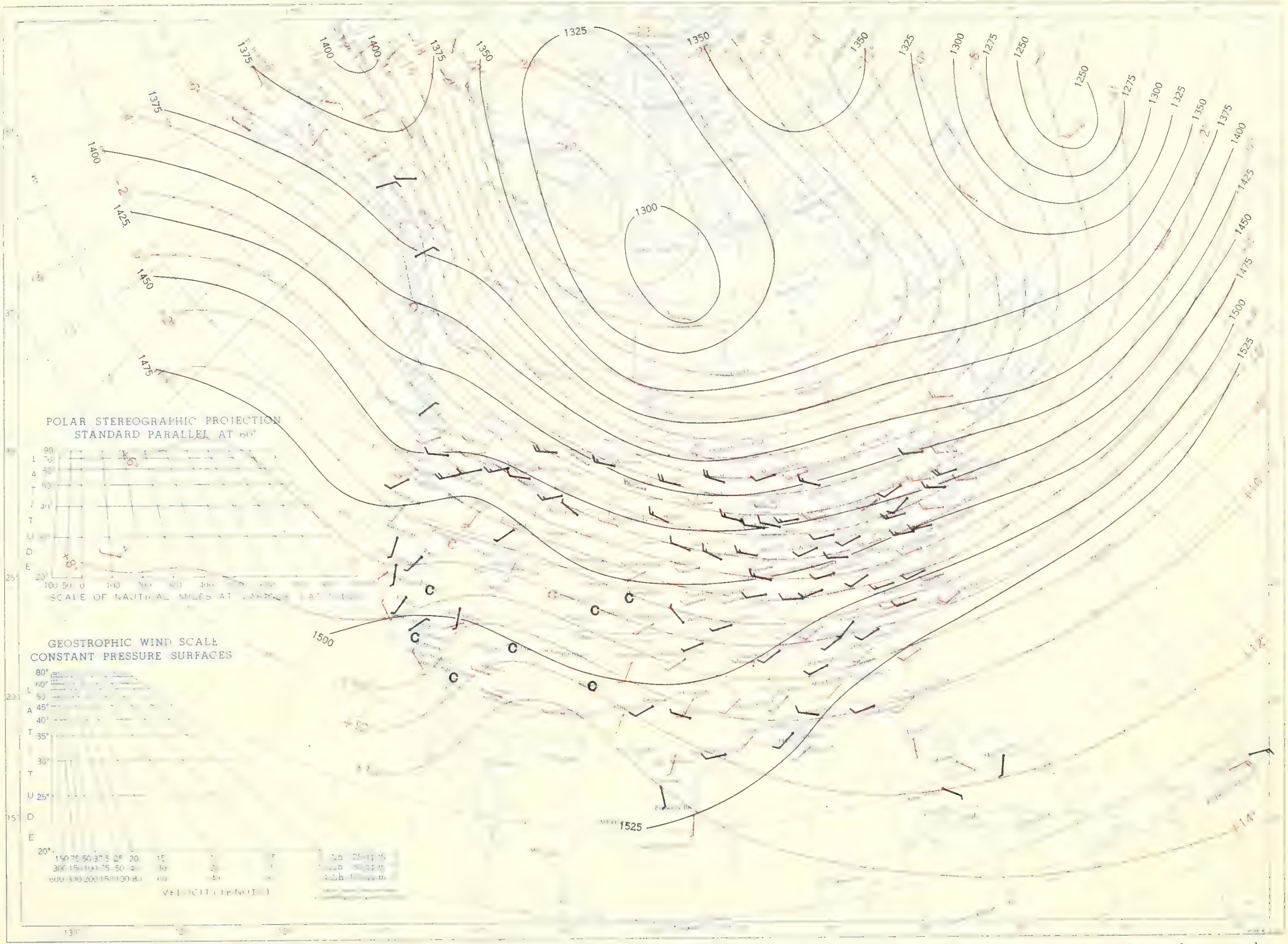
Circle indicates position of center at 7:30 a. m. E. S. T. See Chart IX for explanation of symbols.

Chart XI. Average Sea Level Pressure (mb.) and Surface Windroses, February 1957. Inset: Departure of Average Pressure (mb.) from Normal, February 1957.



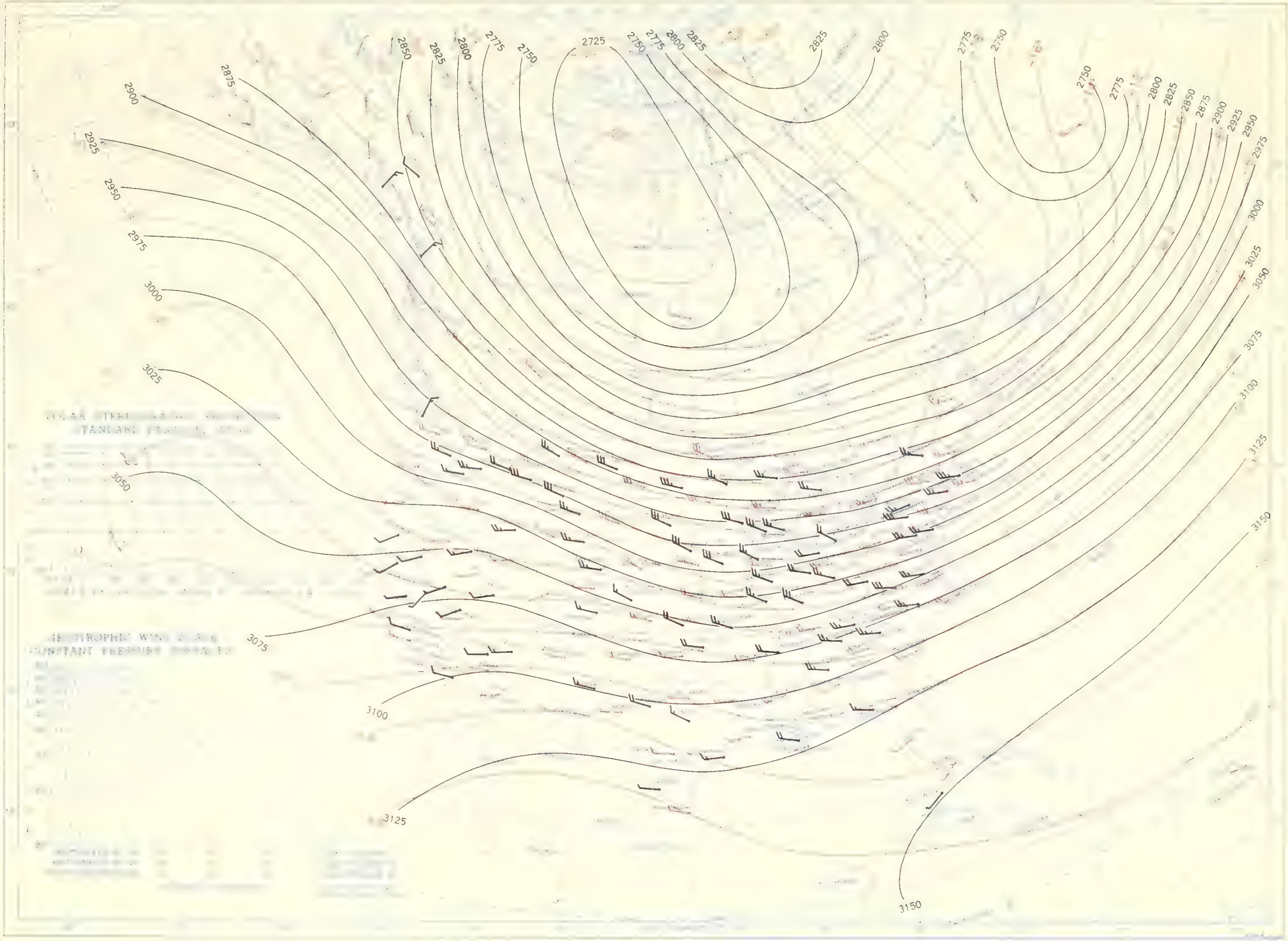
Average sea level pressures are obtained from the averages of the 7:30 a.m. and 7:30 p.m. E.S.T. readings. Windroses show percentage of time wind blew from 16 compass points or was calm during the month. Pressure normals are computed for stations having at least 10 years of record and for 10° intersections in a diamond grid based on readings from the Historical Weather Maps (1899-1939) for the 20 years of most complete data coverage prior to 1940.

Chart XII. 850-mb. Surface, 0300 GMT, February 1957. Average Height and Temperature, and Resultant Winds.



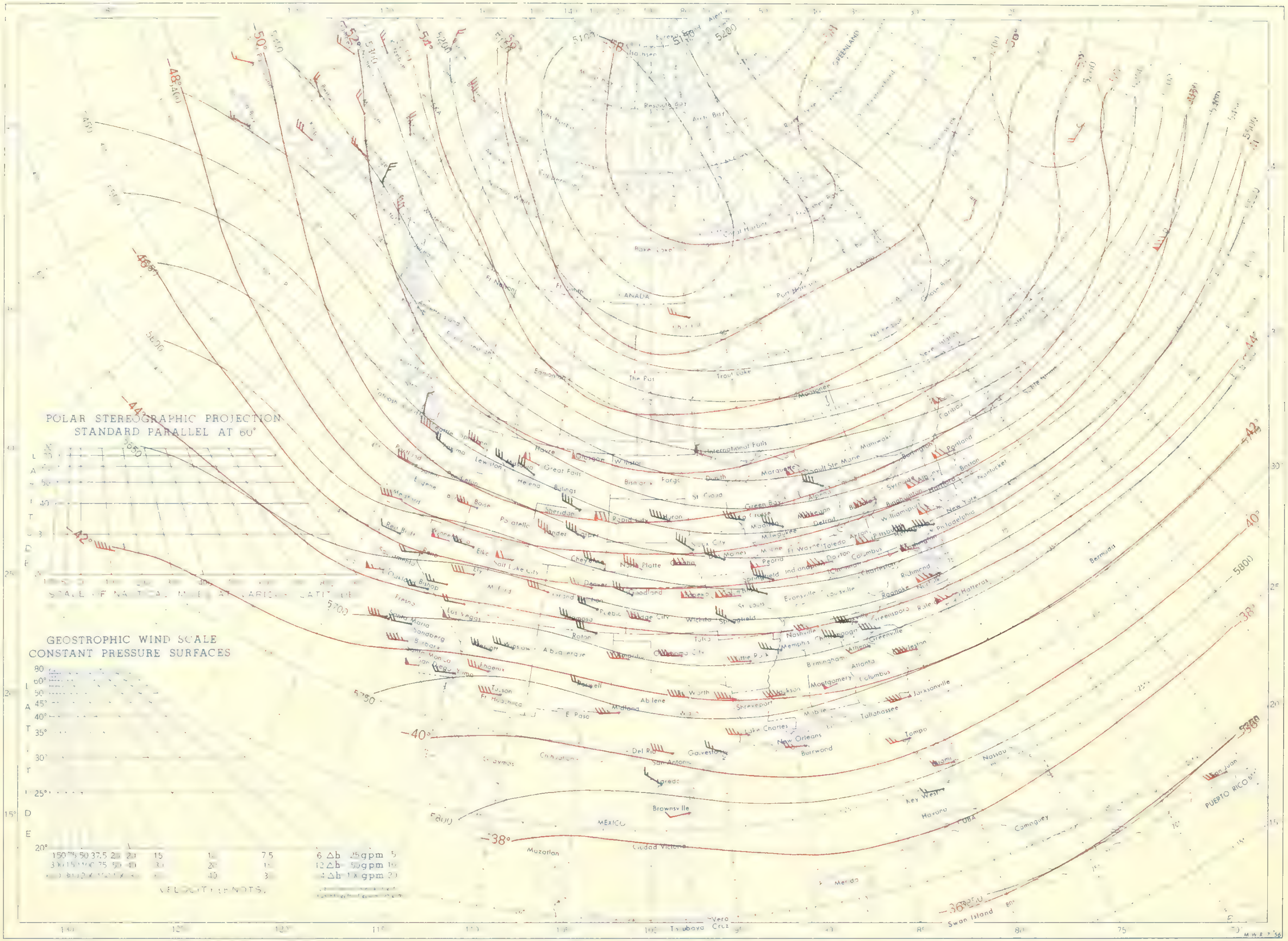
Height in geopotential meters (1 g.p.m. = 0.98 dynamic meters). Temperature in °C. Wind speed in knots; flag represents 50 knots, full feather 10 knots, and half feather 5 knots. Winds shown in red are based on rawins taken at the indicated pressure surface and time. Those in black are based on pibals taken at 2100 GMT and are for the nearest standard height level.

Chart XIII. 700-mb. Surface, 0300 GMT, February 1957. Average Height and Temperature, and Resultant Winds.



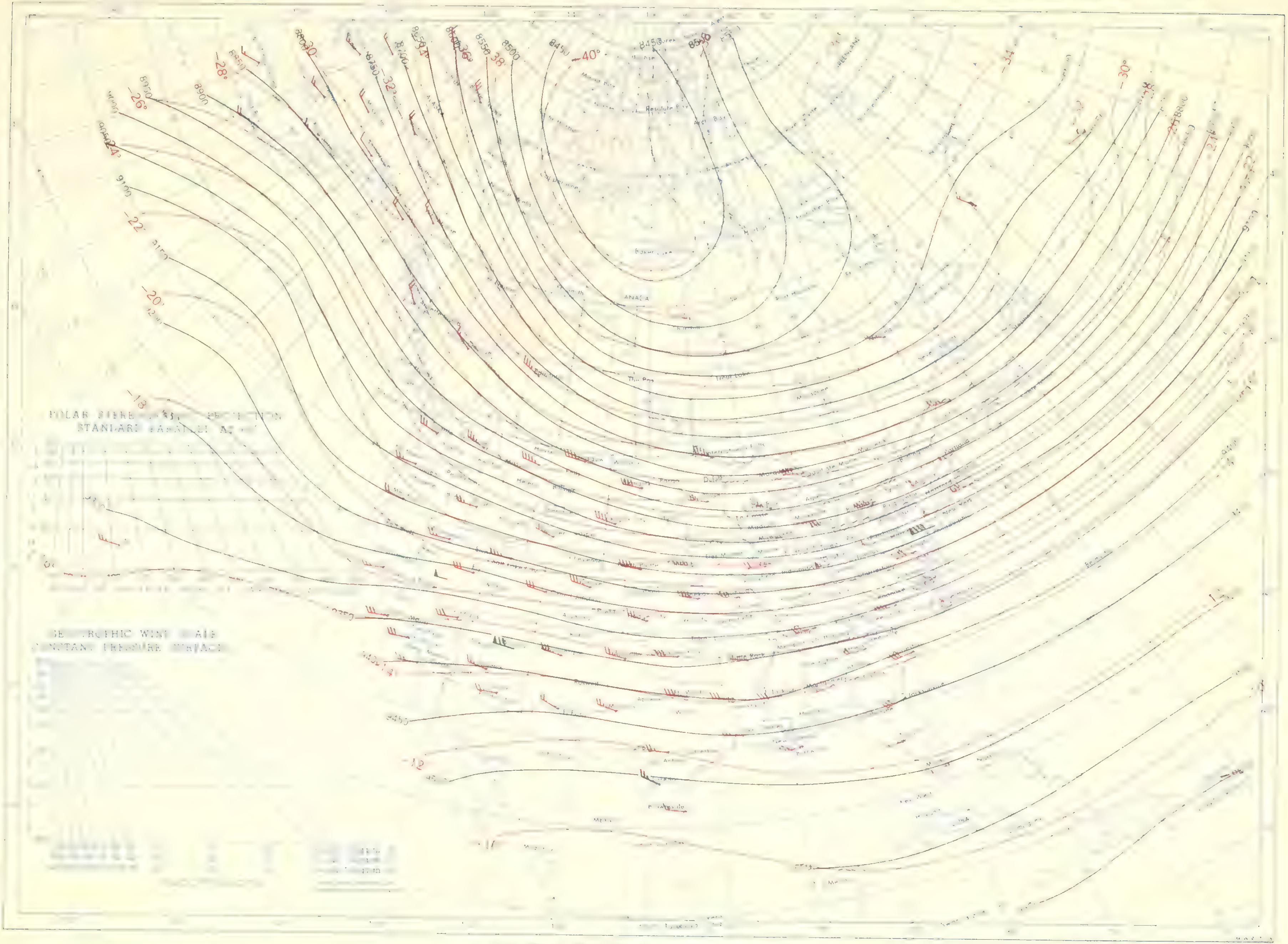
See Chart XII for explanation of map.

Chart XIV. 500-mb. Surface, 0300 GMT, February 1957. Average Height and Temperature, and Resultant Winds.



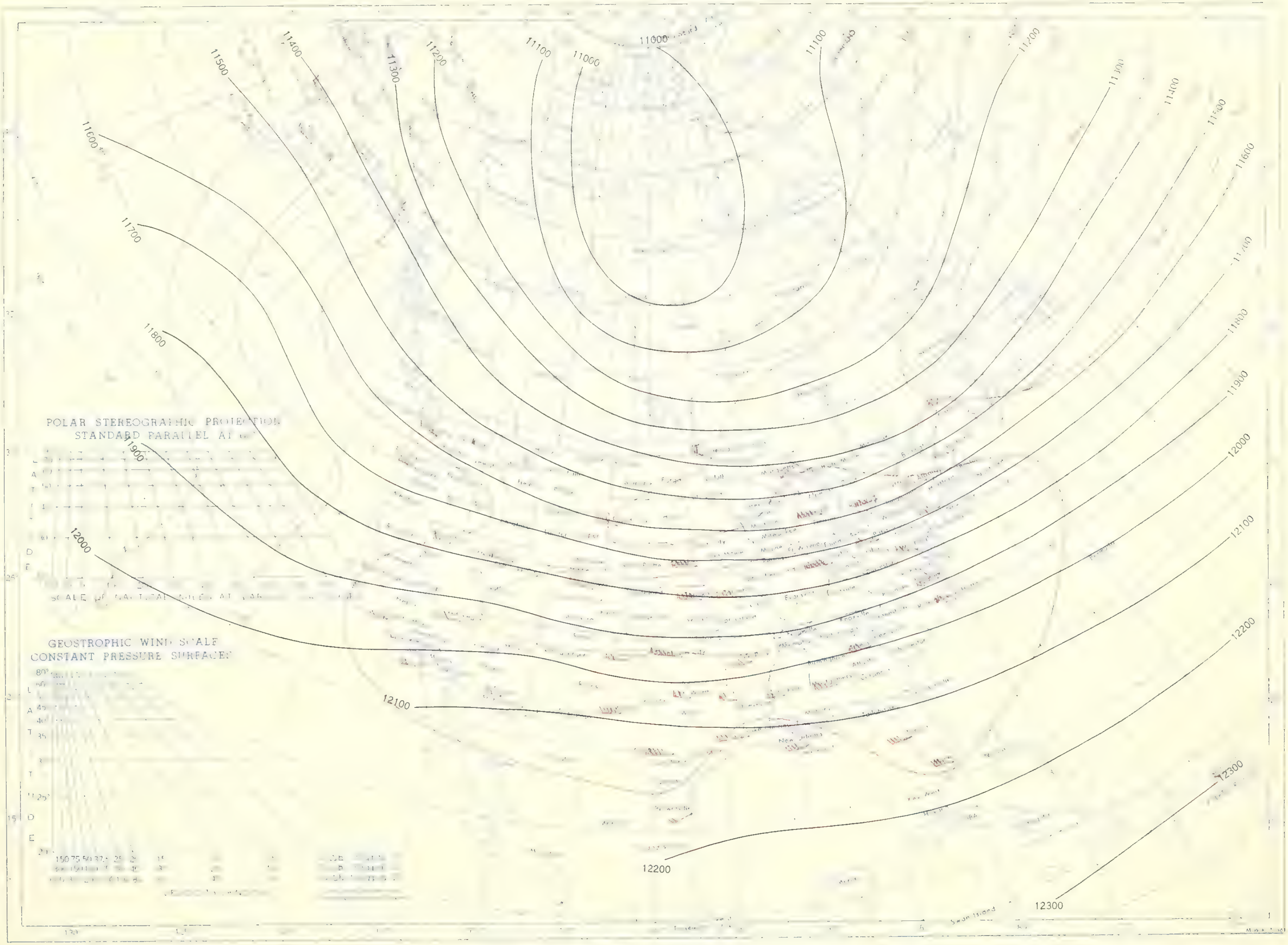
See Chart XII for explanation of map.

Chart XV. 300-mb. Surface, 0300 GMT, February 1957. Average Height and Temperature, and Resultant Winds.



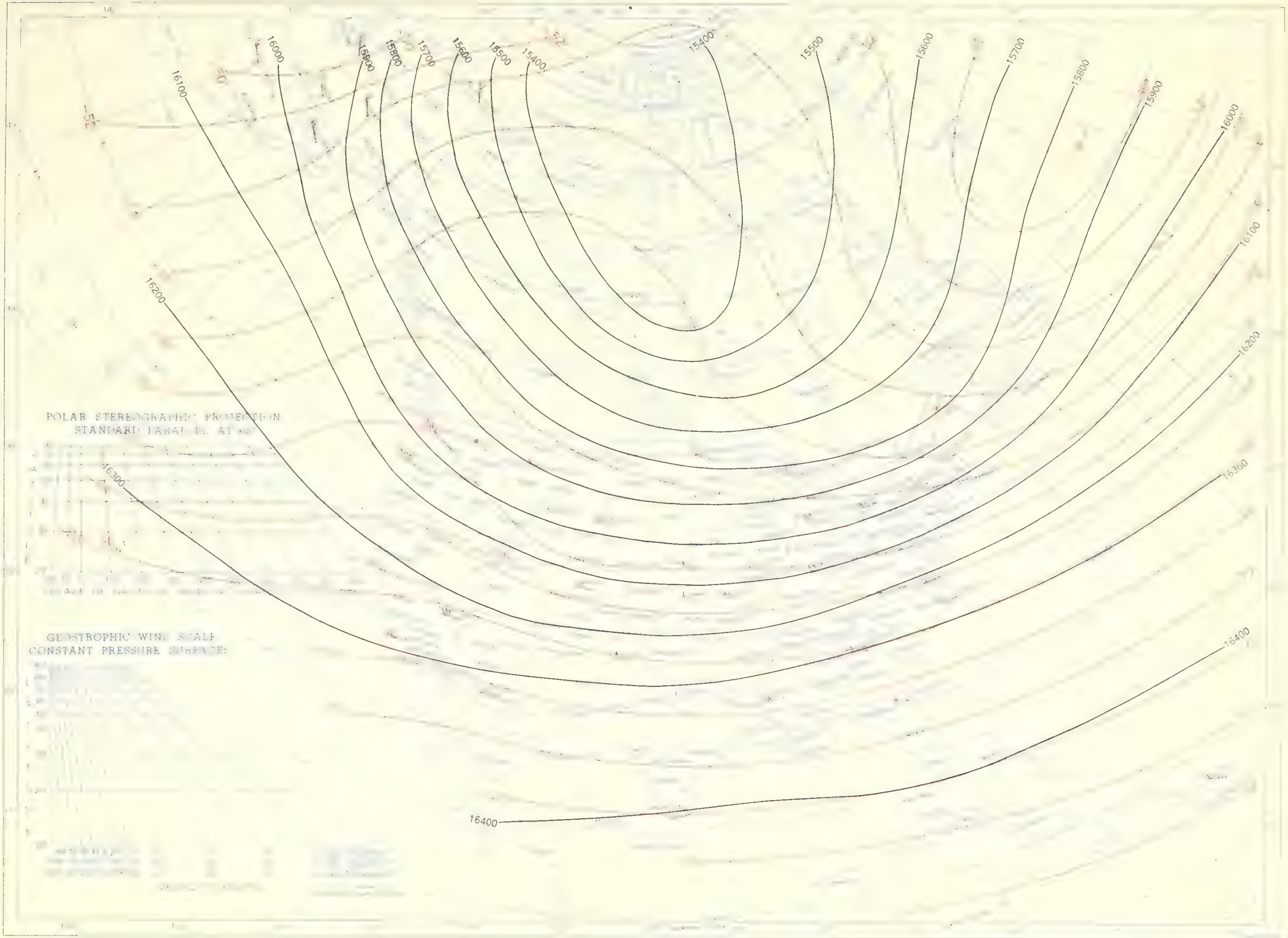
See Chart XII for explanation of map.

Chart XVI. 200-mb. Surface, 0300 GMT, February 1957. Average Height and Temperature, and Resultant Winds.



See Chart XII for explanation of map. All winds are from rawin reports.

Chart XVII. 100-mb. Surface, 0300 GMT, February 1957. Average Height and Temperature, and Resultant Winds.



See Chart XII for explanation of map. All winds are from rawin reports.

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MARCH 1957
Volume 8 No. 3

ASHEVILLE: 1957

CONTENTS

SURFACE DATA

Page

General Summary of Weather Conditions---------------------- 67

Condensed Climatological Data - States-------------------- 68

Climatological Data - Stations------------------------------ 69

Heating Degree Days-- 73

Storm Data and Unusual Weather Phenomena------------------ 74

General Summary of River and Flood Conditions------------- 84

Flood Stage Data-- 86

UPPER AIR DATA

Rawinsonde Data--- 87

SOLAR RADIATION DATA

Solar Radiation Intensities-------------------------------- 93

Blue Hill Data-- 94

Net Radiation--- 94

Daily Totals and Average Daily Totals by Weeks------------ 95

CHARTS I-XVII

NOTE.--This publication contains all of the climatic data formerly printed in the MONTHLY WEATHER REVIEW.

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CLIMATOLOGICAL DATA

NATIONAL SUMMARY

Volume 8 No. 3

MARCH 1957

GENERAL SUMMARY OF WEATHER CONDITIONS

For the country as a whole the rage of the elements, a typical characteristic of March, was conspicious by its absence. Nevertheless one of the worst spring snowstorms on record occurred in the southwestern Great Plains late in the month and numerous severe local storms occurred in Texas.

Precipitation was featured by above-normal amounts in the central and southeastern Great Plains and middle Mississippi Basin, areas plagued by drought in 1956. Generous amounts in the Pacific Northwest were also beneficial.

In most of the country temperatures for the month averaged within 2° of normal. Sharp temperature fluctuations were less frequent than usual, and extremes, with few exceptions, were well within the limits of former records. Although some freeze damage did occur in southern areas, it was mostly minor. At the end of the month the snowcover had retreated to the higher mountain ranges in the Far West and Northeast and some areas around Lake Superior. Navigation began in the Mississippi River at LaCrosse, Wis., on the 15th and at St. Paul, Minn., on the 19th. Ice was out of the River at Concord, N. H., by the 14th and ice in the Missouri River broke up at Bismarck, N. D., on the 26th.

TEMPERATURES.--Temperatures for the month averaged slightly below normal in Washington State, the central Great Plains and Southeast, and a little above elsewhere.

In most sections east of the Rocky Mountains lowest temperatures occurred from about the 6th through the 11th as an extensive cold air mass moved from Canada down through the mid-country to the Gulf and then drifted slowly out over the Atlantic. Freezing extended to the central Gulf areas and to the Everglades in Florida causing some local damage to early crops and tung in the latter area.

Lowest temperatures in much of the Far West occurred about the middle of the month when another cold Canadian air mass moved in behind a low pressure area moving out of the central Rockies. On the 15th Taylor Park, Colo., recorded -27° for the month's lowest temperature, and on the 17th freezing extended into Arizona where some fruit and crops suffered minor damage.

In the Great Lakes region and Northeast on the 13th and 14th, maximum temperatures rose into the 70's, setting new date records at several stations. Among these were Chicago, Ill., 70° and Lansing, Mich., 72° on the 13th; Buffalo, N. Y., 75° and Trenton, N. J., 74° on the 14th.

PRECIPITATION.--March precipitation was much above normal in the central and southeastern Great Plains and the Pacific Northwest, well below east of the Mississippi except near the Gulf, in the northern Great Plains and in the Far Southwest, and about normal elsewhere.

The month's precipitation was featured by the heavy amounts in the central and southeastern Great Plains, areas plagued by drought during the years 1952 through 1956. Monthly totals generally ranged from 2 to over 4 inches, most of which fell during the latter half of the month. March was the third consecutive month of generous precipitation in the southeastern Plains. At the end of the month some streams were flowing in southern and eastern Kansas, moisture conditions in Oklahoma were the best in several years and even subsoil reserves were building up in eastern Texas. In Kansas the lower subsoil continued dry, but topsoil moisture was ample in the east and greatly improved in the west. The month was the wettest March on record at Dodge City, Kans. (4.71 inches), and Houston, Tex. (11.42 inches).

Heavy rains in the Pacific Northwest improved range prospects in many sections but caused some flooding in western Oregon where Medford recorded a monthly total of 5.54 inches for the wettest March on record there. Streamflow was above normal in nearly all the Pacific Northwest.

SNOWFALL.--Snowfall was heavier than usual in central and northern portions of the Far West, but falls in the Cascades and Sierras were not sufficient to bring the snow pack up to normal there.

The outstanding snowstorm of the month occurred in the central and southwestern Great Plains on the 22d through the 25th. Falls from this storm greatly exceeded the March normals in many sections. At Dodge City, Kans., 18.5 inches of snow fell during the storm and a depth of 14 inches on the ground was measured on the 25th and 26th. About 11 inches fell at Amarillo, Tex., where a 10-inch depth was measured on the 25th, and at Omaha, Nebr., where an 11-inch depth was measured also on the 25th.

Another severe snowstorm occurred in parts of the northern Great Plains and upper Mississippi Basin on the 14th and 15th. A fall of 19.5 inches in 24 hours was recorded at Wadena, Minn. This storm, with temperatures below 20° and winds up to 50 m.p.h. or more, was a true blizzard in parts of South Dakota, Nebraska, Minnesota and Iowa. Drifts up to 7 feet high halted transportation and damaged overhead wires, isolating several communities in Minnesota.

In New York State and New England heavy snow accompanied by some sleet and glaze hampered transportation and damaged power and communication lines on the 8th and 9th. Travel was hampered and some lines damaged in Rhode Island and eastern Massachusetts again on the 20th when 4 to 12 inches of snow fell.

A trace of snow fell as far south as Mobile, Ala., on the 8th, and 0.7 of an inch at Birmingham, Ala., on the same date was the heaviest fall there since November 1950.

DESTRUCTIVE STORMS.--The outstanding storm of the month was the severe snowstorm in the southwestern Great Plains from about the 22d through the 25th. This storm, reaching blizzard proportions in many sections, was among the worst on record for so late in the season. Heavy snowfall, ranging up to 20 inches, was blown by winds up to 80 m.p.h. into drifts 15 to 25 feet high. Greatest losses consisted of livestock, but snow, glaze and wind also damaged power and communication lines. Total losses amounted to several million dollars.

Numerous storms occurred in Texas but they were relatively few elsewhere. In that State hail, wind and rain on the 20th caused damage in McLennan County estimated at more than a million dollars, and on the same date a similiar storm was responsible for damage in parts of Washington, Burleson and Grimes Counties of about a half million dollars. Austin estimated hail losses on the 11th at more than a quarter million dollars, and tornado losses on the 31st at several thousand. On the 5th hail and wind also caused about a quarter of a million dollars damage in southeastern Arkansas, most of it in the vicinity of Monticello.

CONDENSED CLIMATOLOGICAL SUMMARY

MARCH 1957

Section	Temperature						Precipitation			
	Monthly extremes						Monthly extremes			
	Station	Highest	Date	Station	Lowest	Date	Station	Greatest	Station	Least
		°F			°F			In.		In.
Alabama	Geneva	87	15	3 Stations	21	8+	Mobile WB Airport	8.69	Belgreen	1.78
Arizona	2 Stations	93	7+	2 Stations	7	23+	Flying H Ranch	2.79	Ehrenberg	.00
Arkansas	Crossett 7S	83	14	Gravette	12	8	Horatio	8.90	Salem	1.11
California	2 Stations	93	8+	2 Stations	-8	22	Klamath	23.27	2 Stations	.00
Colorado	Eversoll Ranch	79	16	Taylor Park	-27	15	Crested Butte	3.74	Pueblo WB AP	.14
Connecticut	Danbury	73	14	Norfolk 2SW	7	5	Groton	4.40	Falls Village	1.29
Delaware	2 Stations	75	14	Newark College Farm	21	4	Selbyville	4.60	Newark College Farm	2.23
Florida	Hypoluxo	92	25	Jasper 9ESE	25	10	Hillsborough Rvr. St. Pk.	8.38	Everglades	.75
Georgia	Homerville	87	15	2 Stations	21	10+	Jesup 8S	7.18	Ringgold	2.45
Idaho	3 Stations	68	19+	Obsidian 2NNW	-26	14	Fenn Ranger Station	4.93	Chilly Barton Flat	.16
Illinois	Harrisburg	75	13+	Stockton	5	3	Prairie du Rocher	4.00	Park Forest	.94
Indiana	Shelbyville Nursery	78	14	Wabash	8	3	Bowling Green	3.10	W. Lafayette CAA AP	.77
Iowa	Albia Pasture Imp Fm	76	13	Saratoga 2E	-2	8	Mount Ayr 2N	4.10	Saratoga 2E	.67
Kansas	Lakin	85	10	Goodland WB AP	6	6	Ransom	5.82	St. Francis	1.06
Kentucky	6 Stations	77	11+	Cynthiana 2	12	4	Lancaster	4.04	Oneonta Dam 35	1.10
Louisiana	2 Stations	85	14+	2 Stations	20	8	Grand Chenier	11.52	Homer Exp Station	3.07
Maine	do	59	14+	Squa Pan Dam	-8	1+	Bar Harbor	3.49	Middle Dam	.91
Maryland	3 Stations	76	13+	Oakland	0	4	Pocomoke City 4SW	5.30	Tonoloway	1.41
Massachusetts	Springfield Armory	70	14+	West Cummington	2	5	Nantucket WB AP	6.08	Adams	.94
Michigan	Bloomingdale	74	14	Kenton U.S. Forest	-24	3	Niles	3.16	Huron Mountain	.30
Minnesota	Canby	63	10	Big Falls Ranger Sta.	-27	3	Wadena	2.51	Red Lake Falls	T
Mississippi	2 Stations	84	14+	Quitman	21	9	Pascagoula High School	12.06	Corinth	2.08
Missouri	do	78	13+	Edgerton	5	8	Monett	5.56	Koshkonong	1.07
Montana	Albion	69	21	2 Stations	-20	14+	Haugan	3.27	2 Stations	T
Nebraska	Tecumseh	78	13	Fort Robinson	-8	7	Syracuse	4.43	Valentine WB AP	.32
Nevada	North Las Vegas Dox	85	8	Wells	-12	14	Arthur 5NW	4.97	North Las Vegas Dox	.00
New Hampshire	Surry Mountain Dam	67	15	Fabyan	-14	5	Mount Washington	3.58	Lancaster	.63
New Jersey	Belvidere	78	14	Layton 3NW	10	3+	Belleplain	4.98	Canton	1.26
New Mexico	2 Stations	86	8+	Gavilan	-4	23	Sandia Crest	3.76	Jal	T
New York	Batavia	78	14	3 Stations	-15	5+	Bridgehampton	4.01	Green	.35
North Carolina	5 Stations	79	13+	4 Stations	15	4+	Wilmington 7N	6.27	Daybook	.75
North Dakota	Marmarth	75	21	Belcourt Indian Res	-21	9	Medora 23NNW	1.18	7 Stations	T
Ohio	5 Stations	76	11+	Mansfield 6W	6	3	Dover Dam	2.99	Findlay CAA AP	.48
Oklahoma	3 Stations	83	10+	2 Stations	14	7	Idabel	8.32	Chandler 1E	1.72
Oregon	Grants Pass	78	27	Austin 3S	4	14	Valsetz	20.38	McDermitt 26N	.80
Pennsylvania	West Chester	79	15	2 Stations	-3	4+	Kregar 4SE	3.81	Hop Bottom 2SE	1.03
Rhode Island	2 Stations	65	13	Kingston	12	5	Kingston	3.85	Woonsocket	2.95
South Carolina	Ridgeland 2SE	84	15	Chester 2SW	18	10	Georgetown	6.93	Dillon	2.86
South Dakota	McLaughlin	74	21	2 Stations	-19	6+	Wagner	2.54	Pollock	T
Tennessee	2 Stations	77	14+	Mountain City 2	16	4	Camp Creek Bald	4.60	Mountain City 2	1.27
Texas	Rio Grand City 2ESE	97	23	2 Stations	10	7	Alvin	14.88	6 Stations	.00
Utah	St. George PH	76	7+	do	-8	14	Alta	10.12	Hite	.00
Vermont	Vernon	70	15	3 Stations	-10	5+	Mays Mill	2.10	Lemington	.71
Virginia	2 Stations	78	12+	Big Meadows	11	3	Nassawadox	7.94	Monterey	.81
Washington	Packwood	74	28	Mt. Spokane Summit	5	5	Cougar 1E	19.59	Chesaw	.97
West Virginia	Williamson	79	12	2 Stations	2	4	Pickens 1	4.11	Stony River Dam	.99
Wisconsin	2 Stations	70	13	Couderay	-24	3	Williams Bay	3.59	Spring Valley	.33
Wyoming	3 Stations	69	12+	Bondurant	-25	14	Moose 3NW	4.48	Clareton 16SW	.00
Puerto Rico	Caguas	95	21	Cayey 1N	51	16	San Sebastian	3.45	3 Stations	.00

+ And also on a later date or dates.

Note: Dates in Table 1 apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for times of observations).

CLIMATOLOGICAL DATA

State and station		Pressure		Temperature												Precipitation							Wind					No. of days (sunrise to sunset)				
												No. of days							No. of days		Snow, Sleet				Fastest mile							
	Elevation (ground)	Station ø	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F. or above	Min. 32° F. or below	Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max. depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy	Sky cover, tenths (sunrise to sunset)	Possible sunshine
	Ft.	Mb.	Mb.	°F.	°F.	°F.	°F.	°F.		°F.				°F.	%	In.	In.	In.			In.	In.	M p. h.		M. p. h.			0–3	4–7	8–10	0–10	%
ALABAMA																																
Birmingham	610	990.6	1015.6	62	42	51.8	-2.0	76	11	27	10	0	3	40	68	6.08	-0.23	1.91	15	2	0.7	1	9.0	N	40	SE	21	3	12	16	7.5	44
Mobile	211	1007.0	1015.2	69	48	58.5	-1.0	81	19	32	9	0	1	47	72	8.69	1.07	2.84	13	7	T	0	10.1	N	--	---	--	8	6	17	6.3	--
Montgomery	198	1007.5	1015.3	66	45	55.5	-1.6	78	17+	31	10	0	2	43	70	5.43	-1.07	1.35	16	2	T	0	7.7	[illegible]	29	[illegible]	24	7	5	19	7.0	55
ARIZONA																																
Flagstaff	6993	------	------	51	25	37.6	3.2	65	8	14	25	0	29	--	--	.92	-.65	.43	10	1	3.0	2	----	---	--	---	--	5	10	16	7.0	--
Phoenix	1114	973.6	1012.8	74	49	61.8	1.9	85	8	40	25	0	0	38	45	.53	-.13	.46	3	0	.0	0	5.5	E	*32	S	19	9	11	11	5.6	88
Prescott	5014	844.2	1012.9	60	34	46.9	2.1	74	8	24	14+	0	10	--	--	.52	-.46	.38	4	1	T	T	10.4	SSW	63	NW	22	6	12	13	6.5	75
Tucson	2558	924.1	1011.9	73	47	59.6	1.7	88	8	36	25	0	0	32	40	.93	.25	.71	3	0	.0	0	7.7	SE	30	NW	30	13	7	11	5.1	85
Winslow	4880	848.3	1011.1	61	35	47.7	2.2	76	8	24	14	0	10	22	41	1.13	.73	.48	8	2	.1	T	9.5	WSW	*48	SW	21	6	11	14	6.6	--
Yuma	199	1007.8	1013.1	81	52	66.6	.9	93	7+	40	17	4	0	32	33	.27	.01	.27	1	0	.0	0	7.9	SSE	41	NW	16	12	8	11	5.2	88
ARKANSAS																																
Fort Smith	458	997.3	1014.2	59	40	49.3	-3.0	77	13	22	8	0	3	38	68	2.40	-.69	.51	14	5	T	0	9.6	ENE	34	SW	10	4	9	18	7.4	38
Little Rock	257	1001.4	1014.5	60	42	51.1	-1.7	74	10+	26	8	0	2	38	66	5.12	.27	1.57	15	3	T	0	9.7	E	40	N	21	6	7	18	7.0	45
Texarkana	361	------	------	62	44	53.0	-3.0	76	13	23	8	0	2	--	--	5.36	.43	1.28	13	6	.0	0	7.0	ENE	--	---	--	--	--	--	---	--
CALIFORNIA																																
Bakersfield	489	999.7	1018.2	70	46	57.9	.8	84	28	36	13+	0	0	43	61	.16	-.95	.09	2	0	.0	0	5.4	NW	*26	NNW	29	4	10	17	7.1	--
Bishop	4108	872.0	1013.2	66	33	49.4	2.0	74	6+	22	17	0	17	--	--	.07	-.59	.07	2	0	.0	0	----	---	--	---	--	6	7	18	6.7	--
Blue Canyon	5280	837.8	1016.3	45	31	38.0	-.7	60	26	21	22	0	18	--	--	11.27	3.81	2.61	19	5	30.8	15	----	---	--	---	--	1	6	24	8.6	--
Burbank	699	989.5	1015.8	71	49	60.0	3.1	85	7	41	14	0	0	43	58	1.12	-1.13	.78	5	0	.0	0	5.5	S	*38	NNW	21	8	10	13	6.2	--
Eureka (U)	43	1015.6	1018.0	55	45	49.9	.8	65	28	36	22	0	0	--	--	8.77	4.13	1.76	21	1	.0	0	7.4	---	31	SW	11	1	5	25	8.7	23
Fresno	331	1005.8	1018.0	66	44	54.9	-.6	80	27	34	14+	0	0	44	68	.53	-1.10	.22	7	0	.0	0	6.4	NW	30	NW	21	6	8	17	7.1	69
Los Angeles (U)	312	------	------	71	53	61.6	2.7	85	27	47	14	0	0	45	61	1.02	-1.34	.52	5	0	.0	0	6.6	---	30	NW	13	10	8	13	5.5	70
Los Angeles	99	1012.2	1015.9	68	52	59.9	3.4	80	28	46	23+	0	0	47	68	.95	-.96	.38	4	0	.0	0	8.2	W	*37	[illegible]	21	7	11	13	6.1	--
Mt. Shasta (R)	3544	891.0	1016.3	50	32	41.2	-.5	65	27	22	13+	0	18	--	--	4.41	.33	1.18	19	1	9.0	5	----	---	--	---	--	3	5	23	8.2	--
Oakland	[illegible]	1018.3	1018.8	61	46	53.6	.2	71	28	38	23	0	0	45	74	2.16	-.15	.54	14	0	.0	0	9.4	W	*25	SW	8+	4	11	16	6.8	--
Red Bluff	341	1004.4	1017.3	63	45	53.8	-.5	75	19	37	22+	0	0	41	65	2.61	.00	.59	15	2	.0	0	9.9	SSE	43	SE	11	4	6	21	7.5	58
Sacramento	17	1016.6	1017.7	64	45	54.4	.5	79	28	36	14	0	0	45	72	2.07	-.02	.50	11	0	.0	0	10.0	SW	36	SW	20	4	9	18	7.1	73
Sandberg (R)	4517	861.8	1015.9	52	37	44.4	-.3	69	7	27	13+	0	8	--	--	.92	-.89	.37	7	0	T	T	16.8	---	*56	WNW	29	6	5	20	7.1	--
San Diego	19	1012.5	1015.8	67	52	59.7	1.5	78	29	43	23	0	0	48	69	.75	-.77	.33	5	0	.0	0	6.9	SSW	25	SW	16	7	10	14	6.4	60
San Francisco (U)	52	------	------	59	49	54.2	-.7	70	27	44	16	0	0	--	--	2.39	-.39	.55	15	0	.0	0	9.2	---	27	W	31	7	8	16	6.5	56
San Francisco	8	1018.3	1019.0	60	47	53.7	.9	71	28	39	22+	0	0	47	80	2.06	-.38	.50	13	0	.0	0	10.3	WNW	40	WNW	9	5	9	17	7.1	--
Santa Maria	238	1009.1	1018.0	64	43	53.5	-.5	76	7+	33	14+	0	0	45	77	.52	-1.77	.23	8	0	.0	0	8.2	WNW	*23	NW	13+	7	11	13	5.9	--
COLORADO																																
Alamosa	7536	766.0	1013.1	48	18	32.9	1.1	60	8+	4	6	0	31	--	--	.26	-.17	.10	5	0	4.0	1	----	---	--	---	--	7	10	14	6.0	--
Colorado Springs	6173	806.0	1014.0	49	25	37.2	.4	64	9+	14	14	0	26	20	56	.56	-.13	.31	6	0	5.5	3	12.6	NNW	*52	NNW	23	6	10	15	6.6	--
Denver	5292	833.1	1012.2	52	27	39.1	1.3	66	9	15	6+	0	25	20	54	1.09	-.10	.67	6	0	8.9	5	13.3	S	42	N	23	7	9	15	6.3	66
Grand Junction	4849	856.1	1013.4	53	33	43.2	2.0	67	9	23	24	0	13	24	53	.73	-.14	.22	9	2	2.7	T	9.5	ESE	38	NW	3	5	7	19	7.0	62
Pueblo	4639	852.7	1013.1	54	28	41.1	1.1	70	12	17	14+	0	23	24	57	.14	-.56	.08	5	0	.8	T	9.8	E	68	N	23	6	12	13	6.6	70
CONNECTICUT																																
Bridgeport	7	1013.1	------	48	33	40.1	3.2	62	14	20	5	0	14	--	--	1.44	-2.16	.48	8	0	3.2	2	----	---	--	---	--	9	10	12	5.6	--
Hartford	169	1006.9	1013.0	48	28	38.4	1.2	69	14	16	5	0	22	23	57	2.21	-1.60	.66	8	0	8.3	4	11.4	NW	40	NW	10	10	8	13	6.2	61
Middletown (U)	133	1002.1	------	47	29	37.9	---	69	14	16	5	0	21	--	--	2.47	----	.56	11	0	7.8	4	8.6	---	%38	NE	[illegible]	--	--	--	---	--
New Haven	6	1012.3	------	47	31	38.7	1.6	63	14	21	5+	0	19	--	--	2.48	-1.64	.68	10	0	2.7	1	7.7	---	26	NW	10	11	6	14	6.0	58
DELAWARE																																
Wilmington	78	1010.9	1014.1	50	34	42.2	-.3	72	14	22	4	0	9	30	68	2.64	-.97	.81	11	1	1.2	T	10.9	NW	--	---	--	[illegible]	[illegible]	15	6.5	--
DIST. OF COLUMBIA																																
Washington (U)	72	------	------	54	38	45.9	.2	74	14	26	4	0	5	--	--	2.33	-1.03	.80	9	1	1.3	1	8.2	---	32	NW	10	--	--	--	---	--
Wash. Nat'l. AP	14	1010.6	1015.1	54	38	45.8	.5	73	14	28	3+	0	6	30	60	2.23	-.80	.63	10	1	2.2	T	10.5	WNW	39	W	9	8	7	16	6.5	49
FLORIDA																																
Apalachicola (U)	13	1013.2	------	68	54	61.3	.4	82	15	38	9	0	0	--	--	4.54	-.38	2.00	7	4	.0	0	8.9	---	45	E	21	6	12	13	6.1	57
Daytona Beach	31	1014.0	1015.6	74	51	62.5	-1.2	85	14+	31	9	0	2	52	75	3.13	-.49	1.76	5	4	.0	0	10.0	WSW	*44	SW	25	10	6	15	6.3	--
Fort Myers	15	1014.7	------	78	57	67.4	-1.2	85	17+	43	10	0	0	--	--	4.73	2.55	1.90	[illegible]	7	.0	0	9.1	---	*40	S	4	7	11	13	6.0	--
Jacksonville	24	1013.7	1015.0	73	51	61.8	-.5	86	15	34	10	0	0	48	67	3.87	.45	1.77	[illegible]	4	.0	0	8.7	WNW	34	W	8	7	9	15	6.2	61
Key West (U)	9	1014.1	------	81	68	74.1	.4	87	24	55	10	0	0	--	--	2.57	1.00	1.84	5	3	.0	0	8.3	---	26	NW	8	6	19	6	5.0	82
Lakeland (U)	214	------	------	75	57	66.3	-.3	85	17	45	8+	0	0	--	--	4.69	.89	2.90	10	6	.0	0	7.1	---	--	---	--	9	10	12	5.9	40
Miami (U)	8	------	------	78	63	69.8	-1.0	85	20+	48	10	0	0	--	--	3.31	1.16	1.33	8	5	.0	0	11.2	---	50	W	6	12	14	5	4.5	66
Miami	[illegible]	1014.5	1015.6	80	61	70.5	-.8	89	25	46	10	0	0	61	76	2.68	.43	1.43	9	4	.0	0	7.9	E	32	NNE	15	8	14	9	5.6	--
Miami Beach	9	------	------	79	65	72.2	.0	87	20	50	9+	0	0	--	--	2.60	.31	1.04	9	--	.0	0	----	---	--	---	--	16	8	7	---	--
Orlando	106	1010.7	1015.2	77	55	65.8	-.9	87	24	38	10	0	0	54	73	3.76	.50	1.73	7	3	.0	0	10.1	WNW	38	SSW	4	10	5	16	6.2	--
Pensacola (U)	13	1012.6	------	67	52	59.6	-.6	79	15+	35	9	0	0	--	--	4.49	-1.51	2.00	11	3	.0	0	10.8	---	28	W	7	--	--	--	---	55
Tallahassee	64	1012.2	1014.8	71	48	59.2	-1.3	82	19	31	10	0	1	47	70	5.65	.58	2.67	7	3	.0	0	6.8	NW	--	---	--	5	10	16	6.5	--
Tampa	19	1014.2	1015.5	75	56	65.6	-.4	83	21	40	10	0	0	56	75	6.98	3.86	4.33	9	5	.0	0	9.9	WNW	*37	WNW	8	4	13	14	6.7	64
West Palm Beach	15	1013.8	1014.8	79	60	69.8	-.2	91	25	45	9	1	0	59	74	2.49	-.73	1.15	[illegible]	5	.0	0	10.9	W	*51	W	4	8	12	11	5.7	--
GEORGIA																																
Athens	798	985.4	1014.8	61	41	50.9	-1.8	75	15	29	10	0	3	40	71	3.95	-1.22	1.02	10	3	T	0	10.0	NW	*27	NW	9	10	7	14	6.2	--
Atlanta	975	973.5	1015.6	60	43	51.5	-1.2	73	11	30	9+	0	2	40	69	4.69	-.98	1.54	11	1	T	T	12.6	WNW	*35	NW	[illegible]	8	8	15	6.7	48
Augusta	143	1007.7	1014.5	65	42	53.6	-1.9	78	15	23	10	0	2	43	73	3.58	.68	1.40	10	2	.0	0	7.6	W	*23	W	8	9	7	15	6.5	--
Columbus	385	1000.7	------	65	44	54.3	-.4	80	31	28	9	0	3	--	--	4.24	-1.57	2.17	12	3	T	0	----	---	--	---	--	6	5	20	7.1	--
Dawsonville	1110	------	------	59	36	47.0	---	73	11+	25	29	0	13	--	--	2.79	----	.88	7	--	T	T	----	---	30	E	31	--	--	--	---	--
Macon	356	1000.9	1014.6	65	45	55.2	-2.6	78	17+	30	10	0	2	43	69	4.83	-.28	1.89	8	3	T	0	10.1	WNW	36	W	[illegible]	7	8	16	6.8	56
Rome	637	991.7	------	60	39	49.5	-2.2	76	11	26	10	0	7	--	--	3.58	-2.25	.91	13	1	T	T	----	---	--	---	--	5	11	15	7.0	--
Savannah	48	1012.0	1014.5	67	47	57.3	-1.4	80	15+	30	10	0	1	49	77	4.66	1.17	2.29	11	3	.0	0	9.5	W	32	NW	9+	7	9	15	6.7	62
Thomasville (U)	283	------	------	70	49	59.7	-.9	81	17+	33	10	0	0	--	--	5.51	.16	1.78	9	2	.0	0	----	---	--	---	--	--	--	--	---	--
IDAHO																																
Boise	2842	918.4	1015.5	52	33	42.2	.4	62	8	23	23	0	14	31	67	2.27	.93	.41	14	2	.2	T	9.8	SE	52	W	9	3	8	20	7.4	54
Idaho Falls 46W (R)	4933	845.2	1014.9	46	22	34.1	4.1	56	8+	11	14+	0	30	--	--	.82	.37	.29	10	0	3.3	2	8.1	---	a39	WSW	11	--	--	--	---	--
Idaho Falls 42NW (R)	4790	------	------	46	21	33.2	4.5	57	20	[illegible]	14	0	31	--	--	.52	.07	.15	7	--	----	--	9.7	---	a45	SSW	12	--	--	--	---	--
Lewiston	1413	962.8	1014.9	53	35	43.8	.2	64	24	28	13+	0	10	--	--	1.68	.54	.41	16	0	T	0	----	---	--	---	--	2	5	24	8.5	--
Pocatello	4444	859.8	1014.9	49	29	39.0	2.4	59	8+	18	22	0	24	28	68	1.24	.11	.63	14	0	.7	T	11.2	SW	47	SW	10	3	9	19	7.6	49
ILLINOIS																																
Cairo (U)	314	1001.7	------	57	40	48.3	-.7	72	13+	27	8	0	5	--	--	2.21	-2.51	.90	12	3	T	T	9.0	---	32	SW	25	10	3	18	6.4	52
Chicago	610	992.2	1015.8	45	30	37.6	.6	71	14	13	3	0	22	26	65	1.98	-.87	.92	8	2	3.2	2	10.9	ENE	43	[illegible]	15	6	9	16	6.7	55
Moline	589	992.6	1015.4	46	28	37.0	-.2	71	13	12	3	0	25	25	66	2.90	.42	.96	6	2	6.9	[illegible]	12.9	ENE	54	SW	15	7	10	14	6.5	58
Peoria	654	987.8	1015.3	47	29	38.3	.0	69	13	13	3	0	22	27	65	2.63	-.16	1.17	5	2	8.2	5	13.2	ENE	52	SW	14	9	7	15	6.4	51
Springfield	589	991.9	1015.8	50	31	40.3	.1	70	13	16	3	0	20	29	67	2.00	-1.31	.67	12	2	1.7	1	13.6	ENE	48	W	14	[illegible]	[illegible]	19	6.7	50
INDIANA																																
Evansville	383	999.3	1015.5	54	35	44.7	-1.9	72	13+	22	3	0	13	33	66	1.93	-2.36	.71	9	3	T	T	10.1	WNW	34	W	14+	6	7	18	7.0	42
Fort Wayne	801	983.1	1015.1	46	28	37.1	.3	71	13+	13	3	0	26	26	69	1.38	-1.78	.40	10	1	3.5	3	14.0	ENE	48	SW	15	6	9	16	6.5	34
Indianapolis	793	985.1	1015.6	50	32	40.8	.7	73	13	17	3	0	16	30	70	1.92	-1.97	.60	10	1	T	T	12.5	NE	43	W	2+	[illegible]	[illegible]	19	6.6	50

See footnotes at end of table.

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure		Temperature											Average relative humidity	Precipitation							Wind					No. of days (sunrise to sunset)			Sky cover, tenths (sunrise to sunset)	Possible sunshine
												No. of days							No. of days		Snow, Sleet				Fastest mile							
		Station ø	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F. or above	Min. 32° F. or below	Average dew point		Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max. depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy		
	Ft.	Mb	Mb.	°F	°F	°F	°F.	°F.		°F.				°F.	%	In.	In.	In.			In.	In.	M. p. h.		M. p. h.			0–3	4–7	8–10	0–10	%
INDIANA (Cont'd.)																																
South Bend	768	986.1	1015.1	46	27	36.2	0.5	72	14	9	3	0	27	25	69	2.51	-0.44	1.03	7	2	3.8	3	12.9	NNW	•36	SW	15	6	8	17	6.9	--
IOWA																																
Burlington	694	989.5	1016.0	48	28	37.6	-.9	72	13	12	8	0	23	26	65	1.88	-.93	.74	6	2	6.8	7	12.3	WNW	49	W	15	8	10	13	6.2	61
Des Moines	948	983.7	1015.7	47	27	36.8	-.2	72	13	13	8	0	26	25	68	1.74	-.29	.68	9	3	11.2	9	13.5	WNW	54	W	11	6	6	19	7.1	56
Dubuque	1065	989.5	1015.3	43	24	33.3	.0	67	13	6	3	0	29	22	63	1.30	-.95	.65	8	3	6.0	4	----	---	--	---	--	6	8	17	6.9	--
Sioux City	1094	973.2	1015.8	45	26	35.8	.8	69	12	16	16	0	23	23	62	1.80	.54	1.06	7	1	9.7	5	14.9	N	45	NW	14	4	11	16	7.3	65
Waterloo	870	------	------	44	24	33.7	-.4	68	13	8	8	0	26	--	--	.86	-1.13	.53	4	1	2.9	2	13.5	---	--	---	--	--	--	--	---	--
KANSAS																																
Concordia (U)	1375	963.4	------	50	32	41.0	-.6	75	13	19	7	0	14	--	63	1.86	.53	1.20	11	1	3.4	1	9.3	---	30	NE	11+	2	9	20	7.8	46
Dodge City	2594	924.5	1013.1	50	31	40.7	-1.9	79	10	16	26	0	18	30	72	4.71	3.56	1.28	12	0	22.1	14	17.4	N	70	N	24	4	9	18	7.5	51
Goodland	3645	884.5	1013.5	47	24	35.3	-1.2	70	12	6	6	0	29	27	76	2.21	1.12	.72	10	0	14.0	7	13.2	NNW	•42	NNW	23	5	10	16	7.3	--
Topeka	877	978.3	1014.9	53	31	42.0	-.6	75	10+	14	8	0	17	29	65	3.96	1.93	1.63	12	3	5.8	3	13.3	E	52	S	13	4	9	18	7.3	44
Wichita	1321	964.1	1013.4	54	34	43.9	-1.4	78	13	17	7	0	12	33	69	2.60	.86	1.09	10	0	1.0	1	15.0	S	36	N	14	2	10	19	7.8	53
KENTUCKY																																
Lexington	979	979.0	1015.4	53	34	43.1	-1.2	72	13+	18	3	0	13	32	70	2.15	-2.31	.65	14	2	4.6	5	11.5	ENE	--	---	--	5	8	18	6.9	--
Louisville	474	995.5	1015.0	54	36	44.9	-.7	73	14	22	3	0	10	33	65	1.66	-3.01	.50	16	1	.4	T	10.9	WNW	39	W	14	6	11	14	6.8	56
LOUISIANA																																
Baton Rouge	64	1011.9	1014.7	71	50	60.6	.3	81	19	33	8	0	0	48	69	5.96	.14	1.51	12	7	.0	0	9.7	E	--	---	--	6	10	15	6.6	--
Lake Charles	12	1012.5	1014.0	69	52	60.3	-.3	80	18	31	8	0	1	52	79	7.08	2.32	2.34	11	7	.0	0	8.5	SE	•30	NNW	21	7	9	15	6.4	--
New Orleans (U)	9	1012.5	------	70	55	62.3	-.7	80	14	39	8	0	0	--	--	10.15	3.59	3.24	13	7	.0	0	6.8	---	22	SE	31	8	9	14	5.8	55
New Orleans	3	1012.2	1014.5	70	53	61.3	-.4	80	14	39	8	0	0	51	73	8.19	2.29	1.96	12	7	.0	0	9.2	SSE	•36	NW	5	11	6	14	6.0	--
Shreveport	252	1004.7	1014.0	65	45	54.8	-3.4	78	13	25	8	0	2	43	69	6.55	1.85	1.25	11	8	.0	0	9.9	ESE	--	---	--	5	7	19	7.1	56
MAINE																																
Caribou	624	988.2	1012.2	34	18	26.3	4.6	44	8	0	1	0	31	19	74	1.46	-.94	.63	11	0	13.4	21	12.2	NW	•34	WNW	24	10	8	13	5.7	--
Portland	61	1008.7	1012.7	43	24	33.6	2.1	55	23	9	5	0	28	23	68	1.91	-2.12	1.23	6	1	3.1	2	10.1	WNW	29	SE	9+	8	10	13	6.0	57
MARYLAND																																
Baltimore (U)	14	------	------	54	40	46.5	1.2	74	14	27	4	0	4	--	--	2.55	-1.08	.85	10	--	----	--	----	---	--	---	--	--	--	--	---	--
Baltimore	146	1010.0	1014.8	52	35	43.5	.3	73	14	24	4	0	9	33	70	2.27	-1.36	.79	11	1	1.4	0	11.1	WNW	37	NW	9	7	7	17	6.6	47
Frederick	294	------	------	52	32	41.6	-1.7	73	14	17	4	0	15	--	--	1.46	-1.85	.75	8	--	1.8	2	----	---	--	---	--	--	--	--	---	--
MASSACHUSETTS																																
Blue Hill Obs (R)	629	988.3	1012.3	44	28	35.1	1.0	62	13	14	5	0	22	--	67	4.50	.63	1.46	9	1	24.7	10	14.6	NW	41	NE	8+	8	12	11	6.0	51
Boston	15	1007.6	1012.3	46	32	39.1	1.5	63	13	20	5	0	15	25	62	3.38	-.05	.97	8	0	11.5	6	17.4	NW	•52	NW	10	9	8	14	6.1	60
Nantucket	43	1011.4	1011.9	44	32	37.8	1.2	54	23	21	6	0	20	30	74	6.08	2.03	2.40	12	0	12.4	4	12.4	NNW	40	NE	20	11	7	13	5.9	55
Pittsfield	1153	969.1	------	42	25	33.4	2.6	66	14	9	5	0	28	--	--	1.10	-2.12	.37	9	--	7.3	2	----	---	--	---	--	--	--	--	---	--
Worcester	986	976.0	------	43	27	34.8	1.6	59	13+	12	5	0	25	--	--	1.62	-1.81	.49	9	0	11.3	5	13.1	---	•34	WNW	10	8	11	12	5.9	--
MICHIGAN																																
Alpena (U)	587	992.2	------	35	22	28.7	1.0	45	15	7	3+	0	31	--	70	1.34	-.70	.95	6	1	4.6	3	10.8	---	36	SW	15	8	10	13	5.8	72
Detroit	619	987.8	1015.4	45	29	36.9	1.8	71	13	13	3	0	23	22	58	1.76	-.77	.56	10	2	3.9	1	11.2	N	42	WSW	12+	7	9	15	6.8	51
Detroit (Willow Run)	722	985.4	1014.5	46	28	36.9	1.4	70	13	14	3+	0	23	24	67	1.19	-1.16	.49	10	0	2.5	1	12.7	W	•35	WSW	15+	6	9	16	6.8	--
East Lansing (U)	856	------	------	46	26	36.0	2.8	72	13	10	3	0	26	--	--	2.08	-.49	.67	13	2	4.7	1	6.2	---	18	SW	15	--	--	--	---	67
Escanaba (U)	594	991.5	------	35	19	27.3	1.1	45	14+	0	3+	0	31	--	72	1.42	-.36	.66	7	1	3.6	5	9.4	---	31	S	15	13	5	13	5.3	75
Flint	761	986.5	1015.0	43	24	33.6	1.2	68	14	6	3	0	29	23	71	1.57	-.62	.64	8	2	5.0	2	10.3	E	•32	W	12	6	7	18	7.1	--
Grand Rapids	681	989.2	1015.1	44	26	34.7	2.2	70	14	11	4	0	27	25	71	1.93	-.42	.79	13	2	11.1	3	11.8	ENE	45	W	15	6	7	18	7.1	56
Marquette (U)	677	987.8	------	33	20	26.3	-.6	45	15+	4	2+	0	31	--	72	.78	-1.27	.44	10	1	5.3	11	7.3	---	26	S	15	6	8	17	6.7	67
Muskegon	627	991.5	1015.4	42	25	33.6	1.2	69	14	10	4	0	27	24	69	2.51	.33	1.32	12	2	9.0	5	----	---	--	---	--	6	9	16	6.6	--
Sault Ste. Marie	721	992.6	1016.0	34	16	25.2	2.2	50	22	0	4	0	31	19	79	1.13	-.72	.53	7	1	8.1	20	9.7	WNW	29	S	15	13	7	11	5.1	66
MINNESOTA																																
Duluth	1409	973.6	1017.8	32	11	21.9	-.3	53	22	-11	2	0	31	14	72	.99	-.79	.57	7	0	10.9	24	11.9	WNW	50	NW	15	13	8	10	5.2	74
Intern'l. Falls	1179	973.9	1017.0	34	6	20.1	.1	55	22	-24	3	0	31	10	66	2.07	1.04	1.80	8	0	13.1	21	10.7	W	•31	NNW	15	11	7	13	5.5	--
Minneapolis	830	982.1	1017.0	39	22	30.4	-.5	57	23	-1	2	0	29	20	67	1.31	-.17	.78	11	0	7.0	4	12.1	NE	41	NW	15	6	12	13	6.3	62
Rochester	1017	977.7	1016.1	39	21	30.0	-.4	54	23	2	3	0	29	21	72	.77	-.78	.35	11	1	6.1	3	10.4	WNW	--	---	--	5	10	16	6.8	--
St. Cloud	1034	977.0	1016.6	36	15	25.7	-1.2	52	21+	-6	2	0	31	18	70	2.03	.88	1.81	5	0	12.3	10	8.9	WNW	•58	WNW	15	10	8	13	5.9	--
MISSISSIPPI																																
Jackson	305	1002.5	1014.8	65	43	54.3	-2.5	80	14	27	8	0	4	43	69	6.14	-.09	1.77	12	4	T	0	7.8	SSE	33	NW	14	5	10	16	6.9	51
Meridian	294	1000.9	------	67	42	54.3	-2.2	81	14	27	9	0	6	--	--	3.89	-2.69	1.10	14	5	T	T	----	---	--	---	--	8	8	15	6.3	--
Vicksburg (U)	234	1005.0	------	65	48	56.5	-1.6	79	14	29	8	0	1	--	--	5.52	-.51	1.56	11	5	T	T	9.1	---	26	E	21	4	10	17	7.2	43
MISSOURI																																
Columbia	778	985.8	1015.0	52	32	42.2	-.6	74	13	15	8	0	18	28	64	2.85	-.16	1.52	8	2	1.8	T	11.8	ENE	34	NE	24	7	9	15	6.6	53
Kansas City	741	979.7	1015.1	53	35	43.8	.0	76	13	20	8	0	13	29	61	3.07	.56	1.65	10	3	T	T	12.2	NE	40	W	14	3	9	19	7.6	41
St. Joseph	809	977.3	------	52	31	41.2	-.7	76	13	15	8	0	19	--	--	3.15	.94	2.23	[illegible]	5	3.1	2	13.9	---	•45	W	11	3	9	19	7.5	--
St. Louis (U)	465	------	------	52	36	44.4	-.9	72	14	23	8	0	11	--	--	2.66	-.98	1.36	10	0	.2	T	12.2	---	49	S	10	11	4	16	6.3	43
St. Louis	552	994.2	1015.2	52	35	43.4	-1.0	73	13	20	8	0	13	31	64	2.87	-.55	1.63	12	1	3.2	2	10.0	WNW	--	---	--	8	4	19	6.8	--
Springfield	1265	965.8	1014.2	53	34	43.6	-1.3	72	13	17	8	0	15	32	69	4.38	1.22	1.70	9	5	T	T	14.0	SSE	47	SE	24	4	9	18	7.3	55
MONTANA																																
Billings	3568	888.6	1015.3	45	24	34.6	.5	65	9	3	7	0	26	22	63	1.52	.59	.70	10	0	16.7	6	11.6	SW	46	NW	7	7	8	16	6.5	76
Butte	5530	824.9	1015.6	40	19	29.6	2.4	52	28	-4	14	0	31	--	--	.63	-.15	.14	12	0	9.5	3	6.6	WNW	•48	W	10	5	4	22	7.5	--
Glasgow (U)	2277	939.7	1016.4	39	20	29.5	1.1	61	20	-1	7	0	31	21	73	.05	-.55	.03	2	0	.5	1	11.3	ESE	•30	WNW	11	6	11	14	6.5	--
Great Falls	3664	885.2	1014.5	44	24	33.8	1.3	60	9	1	5+	0	28	19	60	.77	-.22	.22	8	0	6.9	3	14.2	SW	47	SW	10	5	8	18	7.1	84
Havre (U)	2488	924.5	1015.6	43	22	32.2	1.9	65	31	-3	6+	0	29	22	69	.32	-.38	.13	5	0	1.8	2	7.8	---	30	SW	10	9	9	13	5.9	53
Helena	3893	870.3	1016.1	43	22	32.1	-.1	58	9+	3	6	0	30	22	70	1.19	.47	1.01	[illegible]	0	12.9	5	7.7	W	38	W	9+	5	5	21	7.5	54
Kalispell	2965	------	------	42	23	32.6	-1.1	55	30	8	8	0	29	--	--	.49	-.52	.28	8	0	6.5	5	----	---	--	---	--	1	5	25	8.4	--
Miles City	2629	920.4	1016.0	44	22	32.8	1.6	62	20	-6	6	0	29	--	--	.90	.20	.41	8	0	8.6	5	11.8	WNW	•35	NNE	12	8	9	14	6.2	--
Missoula	3200	899.8	1016.3	45	26	35.6	.9	60	20	8	6	0	29	26	71	.94	.11	.18	14	0	9.6	3	5.7	W	34	W	9	3	2	26	8.4	40
NEBRASKA																																
Grand Island	1841	947.5	1015.0	47	27	36.6	-1.0	74	10+	13	15	0	25	24	65	2.17	.89	.86	7	1	3.3	2	13.8	NNE	--	---	--	5	5	21	7.5	--
Lincoln (U)	1166	------	------	48	30	39.1	-.3	73	12+	18	15	0	21	--	--	3.33	1.86	1.67	9	1	13.6	8	11.3	---	50	NW	14	3	7	21	7.8	46
Norfolk	1544	958.0	1015.1	45	25	34.5	-.4	74	12	12	15	0	26	24	66	1.96	.41	1.15	8	0	5.9	4	----	---	--	---	--	3	11	17	7.2	--
North Platte	2779	913.3	1014.6	47	23	34.7	-1.7	70	12	8	7	0	29	24	70	1.27	.36	.46	8	1	7.2	4	11.1	N	45	N	23	4	7	20	7.5	40
Omaha	978	974.6	1015.6	48	29	38.3	.1	74	13	18	15	0	22	26	66	2.44	1.12	1.42	7	1	11.6	11	13.0	SSE	41	W	11	5	7	19	7.6	52
Omaha, N. Omaha AP	1323	965.8	------	45	26	35.8	-.1	72	12+	14	15	0	25	--	--	2.80	1.48	1.86	6	1	15.6	14	----	---	--	---	--	--	--	--	---	--
Scottsbluff	3950	875.7	1014.2	49	23	36.1	1.2	66	12+	5	7	0	28	22	62	.79	-.09	.46	5	0	8.6	4	11.9	ESE	•39	W	10+	7	12	12	6.5	--
Valentine	2587	921.4	------	43	21	31.9	-1.4	66	12+	3	15	0	30	--	--	.32	-.93	.15	6	0	5.0	3	11.7	---	42	NW	8	8	5	18	6.5	62
NEVADA																																
Elko	5075	842.9	1015.6	50	26	37.8	1.7	64	8	15	14	0	28	27	69	1.82	1.13	.61	12	1	2.9	T	5.3	WSW	•35	W	12	2	5	24	8.4	--
Ely	6257	806.0	1014.8	49	23	35.9	.6	62	8	10	14	0	30	22	61	1.14	-.15	.36	11	1	12.2	3	10.7	S	37	SE	9	3	7	21	8.0	55
Las Vegas	2162	946.8	1012.2	71	43	56.9	.4	82	8	33	14	0	0	19	26	.10	-.25	.11	1	0	.0	0	11.9	SW	•46	SW	21	8	10	13	5.9	74
Reno	4397	860.5	1015.6	57	28	42.4	1.8	71	27	14	23	0	22	25	52	.26	-.44	.10	5	0	.4	T	9.1	WNW	•54	SSW	8	3	13	15	7.3	67
Winnemucca	4299	866.2	1015.8	53	27	40.3	.9	67	8	16	23	0	22	27	62	1.14	.28	.35	11	1	3.9	2	8.8	SW	37	W	12	1	4	26	8.5	31

See footnotes at end of table.

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure		Temperature												Precipitation							Wind					No. of days (sunrise to sunset)			Sky cover, tenths (sunrise to sunset)	Possible sunshine
												No. of days							No. of days		Snow, Sleet				Fastest mile							
		Station ø	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F. or above	Min. 32° F. or below	Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max. depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy		
	Ft.	Mb.	Mb.	°F.	°F.	°F.	°F.	°F.		°F.				°F.	%	In.	In.	In.			In.	In.	M. p. h.		M. p. h.			0–3	4–7	8–10	0–10	%
NEW HAMPSHIRE																																
Concord	339	1002.1	1013.0	45	24	34.4	2.6	61	14	12	4	0	29	22	64	1.22	-1.82	0.50	8	0	2.7	2	8.5	NW	34	N	10	9	8	14	6.0	57
Mt. Washington	6262	795.0	------	20	7	13.8	1.8	39	15	-10	4	0	31	--	82	3.58	-1.97	2.53	11	0	20.3	4	30.5	NW	%94	WNW	24	7	6	18	7.0	45
NEW JERSEY																																
Atlantic City (U)	8	1011.5	------	47	37	42.1	.6	64	14	25	4	0	7	--	--	4.30	.77	1.62	14	0	.2	T	15.8	---	47	NW	10	9	8	14	6.3	57
Newark	11	1013.1	1013.8	50	34	42.0	1.5	72	14	23	4+	0	10	27	62	2.73	-1.05	.85	13	0	2.1	2	9.8	NNE	•30	WNW	10	10	8	13	5.9	--
Trenton (U)	56	1007.8	1014.8	49	35	41.7	.4	74	14	23	4+	0	10	--	--	2.70	-.50	.80	11	0	4.5	1	9.2	---	36	N	10	9	6	16	6.2	50
NEW MEXICO																																
Albuquerque	5310	844.9	1010.6	59	36	47.3	1.3	70	9	24	23	0	8	23	43	.52	.08	.40	5	1	T	T	8.5	NW	40	W	3	7	8	16	6.2	64
Clayton	4969	840.5	1010.8	53	28	40.2	-1.3	70	10	16	6	0	24	--	--	2.30	1.64	.63	9	0	14.9	5	----	---	--	---	--	7	5	19	7.0	--
Raton	6379	800.5	1011.2	53	24	38.6	.5	68	9	12	5+	0	28	--	--	.79	.15	.34	7	1	4.3	1	----	---	--	---	--	6	8	17	7.1	--
Roswell	3612	889.3	1010.5	67	36	51.5	.8	80	8	24	7	0	9	27	43	.80	.27	.74	3	1	T	0	12.3	---	54	W	3+	12	6	13	5.5	--
NEW YORK																																
Albany	277	1010.1	1013.8	44	27	35.5	2.4	65	14	11	5	0	24	24	67	1.54	-.79	.92	7	0	6.8	4	8.0	WNW	42	W	9	9	5	17	6.4	56
Binghamton	1601	953.0	1013.4	40	25	32.7	1.6	69	14	9	4	0	28	23	70	1.47	-1.52	.36	16	0	13.3	6	10.2	NW	47	NW	9	5	8	18	7.2	45
Buffalo	693	985.5	1014.6	43	29	35.9	2.9	75	14	16	4+	0	25	27	74	2.23	-.49	.74	15	0	10.2	5	13.4	SSW	45	SW	16	6	8	17	6.9	53
New York (U)	10	1012.2	------	49	35	41.8	1.1	72	14	23	4+	0	10	--	--	2.75	-.81	.92	14	0	3.7	2	13.0	---	65	NW	10	11	7	13	5.5	59
New York	19	1011.9	1013.7	49	36	42.4	1.9	68	13	24	4	0	8	28	61	2.43	-1.07	.68	13	0	1.5	2	13.7	WNW	53	NW	10	11	5	15	6.0	--
Rochester	543	994.6	1014.5	41	28	34.4	1.4	71	14	13	4+	0	25	27	76	1.75	-1.21	.40	13	0	11.7	4	12.4	SW	47	SW	12	9	4	18	6.9	50
Schenectady	217	------	------	45	30	37.2	4.7	63	14	17	5	0	19	--	--	1.38	-1.31	.77	6	0	3.8	4	----	---	--	---	--	15	8	8	4.2	--
Syracuse	424	992.6	1015.3	42	28	35.1	.9	67	14	12	5	0	23	25	70	2.01	-1.23	1.10	12	0	12.7	7	7.9	WNW	47	S	15	6	8	17	7.1	48
NORTH CAROLINA																																
Asheville (U)	2203	------	------	54	37	45.5	-1.3	72	11	26	8	0	9	--	--	1.57	-2.00	.50	13	0	2.5	T	9.8	---	29	NW	8	4	10	17	7.0	48
Cape Hatteras (R)	9	1013.1	1013.7	57	45	50.8	-1.9	71	16	36	24	0	0	43	76	3.34	-.55	.89	13	3	.0	0	11.9	NE	--	---	--	9	5	17	6.6	--
Charlotte	725	986.5	1015.0	60	41	50.5	-.5	75	12+	25	10	0	3	38	67	3.06	-1.03	.78	13	1	.0	0	9.0	NNE	31	N	20	10	6	15	6.4	48
Greensboro	4	982.9	1015.4	57	37	47.0	-1.2	71	12	27	10	0	6	33	64	2.15	-1.50	.65	11	0	T	0	8.6	NE	32	NNW	20	8	6	17	6.7	59
Raleigh	433	1000.8	1014.7	59	38	48.7	-1.4	75	15	28	21	0	7	37	68	2.25	-1.35	.73	11	3	T	T	9.4	NW	•30	NW	9	10	3	18	6.4	55
Wilmington	30	1013.1	------	62	44	53.0	-1.7	75	12	32	10	0	1	--	--	5.54	2.09	1.38	11	3	.0	0	11.3	---	35	SE	31	9	7	15	6.1	55
Winston-Salem	967	979.4	1015.0	57	38	47.6	-.9	72	11+	27	10	0	4	33	62	2.50	-1.33	.72	13	0	.0	0	8.7	NE	•24	WSW	2	10	4	17	6.4	--
NORTH DAKOTA																																
Bismarck	1650	955.0	1017.2	39	17	27.8	1.1	69	21	2	7	0	31	18	69	.25	-.51	.11	6	0	3.3	2	12.3	WNW	40	NW	8	6	11	14	6.3	63
Devils Lake (U)	1471	961.4	------	34	16	24.5	1.9	56	20+	-6	2	0	31	--	71	.43	-.30	.17	8	0	3.2	4	8.9	---	26	W	28	6	9	16	6.6	69
Fargo	895	982.1	1017.9	38	17	27.5	2.2	60	21	-3	2	0	30	19	72	.08	-.81	.04	3	0	.7	T	15.5	N	50	NW	15	7	7	17	6.6	73
Williston (U)	1877	946.8	1016.5	39	20	29.3	2.8	63	21	6	5+	0	29	18	63	.44	-.31	.19	9	0	3.2	1	8.2	---	34	W	10	7	12	12	6.1	64
OHIO																																
Akron	1210	976.3	1015.3	46	28	37.1	.6	68	13+	9	3	0	25	26	71	1.58	-1.58	.32	16	0	6.8	3	12.9	N	--	---	--	8	9	14	6.5	--
Cincinnati Obs.	761	------	------	53	34	43.2	-.1	75	13	17	3	0	11	--	--	1.13	-2.94	.35	13	1	.5	1	7.3	---	28	W	2	--	--	--	---	58
Cincinnati	869	982.2	1014.8	52	33	42.3	.6	73	13	16	3	0	16	28	61	1.44	-2.60	.35	14	0	1.2	1	11.1	WNW	•29	SSW	11	6	6	19	6.8	--
Cleveland (U)	663	------	------	44	32	38.1	.4	72	13+	18	3	0	17	--	--	----	----	----	--	--	----	--	----	---	--	---	--	--	--	--	---	--
Cleveland	787	986.2	1014.8	46	31	38.1	1.3	71	13+	15	3	0	19	28	71	1.50	-1.39	.27	14	0	8.4	3	15.2	NNE	52	SW	15	9	7	15	6.6	53
Columbus (U)	724	------	------	49	33	40.9	-.2	71	13	18	3	0	13	--	--	1.44	-1.78	.56	10	0	2.0	2	----	---	--	---	--	--	--	--	---	--
Columbus	815	984.6	1015.6	51	31	40.7	.9	74	13	14	3	0	18	29	66	1.61	-1.82	.46	14	0	3.4	2	10.1	WNW	34	W	15+	8	7	16	6.5	50
Dayton	1002	978.1	1015.3	49	31	39.8	.0	71	14	15	3	0	18	27	64	1.42	-1.82	.37	9	1	.2	T	12.4	WNW	42	W	15	7	8	16	6.7	53
Sandusky (U)	603	992.1	------	45	31	38.1	.6	75	13	17	3	0	17	--	--	1.00	-1.89	.36	13	0	3.2	2	9.2	---	42	W	15	13	5	13	5.5	54
Toledo	676	989.3	1015.3	46	28	36.8	1.0	72	13	12	3+	0	24	27	72	1.11	-1.75	.49	11	0	2.6	1	12.2	WSW	56	W	15	7	9	15	6.9	59
Youngstown	1178	971.5	1015.1	46	28	37.3	.6	69	14	15	3	0	25	29	71	2.13	-1.32	.52	16	0	13.0	4	11.9	WNW	•36	WSW	12	5	11	15	6.7	--
OKLAHOMA																																
Oklahoma City	1280	970.5	1013.4	56	38	46.7	-3.0	78	13	23	8	0	7	39	77	2.19	.10	1.02	12	3	.1	T	14.5	SSE	42	SW	10	8	5	18	6.8	51
Tulsa	672	988.8	1013.6	57	39	48.2	-1.7	74	13	22	8	0	5	37	68	3.01	.40	1.26	12	5	.1	T	10.5	SSE	36	S	10	6	6	19	7.4	43
OREGON																																
Astoria	8	1013.9	1014.5	52	39	45.6	.3	65	27	30	26	0	2	40	82	9.73	1.46	2.53	24	0	.0	0	7.4	SE	•28	W	10	3	2	26	8.5	--
Burns (U)	4140	870.3	1014.6	48	29	38.5	-.4	58	27	14	13	0	24	28	70	2.16	1.39	.38	17	0	4.3	1	----	---	--	---	--	3	7	21	7.6	--
Eugene	361	1002.4	1016.2	54	40	46.9	.2	63	19	28	26	0	2	--	--	8.66	4.80	1.38	25	0	T	0	8.5	---	•29	SW	10	1	5	25	8.9	--
Meacham	4050	------	------	42	28	34.8	.8	54	19	18	13	0	26	--	--	3.88	-.53	.60	22	0	22.8	18	----	---	--	---	--	1	2	28	9.3	--
Medford	1312	968.5	1016.7	55	39	46.8	-.4	70	27	31	13+	0	6	39	77	5.54	4.02	1.41	20	0	T	0	4.4	NNW	•29	NW	31	0	7	24	8.8	--
Pendleton	1492	960.7	1015.0	52	35	43.7	-1.5	63	24	30	1+	0	9	34	72	2.31	1.13	.49	20	0	.7	T	10.3	W	•42	WSW	10	2	4	25	8.4	--
Portland	21	1009.5	1015.1	53	39	46.2	-.4	62	18+	27	17	0	3	39	78	7.52	4.05	1.44	24	0	T	0	9.7	ESE	34	SW	10	1	4	26	8.9	20
Roseburg	505	997.3	1016.3	57	40	48.5	1.6	72	27	33	16+	0	0	--	--	5.80	2.87	1.02	24	0	T	0	4.6	---	27	SW	9	0	4	27	9.2	22
Salem	195	1007.8	1015.3	55	39	46.9	.1	65	28	30	18+	0	4	41	82	8.16	3.97	1.48	24	0	.0	0	8.6	S	•28	S	14	1	3	27	8.9	--
Sexton Summit (R)	3836	------	------	44	32	38.0	-1.3	61	27	23	13+	0	16	--	--	7.09	4.13	1.27	22	0	22.6	13	----	---	--	---	--	0	3	28	9.4	--
PENNSYLVANIA																																
Allentown	376	1000.3	1014.8	49	30	39.2	1.3	75	14	19	4+	0	22	28	70	2.31	-.88	.69	13	0	1.9	1	11.4	ENE	--	---	--	11	6	14	6.0	--
Erie	732	------	------	42	28	35.1	1.0	73	14	10	4	0	26	--	--	1.97	-.82	.44	15	0	13.5	4	12.0	---	•26	WSW	12	9	6	16	6.5	--
Harrisburg	335	1000.7	1014.8	50	33	41.3	.5	74	14	21	4	0	12	26	58	1.97	-.90	.64	12	0	2.4	1	8.8	WNW	38	W	9	11	4	16	6.3	57
Philadelphia (U)	26	------	------	51	38	44.0	.5	73	14	26	4	0	5	--	--	3.39	.02	1.31	13	--	----	--	----	---	--	---	--	--	--	--	---	--
Philadelphia	10	1009.4	1013.9	50	35	42.3	.0	73	14	23	4	0	9	29	64	3.24	-.08	1.32	12	1	1.2	T	9.7	N	42	NW	10	8	7	16	6.7	53
Pittsburgh (U)	749	------	------	51	34	42.4	.8	72	13	18	3	0	9	--	--	2.56	-.85	.87	16	--	1.1	--	----	---	--	---	--	--	--	--	---	52
Pittsburgh	1151	983.7	1014.7	48	31	39.7	1.1	70	13	13	3	0	17	27	65	2.02	-1.18	.72	15	0	7.3	4	11.6	WSW	•39	W	2	7	8	16	6.7	61
Reading (U)	266	1002.0	1014.2	51	34	42.5	.9	75	14	23	4	0	10	--	--	2.31	-1.00	.66	13	0	1.1	1	10.1	---	42	NW	10	10	4	17	6.4	54
Scranton	940	979.8	1014.9	45	27	36.2	-.1	73	14	13	5	0	25	25	67	1.66	-1.17	.44	14	0	6.7	2	8.4	NW	34	NW	10	9	9	13	6.3	53
Shippingport (U)	736	------	------	49	31	39.6	---	71	13	13	4	0	18	--	--	2.27	----	.64	16	1	T	T	3.7	---	%37	NW	12	--	--	--	---	--
Williamsport	527	995.4	------	49	29	39.0	.7	71	14	17	5	0	23	--	--	2.87	-.47	1.12	14	--	14.5	3	----	---	--	---	--	9	6	16	6.4	--
RHODE ISLAND																																
Block Island	110	1007.5	1011.8	44	33	38.6	1.5	57	23	24	4+	0	12	--	--	3.18	-.36	1.40	8	0	4.2	2	----	---	--	---	--	10	9	12	5.6	--
Providence	55	1006.8	1012.1	47	31	38.9	2.1	65	13	18	5	0	18	26	64	3.29	-.29	1.07	9	0	10.5	6	11.0	NW	•33	NW	10	12	7	12	5.5	60
SOUTH CAROLINA																																
Charleston (U)	9	------	------	63	49	56.2	-1.9	78	19+	34	10	0	0	--	--	3.89	.51	2.10	11	--	.0	0	10.4	---	36	S	25	--	--	--	---	81
Charleston	41	1013.0	1014.3	65	45	55.3	-1.9	80	15	30	10	0	1	45	75	5.53	1.91	2.93	11	3	.0	0	10.7	WSW	--	---	--	7	7	17	6.7	--
Columbia	217	1006.1	1014.4	64	43	53.5	-1.7	78	15	26	10	0	2	42	73	4.59	.80	1.70	14	3	T	0	7.8	NE	23	WNW	18+	9	8	14	6.2	57
Florence	146	1009.1	------	64	44	53.8	-1.6	80	15	28	10	0	1	--	--	5.48	1.94	2.08	14	2	.0	0	----	---	--	---	--	9	6	16	6.1	--
Greenville	1018	976.8	1014.3	60	41	50.2	-1.3	76	15	28	10	0	3	36	66	3.62	-.89	.95	14	3	T	0	10.3	NE	30	W	2+	5	11	15	6.7	51
Spartanburg	801	------	------	60	41	50.4	-1.3	75	12+	31	21	0	3	--	--	3.67	-.82	1.05	13	2	T	0	9.6	---	32	NW	8	--	--	--	---	--
SOUTH DAKOTA																																
Huron	1282	968.2	1016.9	40	22	31.1	-.6	56	31	10	2+	0	29	22	74	.25	-.84	.16	4	0	3.7	3	12.6	SSE	43	NW	8	7	6	18	6.8	79
Rapid City	3165	898.7	1015.6	45	22	33.7	2.4	69	21	-2	7	0	29	22	67	.66	-.40	.25	10	0	7.0	3	12.9	NNW	50	NW	23	10	8	13	6.1	64
Sioux Falls	1420	963.1	1016.0	42	21	31.4	-.6	66	10	7	20	0	29	20	63	1.84	.49	1.24	7	1	19.0	16	12.3	NNE	•48	NW	14	7	5	19	6.9	--
TENNESSEE																																
Bristol	1519	959.6	------	57	36	46.1	-.6	71	11+	24	4+	0	14	--	--	1.33	-2.44	.55	11	--	2.7	T	----	---	--	---	--	3	10	18	7.2	--
Chattanooga	670	987.3	1015.2	59	40	49.4	-1.3	74	17	30	29	0	4	37	68	2.38	-3.67	.71	13	0	.0	0	8.4	S	29	S	25	5	7	19	7.4	46
Knoxville	950	979.3	1015.2	58	39	48.8	-.6	73	11+	30	8+	0	5	37	68	2.26	-2.57	1.02	14	0	3.1	1	8.6	NE	32	SW	25	2	12	17	7.5	38
Memphis (U)	271	------	------	58	43	50.6	-1.8	75	14	27	8	0	2	--	--	3.75	-1.45	1.50	15	--	T	T	----	---	--	---	--	--	--	--	---	--

See footnotes at end of table.

State and station	Elevation (ground)	Pressure		Temperature											Average relative humidity	Precipitation							Wind					No. of days (sunrise to sunset)			Sky cover, tenths (sunrise to sunset)	Possible sunshine
												No. of days							No. of days		Snow, Sleet				Fastest mile							
		ø Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F. or above	Min. 32° F. or below	Average dew point		Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max. depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy		
	Ft.	Mb.	Mb.	°F.	°F.	°F.	°F.	°F.		°F.		#		°F.	%	In.	In.	In.			In.	In.	M. p. h.		M. p. h.			0–3	4–7	8–10	0–10	%
TENNESSEE (Cont'd.)																																
Memphis	263	1000.0	1015.0	60	41	50.4	-1.6	76	14	27	8	0	4	38	67	4.37	-1.22	1.88	14	3	T	T	10.5	SSE	44	S	11	5	6	20	7.4	44
Nashville	577	995.3	1015.5	58	39	48.3	-1.5	71	11+	27	10	0	8	38	72	2.85	-2.43	.80	11	2	3.1	T	8.5	NW	35	NW	14	4	6	21	7.7	46
Oak Ridge (R)	905	981.5	------	59	39	48.9	1.4	73	11	29	21	0	6	--	--	2.13	-3.56	.99	14	--	.6	T	5.6	---	36	---	25	4	9	18	7.1	--
TEXAS																																
Abilene	1759	950.9	1012.1	66	43	54.3	-.8	84	13	28	8	0	4	38	59	.54	-.58	.41	4	2	T	0	14.8	SSE	49	NW	24	6	9	16	6.2	--
Amarillo	3590	884.9	1011.3	56	34	45.0	-1.1	75	10	22	7	0	13	31	65	2.82	1.78	.99	9	3	11.1	10	14.6	NNW	59	NW	24	8	7	16	6.7	64
Austin	615	991.9	1013.8	70	49	59.5	-.8	82	18+	31	8	0	1	48	70	4.58	2.04	1.64	10	5	.0	0	10.9	NE	44	W	24	7	11	13	6.5	43
Brownsville	16	1010.2	1012.7	79	61	69.7	1.6	90	18	45	8	1	0	59	75	1.97	.86	.92	5	1	.0	0	15.1	SSE	35	S	10	11	8	12	5.7	50
Corpus Christi	41	1011.9	1012.9	76	57	66.4	1.1	88	31	39	8	0	0	56	73	2.74	1.11	1.16	8	4	.0	0	13.1	SSE	45	W	24	7	11	13	6.4	76
Dallas	487	994.9	1013.7	63	45	53.7	-3.7	79	11	27	8	0	2	43	71	6.36	3.55	2.95	10	5	.0	0	12.6	SE	38	NW	25	6	8	17	6.9	54
Del Rio	1091	978.0	1012.3	76	52	64.1	1.2	89	22	41	26	0	0	41	48	1.63	.70	.82	3	5	.0	0	12.1	---	50	NW	20	12	7	12	5.1	68
El Paso	3920	882.8	1010.5	69	46	57.0	2.5	80	8	33	24+	0	0	26	31	.33	.05	.15	4	2	T	T	14.3	WSW	50	W	22	13	9	9	4.9	83
Fort Worth	544	992.9	1013.8	62	43	52.6	-3.1	78	11	25	8	0	3	43	74	4.18	1.51	1.72	10	6	.0	0	13.9	ESE	*35	E	20	7	8	16	6.7	--
Galveston (U)	7	------	------	68	57	62.3	.5	75	18+	37	8	0	0	--	--	7.73	4.63	2.96	11	--	.0	0	12.9	---	42	W	17	--	--	--	---	57
Galveston	5	1011.9	1014.1	68	57	62.1	.3	76	21	39	8	0	0	55	78	7.73	4.47	2.21	11	6	.0	0	13.3	ESE	--	---	--	5	13	13	6.3	--
Houston (U)	41	1008.5	------	70	54	62.4	-.2	85	18	36	8	0	0	--	--	7.05	3.95	2.57	11	7	.0	0	10.9	---	37	SE	28	5	16	10	6.4	64
Houston	50	1011.2	1014.2	70	53	61.2	-.4	84	18	34	8	0	0	52	76	11.42	8.64	5.00	10	8	.0	0	13.4	ESE	--	---	--	6	11	14	6.8	--
Laredo	500	996.3	1011.6	81	58	69.7	1.3	93	11+	45	8	3	0	51	57	.44	-.46	.20	7	5	.0	0	11.9	SSE	*29	NE	3+	11	7	13	5.7	--
Lubbock	3243	899.1	1011.2	63	36	49.6	-.1	78	13	24	7	0	9	33	59	.98	.18	.38	5	3	2.4	1	18.2	S	*69	NNW	24	9	12	10	5.5	--
Midland	2854	912.3	1011.3	69	42	55.4	-.3	80	13	26	7	0	1	31	44	.09	-.54	.09	1	1	T	0	10.8	WSW	*29	W	4+	11	9	11	5.4	--
Port Arthur	16	1012.9	1014.2	70	52	60.7	.4	80	18	32	8	0	1	52	77	8.83	4.83	4.21	11	5	.0	0	12.7	ESE	42	W	31	8	9	14	6.3	58
San Angelo	1903	944.8	1012.1	70	45	57.5	-.7	82	13	29	8	0	2	36	50	.30	-.65	.16	3	2	T	0	13.9	S	*48	NW	23	9	10	12	5.5	--
San Antonio	792	987.8	1012.9	73	51	61.9	.5	87	18	35	8	0	0	48	64	4.19	2.07	1.24	11	9	.0	0	10.1	SSE	45	NW	20	8	9	14	6.2	64
Victoria	110	1008.5	1013.2	73	53	63.0	-.9	83	18+	36	8	0	0	53	71	7.91	5.27	3.14	11	9	.0	0	12.5	---	%46	W	24	6	10	15	6.6	--
Waco	500	992.2	1013.3	66	47	56.3	-2.1	80	11	29	8	0	1	45	71	5.58	2.64	1.94	8	7	.0	0	14.8	S	*58	NNW	27	6	7	18	7.1	--
Wichita Falls	1020	975.6	1013.0	60	41	50.3	-2.7	82	13	27	8	0	5	40	70	2.38	.77	1.01	8	2	T	0	10.6	SE	*29	NW	14	8	5	18	6.7	--
UTAH																																
Milford	5028	841.5	1013.9	56	28	41.7	2.5	70	8	4	22	0	23	--	--	.92	-.14	.42	8	1	2.7	2	----	---	--	---	--	2	10	19	7.6	--
Salt Lake City	4220	864.5	1014.4	54	32	43.1	2.0	65	8+	21	24	0	17	28	58	2.18	.52	.49	12	2	4.2	T	8.6	SSE	32	NW	12	5	7	19	7.7	43
VERMONT																																
Burlington	331	999.1	1014.2	41	22	31.4	2.1	57	15	5	5+	0	29	18	59	.95	-1.24	.63	7	0	8.6	7	6.3	N	36	NW	9	7	9	15	6.4	67
VIRGINIA																																
Lynchburg	947	979.9	------	56	37	46.4	.0	70	12	27	4+	0	6	--	--	1.11	-2.46	.53	7	0	.0	0	8.7	---	27	W	9	7	11	13	6.4	47
Norfolk	26	1012.7	1014.0	56	40	48.4	-.7	74	12+	32	3+	0	2	38	71	4.06	.79	1.46	14	3	T	0	11.3	NNE	37	NW	9	8	8	15	6.2	64
Richmond	162	1008.8	1015.1	58	37	47.2	-.3	74	12	28	2+	0	9	35	68	2.82	-.60	1.18	12	3	T	0	7.8	NNW	27	NW	29	8	8	15	6.2	54
Roanoke	1174	972.1	1015.1	55	36	45.4	-.9	72	17	26	4	0	9	30	59	1.48	-1.71	.53	7	0	T	0	9.7	NW	--	---	--	6	8	17	6.9	--
WASHINGTON																																
Olympia	190	1007.1	1017.0	53	35	43.9	.2	62	19	28	1	0	7	36	76	7.43	2.93	1.43	24	0	T	0	7.7	SSW	*32	WNW	9	1	5	25	8.6	--
Seattle (U)	14	------	------	52	41	46.7	-.3	62	19	37	12+	0	0	--	--	5.70	2.64	.91	23	1	.0	0	9.8	---	43	SW	10	0	7	24	8.5	40
Seattle	14	1013.5	1014.5	--	--	----	---	--	--	--	--	--	--	38	75	----	----	----	--	--	----	--	7.3	S	--	---	--	--	--	--	---	--
Seattle-Tacoma	376	1000.7	1015.2	50	39	44.4	-.1	59	19	33	12+	0	0	37	78	6.26	2.86	1.09	22	1	.0	0	12.2	SSW	*37	SW	20	0	8	23	8.5	--
Spokane	2357	944.8	1014.8	45	30	37.6	-.5	55	19+	17	5	0	23	30	77	1.82	.48	.38	15	0	6.4	3	8.7	NE	33	SW	10	0	6	25	8.9	37
Stampede Pass (R)	3958	875.0	1015.5	34	26	29.7	-1.0	43	27+	18	5+	0	31	--	--	9.08	-1.52	1.84	24	1	72.2	128	----	---	--	---	--	0	3	28	9.3	--
Tatoosh	101	1009.8	1012.9	48	40	44.2	-.5	56	27	35	12	0	0	39	82	11.03	3.21	1.68	24	0	T	0	16.5	E	56	W	10	0	8	23	8.7	31
Walla Walla (U)	949	979.0	1015.2	52	38	44.7	-2.1	63	19	30	5	0	3	--	--	2.94	1.42	.62	20	0	.1	T	6.3	---	62	W	10	1	7	23	8.6	52
Yakima	1061	975.3	1014.8	52	31	41.5	-2.2	63	24	23	13	0	19	30	68	2.63	2.17	.58	16	0	6.7	5	5.6	W	*32	W	10	4	8	19	7.7	--
WEST VIRGINIA																																
Charleston	950	978.6	1014.7	54	34	44.1	-.8	75	11	17	4	0	13	29	61	2.52	-1.64	.97	15	1	1.4	1	7.4	WSW	25	SE	25	4	7	20	7.5	--
Elkins	1970	------	------	51	30	40.2	.9	69	11	14	4	0	22	29	--	1.39	-2.40	.42	13	1	2.6	2	6.6	WNW	21	NW	2	4	6	21	7.4	--
Huntington (U)	565	------	------	55	34	44.5	-2.7	76	11	20	3	0	12	--	--	2.15	-1.93	.93	15	--	2.0	2	----	---	--	---	--	--	--	--	---	--
Parkersburg (U)	615	------	------	53	33	43.1	-.5	74	13	19	3	0	13	--	--	1.15	-2.39	.49	15	0	2.5	1	5.6	---	23	NW	15	7	7	17	6.6	57
WISCONSIN																																
Green Bay	689	991.5	1015.6	39	21	30.1	1.6	61	14	4	3	0	30	23	75	.46	-1.30	.11	10	1	2.0	1	11.8	NE	55	W	15	10	7	14	6.1	63
La Crosse	652	990.5	1016.0	42	23	32.5	.9	59	14	5	3	0	28	21	62	1.03	-.83	.39	9	1	7.0	4	9.4	NNW	*37	W	15	6	9	16	6.5	--
Madison	857	979.0	1015.5	44	23	33.2	.7	65	13	5	3	0	28	23	69	1.19	-.64	.62	11	1	9.0	7	11.0	ENE	49	W	15	5	9	17	6.9	63
Milwaukee	672	989.8	1015.6	40	25	32.4	-.9	59	14	8	3	0	28	24	74	1.59	-.60	.59	9	1	9.0	5	14.2	NNE	54	W	15	9	3	19	6.5	58
WYOMING																																
Casper	5322	832.4	1012.2	47	22	34.7	2.3	62	29	-4	6	0	28	21	62	.91	-.22	.35	10	0	13.1	4	14.4	SW	*46	W	11	9	5	17	6.5	--
Cheyenne	6139	806.3	1013.0	45	22	33.2	1.4	58	21	-1	6	0	29	19	60	.99	-.23	.56	8	0	10.6	6	16.4	NW	49	NW	11+	10	6	15	6.2	65
Lander	5563	830.7	1013.0	48	22	35.0	3.7	60	9+	4	6	0	28	18	52	1.08	-.06	.67	5	0	6.5	2	7.3	---	50	W	9	6	11	14	6.5	70
Sheridan	3942	881.5	1015.4	47	22	34.7	3.1	66	20	0	7	0	29	22	63	1.23	-.14	.55	12	0	15.4	4	9.6	WNW	53	NW	10	8	6	17	6.5	58
PACIFIC AREA																																
Canton Island	9	1009.8	1010.2	88	79	83.4	.3	90	8	77	4+	1	0	73	75	.02	-1.90	.02	1	0	.0	0	13.8	ENE	22	E	10+	5	15	11	6.3	--
Hilo	31	1016.3	1017.6	78	62	69.9	-.9	83	21	57	26	0	0	61	76	3.90	-11.82	1.28	16	0	.0	0	9.8	WSW	*30	N	5	4	15	12	6.7	54
Honolulu	7	1018.0	1018.4	79	65	71.7	-1.3	81	19+	57	25	0	0	59	66	.01	-2.29	.01	1	0	.0	0	10.6	ENE	38	NE	7	5	19	7	5.5	91
Koror (R)	94	1006.8	1010.5	87	76	81.6	.7	89	1+	73	5	0	0	75	84	6.72	-.96	2.93	16	1	.0	0	----	---	--	---	--	0	2	29	9.5	--
Lihue	115	1013.2	1018.8	78	64	71.0	.4	83	4	53	24	0	0	60	72	.30	-3.77	.12	7	0	.0	0	10.6	NE	29	NE	25	4	16	11	6.1	67
Majuro	10	1010.2	1010.5	86	78	82.0	---	88	25	74	7	0	0	74	77	2.83	----	1.99	10	0	.0	0	----	---	--	---	--	2	7	22	8.2	--
Ponape (R)	120	1005.1	1010.5	87	77	81.8	.2	89	15+	73	30	0	0	76	82	9.93	-1.43	4.66	23	1	.0	0	----	---	--	---	--	0	3	28	9.2	--
Truk (Moen Is.)	31	1010.5	1010.8	87	79	82.3	1.0	88	26	75	1+	0	0	75	79	4.68	-1.95	2.24	21	0	.0	0	----	---	--	---	--	0	1	30	9.7	--
Wake Island	11	1015.6	1016.0	82	72	77.3	-.6	86	16	67	9	0	0	70	80	2.99	1.59	2.60	9	0	.0	0	12.3	ENE	*28	ENE	4	11	12	8	5.1	--
Yap (R)	53	1008.8	1010.8	86	76	81.4	-.1	89	28	72	4	0	0	75	82	8.53	3.82	2.90	20	0	.0	0	----	---	--	---	--	0	0	31	10.0	--
WEST INDIES																																
San Juan, P.R.	15	1012.7	1015.5	85	67	75.6	---	90	23+	60	3	2	0	65	75	1.51	----	1.18	10	0	.0	0	7.8	ENE	25	NE	26	14	14	3	4.2	79
San Juan, P.R. (U)	47	------	------	83	71	77.1	1.5	91	23	66	3	3	0	--	--	.29	-2.13	.16	3	--	.0	0	----	---	--	---	--	--	--	--	---	--
Swan Island	31	1011.8	------	84	76	79.9	.3	86	23+	71	11+	0	0	--	--	.72	-.28	.36	7	1	.0	0	----	---	--	---	--	7	17	7	5.5	--
ALASKA																																
Anchorage	92	1000.7	1005.7	37	21	28.7	3.9	47	30	7	5	0	31	21	71	.20	-.40	.11	5	0	3.2	9	6.2	NE	*25	S	2	3	6	22	8.1	44
Annette	110	1005.4	1009.4	45	33	39.3	1.2	58	29	26	1	0	13	31	76	6.90	-1.78	1.07	17	0	5.7	3	10.6	SE	*40	SSE	23	7	3	21	7.3	--
Barrow	22	1021.0	1021.6	-10	-22	-16.0	-1.1	10	5	-34	23	0	31	-25	63	.21	.09	.07	7	0	2.1	23	11.3	NE	30	NE	9	8	11	12	5.7	--
Barter Island	39	1017.3	1019.5	-8	-24	-16.1	---	15	5	-47	22	0	31	-27	54	.23	----	.12	4	0	2.1	26	10.9	W	*32	W	6	10	9	12	5.5	--
Bethel	10	1002.7	1004.1	27	7	17.0	5.5	44	29	-20	25	0	31	14	84	.86	-.06	.30	13	0	8.9	7	9.8	N	*35	SSE	2	5	5	21	7.6	--
Cold Bay	90	997.6	1001.9	35	26	30.3	.6	44	19	12	10+	0	24	27	84	2.00	.11	.53	16	0	2.6	3	18.4	ESE	*60	WSW	17	1	8	22	8.3	--
Cordova	40	1004.7	1006.3	42	25	33.4	3.3	51	29	13	25	0	24	27	75	1.26	-4.66	.58	13	0	3.4	14	5.3	E	*23	ESE	1+	6	7	18	7.3	--
Fairbanks	436	991.5	1009.2	31	6	18.1	9.1	46	2+	-18	26	0	31	8	63	.15	-.43	.05	7	0	2.2	27	4.2	N	*15	ENE	6	7	7	17	6.8	--
Juneau	15	1007.8	1008.9	41	25	32.8	.0	49	4+	15	4+	0	28	28	81	1.35	-2.12	.58	14	0	5.2	9	6.3	ESE	32	SE	4	5	6	20	7.5	47
King Salmon	44	1000.7	1002.7	34	18	25.7	4.4	48	31	-10	26	0	29	21	82	1.48	.26	.59	10	0	5.1	3	12.4	E	*52	ESE	1	3	5	23	8.1	--
Kotzebue	10	1011.9	1012.4	11	-11	.4	2.0	32	4	-32	24+	0	31	-5	77	.16	-.11	.13	4	0	8.8	33	11.8	NE	*49	E	2	8	7	16	6.6	--
McGrath	334	994.2	1007.3	28	3	15.6	8.3	45	3	-19	25	0	31	7	69	.72	-.26	.35	9	0	7.6	23	3.7	N	*16	S	18	5	6	20	7.4	--
Nome	13	1008.1	1008.9	20	1	10.8	2.3	33	29	-19	24+	0	31	5	76	.62	-.29	.23	11	0	6.8	26	9.5	NE	43	NE	7	11	4	16	5.8	31
Northway	1713	944.8	1010.2	24	-6	8.8	1.9	38	18+	-27	6+	0	31	--	--	.29	.07	.20	5	0	8.2	36	----	---	--	---	--	9	6	16	6.3	--
St. Paul Island	22	1001.0	1002.0	28	19	23.5	-1.0	37	14	-1	9	0	31	20	87	1.73	.56	.64	20	0	16.9	12	----	---	--	---	--	3	4	24	8.4	--
Yakutat	[illegible]	1006.4	1007.5	42	24	33.1	2.3	55	30	11	15	0	28	28	85	3.32	-6.57	1.45	14	0	16.1	13	6.3	E	*36	E	5	6	6	19	6.8	--

Data from airport unless otherwise specified. U indicates Urban, R indicates Rural, sites.
* Data entered in column "Fastest Mile" is the fastest mile observed. This station is not equipped with automatic recording wind instrument.
+ And also on a later date or dates.
% Peak gust.
a Maximum hourly average
# Number of days maximum 70° or above for Alaskan stations.
ø Station pressures apply to elevation shown in Table 10b of the annual issue of this publication

HEATING DEGREE DAYS

(Base 65°F.)

MARCH 1957

State and station	Current season		Normals
	This month	Period July through this month	July through this month
ALABAMA			
Birmingham	402	2035	2622
Mobile	209	1159	1565
Montgomery	295	1593	2057
ARIZONA			
Flagstaff	845	5588	6161
Phoenix (U)	92	1313	1430
Phoenix	107	1175	1624
Prescott	554	3609	3984
Tucson	167	1283	1692
Winslow	530	3929	4215
Yuma	31	693	937
ARKANSAS			
Ft. Smith	479	2860	3037
Little Rock	426	2565	2842
Texarkana	363	2107	2278
CALIFORNIA			
Bakersfield	223	1991	1989
Bishop	478	3592	3725
Blue Canyon	832	4364	4523
Burbank	161	1121	1549
Eureka (U)	459	3762	3543
Fresno	308	2430	2344
Los Angeles (U)	123	809	1235
Los Angeles	158	960	1653
Mt. Shasta (R)	731	4925	4833
Oakland	346	2599	2550
Red Bluff	340	2353	2318
Sacramento (U)	289	2243	2314
Sacramento	325	2484	2490
Sandberg (R)	632	3404	3491
San Diego	161	832	1283
San Francisco (U)	330	2350	2362
San Francisco	342	2502	2666
San Jose	278	1961	1998
Santa Maria	351	2364	2277
COLORADO			
Alamosa	990	6843	7317
Colorado Springs	856	5134	5317
Denver	795	4769	5256
Grand Junction	670	5292	5226
Pueblo	734	4543	5023
CONNECTICUT			
Bridgeport	764	4748	5048
Hartford	816	5474	5379
New Haven	809	5008	5146
DELAWARE			
Wilmington	703	4274	4398
DIST. OF COLUMBIA			
Washington (U)	584	3572	3864
Washington	587	3707	3923
FLORIDA			
Apalachicola (U)	131	764	1274
Daytona Beach	124	657	857
Fort Myers	32	297	405
Jacksonville	149	827	1220
Key West (U)	3	21	77
Miami (U)	22	144	173
Miami	17	118	178
Miami Beach	9	66	123
Orlando	62	443	650
Pensacola (U)	178	970	1390
Tallahassee	189	1052	1481
Tampa	57	392	674
West Palm Beach	25	176	248
GEORGIA			
Athens	433	2288	2657
Atlanta	410	2100	2673
Augusta	348	1823	2076
Columbus	329	1737	2299
Macon	300	1603	1987
Rome	474	2550	2952
Savannah	254	1400	1667
IDAHO			
Boise	699	5431	5096
Lewiston	652	5242	4785
Pocatello	803	6169	5962
ILLINOIS			
Cairo (U)	511	3219	3527
Chicago	846	5110	5516
Chicago University	862	5105	
Moline	861	5465	5667
Peoria	824	5087	5419
Springfield	761	4714	5086
INDIANA			
Evansville	623	3899	4013
Ft. Wayne	859	5208	5492
Indianapolis	742	4588	4973
South Bend	885	5321	5683
IOWA			
Burlington	841	5232	5463
Des Moines	867	5534	5762
Dubuque	974	6147	6385
Keokuk (U)	744	4768	
Sioux City	901	5811	6256
KANSAS			
Concordia (U)	735	4627	4816
Dodge City	749	4385	4561
Goodland	914	5286	5534
Topeka (U)	677	4318	4499
Topeka	705	4542	4731
Wichita	646	4138	4183
KENTUCKY			
Lexington	670	3891	4456
Louisville	618	3724	4055
Pikeville (U)	507		
LOUISIANA			
Baton Rouge	157	1034	1547
Lake Charles	162	994	1503
New Orleans (U)	111	732	1156
New Orleans	136	836	1286
Shreveport	308	1806	2056
MAINE			
Caribou	1194	8488	8551
Greenville (U)	1149	7955	
Portland	965	6521	6477
MARYLAND			
Baltimore (U)	566	3431	3804
Baltimore	660	4012	4289
Frederick	717	4409	4380
MASSACHUSETTS			
Blue Hill Obs. (R)	928	5643	
Boston	798	4902	4979
Nantucket	836	4735	4927
Pittsfield	974	6406	6563
MICHIGAN			
Alpena (U)	1118	6674	6739
Detroit	867	5248	5535
Detroit (Willow Run)	866	5372	5618
East Lansing (U)	892	5506	
Escanaba (U)	1161	7091	7216
Grand Rapids	932	5658	6089
Marquette (U)	1192	7190	7074
Muskegon	969	5659	5981
S. Ste. Marie	1232	7825	7906
MINNESOTA			
Duluth (U)	1292	8525	8086
Duluth	1328	8579	8439
Internat. Falls	1389	9321	9158
Minneapolis	1065	6695	6944
Rochester	1079	6825	7105
St. Cloud	1207	7643	7793
MISSISSIPPI			
Jackson	328	1755	2121
Meridian	329	1764	2239
Vicksburg (U)	263	1586	1929
MISSOURI			
Columbia	701	4277	4638
Kansas City	649	4151	4477
St. Joseph	729	4708	4869
St. Louis (U)	633	3866	4098
St. Louis	664	4043	4290
Springfield	655	3908	4264
MONTANA			
Billings	936	6141	6119
Glasgow	1093	7738	7668
Great Falls	962	6670	6409
Havre (U)	1006	7176	7178
Helena	1013	7247	7000
Kalispell	998	7287	6810
Miles City	991	6719	6889
Missoula	906	6768	6723
NEBRASKA			
Grand Island	876	5401	5654
Lincoln (U)	793	4907	5284
Norfolk	939	5868	6253
North Platte	935	5746	5755
Omaha	821	5188	5564
Scottsbluff	890	5587	5888
Valentine	1018	6253	6161
NEVADA			
Elko	834	6347	6162
Ely	893	6295	6186
Las Vegas	243	2278	2333
Reno	693	5236	5034
Tonopah	685	4752	4946
Winnemucca	760	5656	5413
NEW HAMPSHIRE			
Concord	942	6520	6554
Mt. Washington Obs.	1582	11167	
NEW JERSEY			
Atlantic City (U)	701	3827	4060
Newark	705	4344	4643
Trenton (U)	713	4277	4495
NEW MEXICO			
Albuquerque	543	3772	4030
Clayton	763	4244	4510
Roswell	409	2907	3211
NEW YORK			
Albany	908	6004	6069
Binghamton	995	6204	6459
Buffalo	894	5392	5815
New York (U)	712	4196	4423
New York	696	4081	4391
Rochester	944	5666	5905
Schenectady	856	5650	
Syracuse	920	5630	5666
NORTH CAROLINA			
Asheville (U)	601	3229	3677
Charlotte	442	2452	3004
Greensboro	547	3162	3519
Cape Hatteras (R)	433	1969	2196
Raleigh	499	2845	3126
Wilmington	366	1947	2212
Winston-Salem	531	3057	3440
NORTH DAKOTA			
Bismarck	1145	7775	7905
Devils Lake (U)	1248	8502	8659
Fargo	1159	7826	8148
Grand Forks	1221	8377	
Pembina	1290	8560	
Williston (U)	1098	7733	7907
OHIO			
Akron	858	5269	5381
Cincinnati (U)	608	3634	4110
Cincinnati	698	4388	4631
Cleveland	825	4878	5206
Columbus	745	4439	4960
Dayton	775	4643	4944
Sandusky (U)	829	4904	5088
Toledo	868	5315	5534
Youngstown	854	5269	5344
OKLAHOMA			
Oklahoma City	560	3396	3422
Tulsa	513	3214	3367
OREGON			
Astoria	594	4377	3957
Burns (U)	813	10243	5858
Eugene	551	4244	3961
Meacham	930	6410	6317
Medford	557	4296	3890
Pendleton	651	5090	4570
Portland (U)	524	3851	3527
Portland	578	4271	3901
Roseburg	508	3978	
Salem	554	4182	3826
Sexton Summit (R)	828	4830	4876
PENNSYLVANIA			
Allentown	792	5006	5196
Harrisburg	730	4519	4693
Philadelphia (U)	644	3783	4061
Philadelphia	695	4170	4360
Pittsburgh (U)	694	4168	4496
Pittsburgh	778	4776	5188
Reading (U)	690	4309	4515
Scranton	886	5540	5300
Williamsport	799	5081	5215
RHODE ISLAND			
Block Island	812	4601	4809
Providence	804	5103	5239
SOUTH CAROLINA			
Charleston (U)	276	1388	1726
Charleston	307	1674	1910
Columbia	350	1887	2352
Florence	345	1880	2424
Greenville	451	2510	2867
Spartanburg	447	2484	2866
SOUTH DAKOTA			
Huron	1045	6802	6985
Pierre	1025	6617	
Rapid City	966	6240	6415
Sioux Falls	1039	6601	6934
TENNESSEE			
Bristol	578	3283	3779
Chattanooga	475	2602	3160
Knoxville	496	2694	3344
Memphis	447	2618	2974
Nashville	511	2888	3284
TEXAS			
Abilene	333	2229	2544
Amarillo	616	3481	3948
Austin	185	1342	1663
Brownsville	25	354	617
Corpus Christi	53	669	1005
Dallas	347	2088	2197
Del Rio	87	1132	1386
El Paso	242	2108	2531
Ft. Worth	381	2211	2266
Galveston (U)	106	715	1181
Galveston	111	761	1205
Houston (U)	118	853	1249
Houston	138	947	1352
Laredo	22	612	781
Lubbock	473	2992	3350
Midland	293	2240	
TEXAS (Cont'd.)			
Port Arthur	150	975	1478
San Angelo	239	1977	2045
San Antonio	132	1131	1545
Victoria	102	883	1112
Waco	270	1783	1959
Witchita Falls	449	2683	2869
UTAH			
Milford	716	5400	5583
Salt Lake City	667	5015	5099
VERMONT			
Burlington	1035	6664	6805
VIRGINIA			
Lynchburg	569	3486	3777
Norfolk	508	2752	3130
Richmond	546	3297	3618
Roanoke	600	3493	3782
WASHINGTON			
Olympia	647	4713	4482
Seattle (U)	561	3922	3689
Seattle-Tacoma	629	4594	4336
Spokane	841	6241	5815
Stampede Pass (R)	1085	7540	7238
Tatoosh Island (R)	638	4703	4432
Walla Walla (U)	623	4817	4301
Yakima	722	5741	5179
WEST VIRGINIA			
Charleston	645	3723	3989
Elkins	762	4624	5019
Huntington (U)	627	3550	3732
Parkersburg (U)	672	3988	4271
WISCONSIN			
Green Bay	1078	7030	7109
La Crosse	1000	6351	6774
Madison (U)	949		6382
Madison	977	6200	6484
Milwaukee	1006	6085	6124
WYOMING			
Casper	934	6198	6451
Cheyenne	976	5831	6210
Lander	924	6326	7057
Sheridan	933	6430	6710
Alaska			
Anchorage	1119	9657	8964
Annette	792	5945	5607
Barrow	2519	16304	15673
Barter Island	2522		
Bethel	1483	11057	10587
Cold Bay	1069	7468	
Cordova	975	8097	7601
Fairbanks	1446	12877	12336
Juneau	992	7481	7223
King Salmon	1214	9888	
Kotzebue	2006	13556	12867
McGrath	1526	12880	12261
Nome	1676	11715	11220
Northway	1736	14434	13392
St. Paul	1280	8612	8163
Yakutat	985	7553	7361

Data from airport unless otherwise specified.
U indicates Urban, R indicates Rural, sites.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
NEW ENGLAND Northern and central portions	1				4		4	1	Snow	4 deaths and numerous injuries in automobile accidents resulted from heavy snowstorm. Street conditions most hazardous of the whole season in some areas. Bus service halted or delayed in Boston area. In addition to property damaged, over $300,000 spent for plowing and sanding of highways.
ALASKA Peninsula and southwestern mainland	1-2	2 p.m. 1st -midnight 2d	600	*300				1	Wind, rain, and snow	Widespread strong winds surrounding storm center as it moved from latitude 46° N., and 167° W., at 2 p.m., on 1st to 55° N., and 155° W., at 8 a.m., on 2d and thence to 59° N., and 170° W., at midnight on 2d. Port Heiden on 1st reported gusts estimated at about 110 m.p.h., from east, when 2 old buildings blown apart. Kokhanok Bay on 1st received winds from east and southeast with gusts estimated to 75 m.p.h., tearing props from windcharger. Winds continued strong here with gusts from southeast continuing to reach estimated peaks of 75 m.p.h., on 2d. Strong winds encompassed large area about low center. Kitoi Bay on Kodiak Island received strong easterly winds. On 2d, gusts reaching 55 to 60 m.p.h., in interior in Big Delta area, and Girdwood, just southeast of Anchorage, received gusts reaching 30 m.p.h., and were quite general over entire Cook Inlet area.
TEXAS Gardendale, La Salle County	3	12:15 p.m.							Hail	Hailstones 3/4 inch in diameter.
TEXAS Fowlerton, La Salle County	3	12:45 p.m.	26	*7			3		Hail	Hailstones baseball to golf-ball size. Storm moved eastward.
TEXAS Corpus Christi, Nueces County	3	3 p.m.							Hail	Hailstones 1 inch in diameter until 5 p.m.
TEXAS Premont, Jim Wells County	3	7:30 p.m.							Hail	Damaged roofs and broke windows.
	3									Minor storms also reported at Opelousas, La.; and Beeville, Tex.
FLORIDA Lakeland, Polk County	4	12:30 p.m.	Short	20	0	0			Tornado	Cloud moving northeastward touched ground over uninhabited area; funnel cloud observed.
ARKANSAS Drew, Bradley, and Ashley Counties	5	2-4 p.m.					°5	C	Hail and wind	Principal damage was in Drew County in vicinity of Monticello where hail up to size of golf balls caused extensive damage to roofs, windows, and signs. Some accompanying wind damage in city. Only reported monetary losses were in Monticello area and attributed to hail. In other sections of Drew County and in Bradley and Ashley Counties, hail 1/2 inch in diameter or less reported. Crop losses considered negligible. Fruit trees sustained no apparent damage. Storm moved northeastward.
	5									Minor storms also reported at Florence, Ala.; at Little Rock, Ark.; at Lake Providence and Norco, La.; and at Kosciusko and Louisville, Miss.
SOUTH DAKOTA Southwestern portion	5-6	1 a.m.5th-6 a.m.6th				3	3		Snow and glaze	21 automobile accidents in Rapid City and Deadwood where melting snow glazed streets. Snowfall in Black Hills 2 to 5 inches, little drifting.
TEXAS Refugio, Refugio County	6	5:30 p.m.					4		Hail, wind, rain, and electrical	Hailstones 1 inch in diameter damaged aircraft. 1-1/2-inch rain fell in 15 minutes.
TEXAS Corpus Christi (25 miles north-northeast of), Nueces County	6	6-6:30 p.m.			0	0			Tornadoes	3 funnels aloft sighted.
OREGON Northwest to north-central portions	7-8	Most of both days	150-200	*50-100			4	2	Rain	Heavy rains, particularly in Willamette Valley and as far up Columbia Gorge as The Dalles caused numerous small creeks to overflow their banks and minor flooding at scattered points along Willamette River. Reactivated several slides in residential areas of Portland and in scattered other areas of north. Several roads closed by slides and high water. Flooding of Johnson Creek in Portland continued to flood roads, a few houses, and small amount of business property. Storm moved eastward.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

MARCH 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
IOWA Central and northern portions	8	All day				7	4	1	Snow and sleet	Glazed highways caused nearly 100 traffic accidents.
NEW YORK Entire State	8-9				1				Snow	Snowstorm with moderate to heavy accumulations of wet snow caused numerous accidents on roads and downed tree limbs and wires. Woman killed by skidding into tree at Oneida. No reports of number of injured in traffic accidents. Numerous power and phone interruptions of service by wires downed.
NEW ENGLAND Northern and central portions	8-9				1		4	1	Snow, sleet, and wind	Excepting southern Massachusetts and coastal New England, where precipitation fell as rain, heavy, wet snow clogged many roads and made travel hazardous generally. Accidents attributed to storm caused a number of injuries, including 1 death in Massachusetts. High winds and, in many areas, sleet and glazing accompanied snow. Trees and branches toppled, breaking utility lines in several communities.
CALIFORNIA Entire State, except southeastern desert area	8-10								Rain and wind	Steep pressure gradient behind secondary front caused locally strong winds. Light to moderate rains occurred in north and central, scattered thunderstorms in central Sierras, and locally heavy rain in Los Angeles and San Bernardino Counties. Gusty winds reached 41 m.p.h., at San Francisco Airport, and winds in excess of 30 m.p.h., at Pt. Arguello and Pt. Piedras Blancas. Minor damage occurred in San Bernardino and nearby Elder Gulch area from local flooding. Storm moved southeastward.
IDAHO Entire State	9-10								Wind and snow	Within 36 hours, 2 storm fronts swept across State, accompanied by strong, gusty winds. Although damage minor in all sections, extreme winds of 52 m.p.h., recorded at Boise on 9th (all-time high for March), 47 m.p.h., at Pocatello and 55 m.p.h., at Lewiston on 10th and peak gust of 58 m.p.h., at Idaho Falls at 2:33 p.m., on 10th. Snow accompanied winds in some areas, particularly in north where near-blizzard conditions reported in several localities.
NEW JERSEY Entire State	10	All day				Several	°3	C	Wind	Strong, gusty, northwest and north winds, associated with intense northeastward moving storm, caused considerable damage throughout State. Telephone and powerlines downed, trees uprooted, and some roof damage sustained.
ILLINOIS Edwardsville, Madison County	10	Afternoon			1	2	2		Wind	Wind gust wrecked automobile traveling on superhighway. No thunderstorm at time.
	10									Minor storms also reported in Caddo and Kiowa Counties, Okla., and in Washington State.
	10-11									Minor storm reported in Lawrence County, S. Dak.
TEXAS Cameron, Milam County	11	2:10 a.m.							Wind	Strong winds blew down trees. Storm moved southeastward.
TEXAS San Antonio, Bexar County	11	3:30 p.m.	30	*2			3		Hail	Hailstones up to 2-1/4 inches in diameter fell on parts of San Antonio until 6 p.m. Storm moved north-northeastward.
TEXAS Austin, Travis County	11	7 p.m.	4	*1-1/2			5		Hail	Roofs, windows, neon signs, and aircraft damaged. Storm moved northeastward.
TEXAS Zunkerville, Karnes County	11	9 p.m.			0	0			Tornado	Hit in open country west of town.
CALIFORNIA Tehama and Shasta Counties	11								Wind and electrical	Strong winds blew trees down across highways and power- and telephone lines near Hatchett Mountain in Shasta County. Winds reached 43 m.p.h., at Red Bluff Airport and distant lightning observed. Storm moved eastward.
	11									Minor storms also reported in Mahaska County, Iowa; Ohio County, Ky.; at Alexandria, La.; and at Tonkawa, Okla.
KANSAS Most of State	11-15	Mostly during daylight hours							Dust and wind	Visibilities of 5 miles or less daily, winds attained speeds of 30 to 45 m.p.h., with gusts at times to 60 m.p.h., in connection with frontal passage and low pressure area centered to north of Kansas. On 11th, worst of storm located in northwest, with dust carried into east afternoon and early evening. Conditions on 12th were more intense in central part, but visibilities in east lowered to 2 miles or less. West and northwest

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

MARCH 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
KANSAS (Cont'd)										winds of 40 to 60 m.p.h., caused dust blowing in western third on afternoon and evening of 13th, with visibilities of 1 mile or less and at times zero. Dust most prominent in central and east in daytime hours of 14th. On 15th, 30-m.p.h., south winds raised dust over west and visibilities lowered to 1-1/2 and 3 miles in afternoon.
TEXAS Victoria, Victoria County	12	Afternoon			0	0			Tornadoes	6 funnel clouds sighted aloft, moving northeastward.
IDAHO Entire State	12								Wind and snow	High winds and snow again swept across State. In this storm as in that of 9th and 10th damage minor, being confined largely to some roof and window damage and toppling of utility poles and lines in a few places. Snow heavier than in earlier storm and rail and highway travel hampered.
	12									Minor storms also reported at Brownsville, Harlingen, and Los Fresnos, Tex.; and in Cache and Salt Lake Counties, Utah.
COLORADO Eastern portion	13	Afternoon							Wind, snow, and dust	Cold front caused sudden drop in temperature, scattered snow, and high wind. Blowing dust caused a few minor accidents, and did damage to fields. Heaviest wind damage reported in Lamar area. At Wiley, 2 large hay sheds blown down at National Alfalfa Company. 3 company trucks, a cutting machine, and office damaged. No actual estimate of damage made, but would run into thousands of dollars. Other damages include 1/2 mile of telephone poles blown down, roofs blown off small buildings, and trees and television antennas damaged.
OKLAHOMA Sallisaw, Sequoyah County	13							1	Electrical	Lightning struck home, causing considerable damage to electrical system and appliances.
	13									Minor storms also reported in Calhoun, Clay, and Lee Counties, Iowa; and at Hartshorne and in the Panhandle area, Okla.
SOUTH DAKOTA Eastern and south-central portions	13-14	2 p.m.13th -11 p.m. 14th			1	3	3		Snow and wind	Light snow began in west, became heavy in east on 14th. Northwesterly wind averaging 30 to 35 m.p.h., reduced visibility to few yards. At Sioux Falls, gusts reached 63 m.p.h. 3 inches or more snow fell east of line through Martin-Pierre-Aberdeen. 6 to 8 inches fell between Wagner and Flandreau, with drifts much higher. Schools closed and traffic virtually halted. Death near Gettysburg due to exposure after truck stalled. Property damage based on automobile collisions.
ILLINOIS	14	1:30 p.m.					4		Hail	Scattered damage to roofs and windows by hail, principally in area extending from Belleville to Effingham. Also scattered lighter hail damage in numerous thunderstorms in central and north on this date. Storm moved northeastward.
ILLINOIS Schuyler, Fulton, Peoria, and Marshall Counties	14	2 p.m.			0	0	4		Tornado and wind	Wrecked veterinary office and caused other damage at Rushville. Continuation of same storm northeastward either as tornado or windstorm caused scattered damage at Canton, Bartonville, and Lacon. Storm moved northeastward.
ILLINOIS Mason and McLean Counties	14	2:55 p.m.		100	0	0	4		Tornado and wind	Light to moderate damage to a dozen residences and farmsteads in eastern part of Mason City and northeastward. Continuation of same storm as tornado or windstorm caused scattered damage near Funks Grove and south of Bloomington.
ILLINOIS Sterling to Rockford, Whiteside to Winnebago Counties	14	3:05 p.m.					4		Wind	Strong, gusty winds measured to 70 m.p.h., moved northeastward from Sterling and Dixon to Rockford, causing scattered damage. Trucking company garage unroofed at Sterling. Newly-constructed, concrete-block, rear wall of 280-foot hangar at Greater Rockford Airport blown out with no apparent damage to roof or other walls. Hangar doors facing wind may have been open. Wall not anchored to floor or remainder of structure.
ILLINOIS Logan, McLean, and Ford Counties	14	3:10 p.m.			0	0	4		Tornado	2 farmsteads damaged at Latham by small tornado. Intermittent path appeared to extend northeastward for 85 miles as shown by damage near Bellflower, Saybrook, and near Piper City.
ILLINOIS Piatt, Champaign and Vermilion Counties	14	4:20-5:50 p.m.		30	0	0	4		Tornadoes	Some scattered damage also along 25-mile extension of path northeastward to Sidney and Ogden. Mostly light damage to about 10 farmsteads at Atwood and Parkville. Same storm probably accounted for pilot report of 2 funnel clouds aloft over Vermilion County at 5:50 p.m.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

MARCH 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TEXAS McFaddin, Victoria County	14	5 p.m.			0	0			Tornado	Funnel sighted aloft.
ILLINOIS Joliet, Will County	14	5:32 p.m.			0	0			Tornado	Funnel cloud aloft.
MICHIGAN	14	Afternoon-evening				2	5	1	Wind and electrical	High winds caused scattered damage, mostly in central and southern Lower Michigan. Lightning destroyed large barn and contents in Isabella County and caused minor damage in several other localities around State.
IOWA Northwestern half	14	Afternoon-night			3	11	4	1	Blizzard	Traffic stalled and travelers stranded, schools closed, all surface transportation stopped, communication and powerlines downed, and towns isolated. Storm moved southeastward.
ILLINOIS Round Lake, Lake County	14	6:10 p.m.	2	35	0	0	3		Tornado	Small tornado moving northeastward caused light damage in 2 places about a mile apart.
INDIANA Fairbanks, Sullivan County	14	6-7 p.m.	5		0	0	4	1	Tornado, rain, and electrical	South of Fairbanks, tornado blew down barn and unroofed house and another barn. Damage in path about 1-1/2 miles wide from rain and lightning minor. Storm moved northeastward.
INDIANA New Chicago, Lake County	14	6:30-6:38 p.m.	10	30	0	0	4	1	Tornado	Tornado first struck at Schererville, damaging 3 buildings and 7 trailers. Roof of 1 trailer tossed 350 feet. Minor damage occurred to buildings in and near New Chicago. 10-mile path of destruction not continuous. Observer at Ogden Dunes reported peak wind gust of 67 m.p.h., at 6:39 p.m. Shortly afterwards small pebbles found at toll road interchange 2 miles south of Chesterton which were foreign to area, indicating that tornado may have traveled above ground to this point. Storm moved east-northeastward.
INDIANA La Porte, La Porte County	14	7:10 p.m.			0	0	3	1	Tornado	Northwest of La Porte, trailer demolished and house damaged. Trailer tossed 400 feet. This may have been a continuation of the New Chicago tornado. Storm moved east-northeastward.
INDIANA Spencer, Owen County		7:30-7:40 p.m.	1/10	30	0	0	2	1	Tornado	3 miles south of Spencer, tornado damaged porch and moved building from its foundation. Sounds "like a train" heard by occupants of house. Storm moved northeastward.
	14									Minor storms also reported in scattered areas and in the southeastern third of Iowa; at Milan, Mo.; and in Black Creek area of Florence County, S. C.
MINNESOTA Northern and central portions	14-15	A.m.14th-a.m.15th			6	Many	3	1	Snow, wind, rain, and electrical	Blizzard conditions; heaviest snow of season accompanied by 40- to 50-m.p.h., winds; drifts 6 to 7 feet high in west-central. Roads blocked, some communities isolated, many schools closed. Total storm snowfall accumulation at Wadena Weather Bureau substation 23.70 inches, 24-hour snowfall of 19.50 inches established new record at Wadena. Numerous traffic accidents. 6 fatalities attributed to weather. 2 deaths in Minneapolis from heart attacks after shoveling snow. Freezing rain downed many telephone and powerlines in south. Lightning struck rural school near Austin, knocking down teacher and 2 pupils, no serious injuries. Part of school roof damaged by resulting fire. Storm moved northeastward.
ILLINOIS Extreme northwestern portion	14-15	Early evening				1	4		Wind	Scattered damage mostly in Moline-Freeport area resulted from 40- to 50-m.p.h., squally winds caused by very deep low-pressure center near Rochester, Minn. Strong winds continued through night and part of 15th.
FLORIDA West Palm Beach, Palm Beach County	15	10:35 a.m.			0	0			Tornado	Funnel remained aloft.
CALIFORNIA Central coast, southern coastal basin, and southeastern interior areas	15-16								Wind and rain	Light rains in central California coastal area caught apricot blossoms at critical stage - may result in crop reduction. Brief, but torrential rain in southern coastal area caused temporary flooding in San Fernando Valley, and several minor mud slides on Coast Highway north of Santa Monica. Strong, gusty winds blew down 11 trees in Los Angeles area, 1 tree falling across roof of parked automobile. Winds up to 70 m.p.h., caused extensive damage to powerlines from Hoover Dam in area 13 miles north of Needles. Storm moved southeastward.

See reference notes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
	16									Minor storm reported at Buckeye, Ariz.
ALASKA Peninsula and southwestern mainland	16-17		400	200				1	Wind	Rather widespread cyclonic circulation about storm center affected upper Alaska Peninsula and inland to Cook Inlet and to lesser degree central Alaska. Kokhanok Bay received damages to greenhouse on 17th; Port Heiden had 75 feet of dock structure washed away by high, wind-tide action same day. Palmer, in upper Cook Inlet area had northwest and northeast winds on 16th from 28 to 35 m.p.h. Big Delta received 35 to 40 m.p.h., winds on 17th. Storm moved north-northeastward.
TEXAS Galveston County	17	9 a.m.-10 p.m.			1	7	6		Tornadoes, wind, and rain	Series of thunderstorms from 9 a.m., to 10 p.m. Small twisters imbedded in thunderstorm activity at Arcadia 1:30 and 2 p.m.; Texas City about 1:55 p.m.; San Leon about 3 p.m.; Boyd Ranch, Crystal Beach, and Gilchrist areas between 4:30 and 5 p.m. Wind damage $100,000; flooding $800,000. Excessive rains up to 13 inches occurred.
TEXAS Rule, Haskell County	17	11:30 a.m.			0	0			Tornado	Unconfirmed report of funnel cloud aloft.
TEXAS Miles, Runnels County	17	11:40 a.m.			0	0			Tornado	Funnel cloud sighted aloft.
TEXAS Alvin, Brazoria County	17	3:18 p.m.	5	400	0	0	5	3	Tornado and rain	Tornado killed 4 cows, loss $600, and caused property losses of $50,000. Rain losses of $5,000. Storm moved eastward.
TEXAS Jefferson County Airport (4 miles east of)	17	5:50 p.m.	** 265	100	0	0	3	1	Tornado	House deroofed and 2 garages damaged; 1 lifted and turned 60° cyclonically. Storm moved north-northwestward.
	17									Minor storm also reported at Lee's Summit, Mo.
SOUTH DAKOTA Southern portion	17-19	1 p.m. 17th -3 a.m. 19th					3		Snow	Very wet snow with little wind or drifting. Most fell between 6 p.m., 17th and 8 a.m. 18th. 2 to 6 inches of new snow in southwest and south-central, heavier in southeast. Locally 14 inches in Bonesteel-Tyndall and Alexandria-Bridgewater areas. Unthawed snow from previous storm increased these depths with accumulations reaching 15 to 18 inches in Alexandria-Sioux Falls area and near Tyndall. Sioux Falls building roof collapsed from heavy weight. Most traffic stopped. Moisture badly needed in storm area. Amounts negligible north of Rapid City-Pierre-Brookings.
IOWA North-central and northeastern portions	18	All day				2	3	1	Snow	Glazed highways resulted in numerous accidents.
GEORGIA Mitchell, Colquitt, Brooks, and Lowndes Counties	19	4:30-6 p.m.					2	4	Hail	Severe hailstorm of short duration. Hailstones from 1/2 to 1 inch in diameter accumulated in drifts to depths of 3-1/2 feet and remained on ground more than 15 hours. Hardest hit was northeast of Moultrie in Colquitt County. Crop damage primarily to tobacco beds and truck crops. Storm moved southeastward.
	19									Minor storm also reported at Santa Barbara, Calif.
TEXAS Crane (east of), Crane County	20	9:45-11 a.m.					2	1	Wind, hail, and electrical	Hail 1 inch in diameter. Wind 30 to 40 m.p.h., knocked down power- and phone lines.
TEXAS Seminole (5 miles northeast of), Gaines County	20	11:30 a.m.			0	0			Tornado	Funnel sighted aloft.
MASSACHUSETTS	20	All day			3		4	1	Snow and wind	4 to 12 inches of snow hit eastern Massachusetts, causing 3 deaths from exertion. Hardest hit was Cape Cod and adjacent areas in southeastern Massachusetts where trees laden with wet snow blown over onto utility lines. Many communities there without power for up to 12 hours and hundreds of phones out. Many automobiles abandoned on Cape highway. Scores of minor automobile accidents occurred due to slippery conditions. Snow removal costs estimated to exceed $100,000.
RHODE ISLAND Entire State	20	All day			2	6			Snow	One of heaviest snowfalls of winter resulted from coastal storm with up to 8 inches. Automobile accidents on slippery highways resulted in 1 death and 6 persons injured. Other death due to heart attack while shoveling snow. Storm caused

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
RHODE ISLAND (Cont'd)										cancellation or delay of airlines and arrival of aircraft carrier.
TEXAS Big Spring (10 miles west of), Howard County	20	12:45 p.m.			0	0			Tornado	Funnel sighted aloft.
TEXAS Midland (20 miles northeast of), Midland County	20	12:50 p.m.			0	0			Tornado	Funnel sighted aloft.
TEXAS Abilene (40 miles east-southeast of), Callahan County	20	2:35 p.m.			0	0			Tornado	Funnel sighted aloft.
TEXAS Del Rio, Val Verde County	20	3:36-3:48 p.m.					3	1	Hail and wind	Hailstones 1 to 2 inches in diameter damaged roofs. Storm moved east-southeastward.
TEXAS Kerrville, Kerr County	20	4:15 p.m.	5				4		Hail and wind	Hailstones to hen-egg size damaged roofs, greenhouses, and gardens. High winds followed hail. Storm moved southeastward.
TEXAS Beeville (15 miles north of), Bee County	20	6 p.m.	3/4	75	0	0	2	1	Tornado	Flattened all vegetation and burned grass in path. Storm moved southwestward.
TEXAS Austin, Travis County	20	6 p.m.	6	*3			5		Hail and rain	Hail up to 3 inches in diameter fell in southeastern Austin, damaged roofs, windows, and sidings. Heavy rains flooded downtown stores. Storm moved east-southeastward.
TEXAS Lee County	20	7:10 p.m.	14	*15	0	2	5	4	Tornado, hail, and rain	1/2-inch hailstones in Lincoln, Loebau, and Mahaw communities; church destroyed and roofs damaged. 3-inch rain in 20 minutes. Storm moved northeastward.
TEXAS Dime Box (5 miles south of), Lee County	20	7:45 p.m.	15	300	0	2	4	2	Tornado, wind, and hail	Gardens, pasture grass, and crops ruined. Wind 75 to 80 m.p.h. Hail covered ground to depth of 6 to 12 inches, average size that of ice cubes. Storm moved northeastward.
TEXAS Giddings, Lee County	20	7:45 p.m.	10	*8	0	0	5	1	Tornado, rain, and hail	Gardens ruined, homes and outhouses destroyed, roofs and windows damaged. Storm moved northeastward.
TEXAS Austin (south of), Travis County	20	8:12 p.m.			0	0			Tornado	Unconfirmed pilot report of funnel aloft.
TEXAS Washington, Burleson, and Grimes Counties	20	8:12 p.m.	30	*12		3	5	4	Hail, wind, and rain	Entire Washington County affected, also Somerville, and Navasota. Some hailstones size of hens' eggs. Field crops and livestock damaged. Roofs of buildings damaged by heavy hail. Storm moved eastward.
TEXAS Sisterdale, Kendall County	20	Evening			0	0	3		Tornado and rain	Unroofed 100-foot chickenhouse, twisted windmill, and caved in sidewall of rock dwelling. Accompanied by heavy rain.
LOUISIANA Lafourche, Terrebonne, and Jefferson Parishes	21	6 a.m.	2	100	0	2	4	2	Tornado and hail	Between Montegut and Bourg, 2 homes demolished and several others badly damaged; 1 house lifted up and turned around and smashed into another house. Heavy hail covered ground in area. Power interrupted also from Golden Meadow to Grand Isle in Lafourche and Jefferson Parishes. Storm moved northeastward.
FLORIDA San Antonio, Pasco County	21	7:30 p.m.	6	75	0	0	3	3	Tornado (suspected)	Some evidence of tornadic winds, as citrus trees twisted off and/or uprooted. No funnel cloud observed. Storm moved eastward.
	21									Minor storm also reported in central Iowa; and at Lake Charles, La.
CALIFORNIA Southern coastal basin	21-22								Wind	Strong, Santa Ana type winds, with gusts of 36 to 52 m.p.h., following frontal passage. 80 trees uprooted. 6 homes and 3 parked automobiles damaged by falling trees. Powerlines downed over widespread area, and streets littered with debris, requiring major cleanup job. At Culver City, 6,000-pound aluminum canopy shed, 80x40 feet, blown distance of 60 feet into vacant lot. Damage estimated $10,000. Several olive trees uprooted in San Bernardino area.
FLORIDA Waverly (near), Polk County	22	4-5 a.m.						5	Hail	Hailstones of golf-ball size hit citrus groves in 2-square-mile area, stripping trees of foliage and knocking large amounts of fruit from trees.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
FLORIDA (Cont'd)										Many oranges split open, some grapefruit completely penetrated by hail but left hanging on trees.
TEXAS El Paso, El Paso County	22	Afternoon					3	1	Wind and dust	Damage mostly to trees. Fastest mile 50 m.p.h. Visibility reduced to 1/2 mile.
SOUTH DAKOTA Western half	22-23	A.m.22d-p.m.23d							Snow and wind	On 22d, rain started in Black Hills then changed to snow with 3 to 13 inches on higher elevations. Spread eastward during night with 1 inch in northwest to 2 to 5 inches in southwest. Despite wetness, winds caused drifting at Lead, Faith, and Martin. Snow changed to rain in vicinity of Missouri River. High winds followed snow on 23d with rapid thawing. Wind 50 m.p.h., at Rapid City. Blowing soil at Newell where little snow fell.
NEW MEXICO Entire State	22-24				1				Wind, snow, and dust	Unusually severe storm moved down eastern slopes of Rocky Mountains on 22d. This storm produced high winds over most of the State and one of the most severe blizzards in many years in northeastern corner. Blizzard conditions confined primarily to Union and eastern third of Colfax Counties, but heavy blowing dust reported over most of eastern plains and in many other sections of State. Winds abnormally strong in east and persisted for almost 3 days. Weather Bureau Airport Station at Raton reported gusts up to 85 m.p.h., and estimates of speeds from 70 to 80 m.p.h., were common on eastern side of State. Snow began falling in northeast on afternoon of 22d and continued intermittently until late on 23d. Snowfall not abnormally heavy, but because of extremely high winds and severe drifting, measurements were very difficult. Reports of depths ranged from 2 to 16 inches during storm, but most of this was swept off level plains and piled into huge drifts. Many oldtime residents reported this one of worst storms they could remember. Drifts up to 10 feet blocked highways and railroads and stranded motorists and trains. Power off in many communities as winds broke powerlines and blew down poles. Estimates obtained from New Mexico Cattle Growers Association, based on reports from reliable sources, place loss of livestock between 12,000 and 15,000 head. Also considerable wind damage to light structures, windmills, and farm buildings. In Raton, loss from wind estimated to be 30 to 35 thousand dollars. Severe soil erosion and wind damage to ranges reported from most of east. No estimate of total damages available. 1 death from exposure resulted from storm.
KANSAS Most of State	22-25	Morning of 22d-evening of 25th			10				Snow, wind, and rain	Severe snowstorm began as fog, light rain, and drizzle about 8 a.m., of 22d in extreme northwest, progressing south and east through day and beginning in south from 6 to 8 p.m. The rain changed to rain and snow mixed about midnight of 22d and 23d in north, about daybreak of 23d in central part, and in afternoon or evening in southern part of western third. With temperatures near freezing, rain and snow mixed continued several hours, gradually changing to mostly heavy snow on 23d. As temperatures dropped below freezing, volume of snow increased. Early in morning wind velocity began to increase, blowing from north and northeast. Speeds increased to more than 30 m.p.h., by 6 a.m., of 23d at Goodland, Garden City, and Dodge City and by evening at Russell, and it was evening of 24th before wind dropped below 30 m.p.h., at these stations. Gusts during this time reached 50 to 60 m.p.h., or higher and were recorded above 45 m.p.h., during afternoon and night of 23d and early morning of 24th. Blowing snow reduced visibility to zero much of time and high wind plastered heavy, wet snow against all objects. Practically all stations in western third recorded from 5 to 20 inches of snow with totals these days of 14 inches or more from Lakin and Dodge City north to Rawlins County and from Wichita County east through Rush County. Drifts commonly reported 10 feet deep and not a few were 25 or 30 feet deep. Remnants of these large drifts were still in evidence on April 15. All traffic ceased and several hundred automobiles, busses, and trucks were caught in storm. 3 trains stranded with their passengers. Heroic rescue measures undertaken especially for the sick. Miles and miles of telephone, telegraph, and powerlines broken or blown over and out of operation from Norton County to Pratt County and from Lane County to western Rice and Reno Counties. Snow and ice accumulated on wires from 4

See reference notes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
KANSAS (Cont'd)										to 6 inches in thickness, and weight estimated at 7 pounds or more per foot. Livestock smothered by storm and some cattle drifted as much as 15 to 25 miles. Livestock losses in 26 western counties estimated at 23,000 head with valuation of $1,333,000. 10 persons lost their lives by exposure, overexertion, or from carbon monoxide poisoning. Monetary loss to communication and powerlines, loss of worktime due to lack of power, spoilage of food stuffs, in addition to livestock losses estimated to run into millions of dollars. Lack of severe cold prevented greater losses and suffering. Rain and heavy, wet snow falling on warm ground forepart of storm provided considerable moisture for fields.
COLORADO Eastern portion	22-25						6		Snow, rain, wind, and dust	Severe storm began on afternoon of 22d as rain, changing to snow and continuing on 23d, 24th, and early hours of 25th. High winds up to 75 m.p.h., preceded and accompanied storm, causing blowing dust and snow which built up drifts 12 to 15 feet deep. Many motorists trapped in their cars or snowbound in small towns. Many minor accidents and a few injuries, but no deaths reported. Roads blocked, trains halted, schools closed , powerlines damaged, and heavy loss of livestock occurred as result of 60-hour storm. Livestock became caked with mud and many died of suffocation. Estimates run as high as 12,000 head of cattle and sheep killed, with valuation well over a million dollars. Baca County estimated loss of around $800,000 in cattle and loss appears to range from one-third to one-half of total cattle numbers. Valuable topsoil blown away and winter grains and grass badly damaged. Over a million acres of cropland and near 900,000 acres of rangeland damaged.
NEBRASKA Most of State	22-25				3	Few	5	2	Snow and wind	Wet snow freezing on wires and strong winds caused heavy damage to power- and telephone lines. Storm brought badly needed moisture; generally beneficial to agriculture.
OKLAHOMA Northwest and Panhandle areas	22-25				5		5	2	Snow and wind	Up to 10 inches of snow and winds up to 80 m.p.h., caused blizzard conditions and drifts 10 to 25 feet deep. All forms of transportation halted and communication and utility lines badly damaged. 5 persons died, 4 from carbon monoxide gas in stalled truck and 1 from heart attack from overexertion. Hundreds of motorists marooned. Livestock losses reported at about 4,000 cattle and calves, over 1,000 sheep, and over 300 hogs. Strong winds blew snow into attics and barns, causing additional damage. Storm moved south-southeastward.
TEXAS Panhandle section	22-25				10		°6	C	Wind and snow	Winds up to 80 m.p.h., with snow. All transportation facilities halted, about 4,000 persons marooned, heavy losses of cattle and livestock. Storm moved southeastward.
ARIZONA Phoenix, Maricopa County	23	Afternoon			0	0	2	1	Dust devil	Dust devil damaged roofs and cinder-block wall in residential section.
LOUISIANA Baton Rouge, East Baton Rouge Parish	23	5:07 p.m.			0	0			Tornado	Funnel aloft reported to east of city by Weather Bureau observers.
LOUISIANA Baton Rouge, East Baton Rouge Parish	23	5:30-6:30 p.m.			0	0			Tornadoes	2 funnels aloft reported.
	23									Minor storm also reported at Port Sulphur, La.; and at Jet, Okla.
ALABAMA Clark, Tallapoosa, and Chilton Counties	24	Noon-4:15 p.m.	160	*2-3			3	4	Hail and rain	Hail, with stones up to 1 inch, from Coffeeville area, Clark County, through Thomasville, Pine Hill, Millers Ferry, Craig Field, Autaugaville, a few miles northwest of Prattville, and into Tallapoosa County. Hail preceded rain shower which reported heavy by some observers. Observer northwest of Prattville, Autauga County, reported heavy fall of 1-inch hailstones out of very dark cloud close to ground with not much lightning and with no rain or wind. In Tallapoosa County, where last hail reported in this storm, stones smaller and path spread out over rather wide area. Light hail with stones up to 3/4 inch fell in south-central Chilton County in another storm between 3:30 and 4:15 p.m. Storm moved northeastward.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MISSOURI Vernon County	24	4 p.m.							Rain, hail, and electrical	Heavy rains, up to 3 inches, accompanied by hail and frequent lightning over most of county. Hail reported to cover ground in many parts of county, with up to 3 inches on ground near Metz.
MISSOURI Butler, Bates County	24	4:15 p.m.							Hail	Hail 1 inch in diameter.
GEORGIA Columbus, Muscogee County	24	7-8 p.m.					2	1	Electrical, wind, and hail	Severe thunderstorm with wind gusts to 51 m.p.h., caused general minor damage in Columbus area. Electrical and telephone services interrupted because of downed lines.
TENNESSEE Eaton community, Gibson County	24	9:15 p.m.							Wind, rain, and electrical	2 barns destroyed; several homes damaged, trees uprooted, power- and telephone lines blown down.
MISSOURI Northern quarter	24								Snow	3 to 10 inches of wet snow fell, blocking roads, causing some damage to tree limbs, power- and phone lines.
	24									Minor storms also reported at Beaumont, Miss.; at Marshall, Mo.; in Aiken and Georgetown areas, S. C.; and at Rutherford, Tenn.
IOWA Southern third	24-25				1	5	5	1	Snow and wind	Closed highways stopped all travel; power- and phone lines downed, and towns isolated.
ILLINOIS Northern portion	25	Morning-noon							Snow	4 to 8 inches of heavy, wet snow covered northern half of State, except that northern 2 tiers of counties had only about 2 inches. Traffic seriously hampered and a great number of schools closed. Numerous automobile accidents resulted. Storm ended about noon and highways were near normal by evening.
OREGON Portland	25	3:45 p.m.	**80	20	0	0	3	2	Whirlwind or dust devil	This freak whirlwind or dust devil on otherwise comparatively calm day moved through cold frames of commercial greenhouses in southeastern Portland, picking up, then dropping about 60 glass sashes.
INDIANA Sullivan County	25						4		Electrical	Lightning and resulting fire burned garage.
TEXAS Waco, McLennan County	27	5:02 p.m.					°6	C	Hail, wind, and rain	Gusty winds damaged roofs, windows, windshields, exterior paint, and house furnishings. Shrubbery and gardens damaged. Storm moved southward.
	27									Minor storms also reported at Sedalia, Mo.; and at Willis, Okla.
MASSACHUSETTS Franklin, Worcester, and Middlesex Counties	28	12:50 p.m.	1/2	12	0	0	3	1	Dust devils	At east Shelburne, demolished garage and damaged barn and farm trailer. Other dust devils reported, one near Fitchburg and one at Ashland, also shortly after noon, but with no damage reported. Storm moved eastward.
CALIFORNIA San Joaquin Valley, Mojave Desert, and southern coastal basin	29-Apr. 2								Wind	Steep pressure gradient behind frontal passage on 29th caused strong northerly winds in lower San Joaquin Valley on 30th, in Mojave Desert on 30th and 31st, and in Los Angeles Basin on April 1 and 2. Strong winds at Lindsay in Tulare County blew down several TV antennas on 30th. Near Lancaster on 31st, winds at Edwards Air Force Base reached 80 m.p.h. At cooperative observer's station at Lancaster, instrument shelter blown over and all thermometers broken.
TEXAS Boerne (2 miles northwest of), Kendall County	31	7:55-8 a.m.	15	880	0	0	3		Tornado	Trees uprooted, roofs torn off, barns, sheds, TV antennas, and telephone lines damaged. Storm moved northeastward.
TEXAS Austin, Travis County	31	9:05 a.m.	1/2	100	0	0	5		Tornado	Over small area on northern edge of town, extensive roof damage and windows broken. Storm moved north-northeastward.
TEXAS Pflugerville, Travis County	31	10:30 a.m.			0	0	4		Tornado	Tore 40-foot-wide gap in wall of all-brick school. Trees and antennas downed. Storm moved north-northeastward.
TEXAS Normangee, Leon County	31	11:58 a.m.-12:08 p.m.			0	0			Tornado	Funnel aloft sighted.
TEXAS Huntsville, Walker County	31	12:30-12:40 p.m.	2	100	0	2	4		Tornado	In Huntsville and portions of Walker County. Storm moved northeastward.
TEXAS Blessing, Matagorda County	31	1:30 p.m.	1-1/2	30	0	0	3		Tornado	Medium-size trees broken off 2 or 3 feet above ground and roofs blown off. Storm moved eastward.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
LOUISIANA Robson, Caddo Parish	31	2:10 p.m.					3	1	Hail	Hailstones up to 1 inch covered ground.
MAINE Starboard, Washington County	31	2:30 p.m.	1/4	10	0	0		1	Waterspout	Crossed part of Machias Bay between Starboard, Maine, and Ingalls Island. Occurred on clear day and would have been only dust devil if over land. Unconfirmed news item reported spout capsized small boat. Storm moved southeastward.
LOUISIANA Lake Arthur, Jefferson Davis Parish	31	4 p.m.	8	300	0	0	4	1	Tornado	Moved northeastward from about 4 miles west to 4 miles north of Lake Arthur; destroyed several farm buildings, uprooted trees, and damaged roofs.
MISSISSIPPI McComb (3 miles north of), Pike County	31				0	0	2	1	Tornado	Pilot reported funnel cloud aloft; treetops reported twisted off. Storm moved northeastward.
TEXAS College Station, Brazos County	31	4:10-4:15 p.m.	1	200	0	0	3	1	Tornado	Minor surface damage as funnel touched ground intermittently in Bryan area and eastward. Funnel ill-defined; moved east-northeastward.
OKLAHOMA Ringling, Jefferson County	31	4:25 p.m.			0	0			Tornado	Pilot reported funnel cloud aloft.
LOUISIANA Between Reserve and Laplace, St. John the Baptist Parish	31	6 p.m.	2	1,000	0	0	3	2	Tornado (suspected)	Power poles blown down for distance 3,000 feet; path northward over open farmland.
TEXAS McNeil, Travis County	31	9:15-9:30 p.m.			0	0	2	1	Tornado	Windmill, chickenhouse, and sheds damaged.
LOUISIANA Boothville, Plaquemines Parish	31	10:15 p.m.	1	100	0	3	4	1	Tornado, wind, and rain	Several homes demolished and some damaged. Winds estimated at 80 m.p.h., from Boothville to Port Sulphur attended squalls over area with heavy rains and tornado at Boothville. Storm moved northeastward.
LOUISIANA Nairn, Plaquemines Parish	31	10:30 p.m.	1	200	0	0	4	3	Tornado (suspected)	Lifted several homes off foundations, unroofed packing plant, and downed power poles. Storm moved northeastward.
ALABAMA Mobile area, Mobile County	31	11:30 p.m.	1	70	0	4	4	1	Tornado	Tornado was followed by heavy thundershower. Storm occurred 6 miles southwest of center of city; moved northward.
ALABAMA Mobile, Mobile County	31	11:30 p.m.			0	0			Waterspout	Reported in swamp north of Mobile Bay. It was well to right of projected path of tornado at that time which occurred southwest of Mobile. Since there could have been error in estimating distance away of formations observed by light of occasional lightning, it could have been either the tornado which occurred southwest of Mobile or a separate storm.
TEXAS Goliad (10 miles west of), Goliad County	31						4		Electrical	3 oil tanks set afire by lightning.
TEXAS Baytown, Harris County	31				0	0	4	1	Tornado	Damaged at least 3 houses and knocked down 295-foot radio tower.
	31									Minor storms also reported at Georgetown and Taylor, Tex.

* Miles instead of yards.
** Yards instead of miles.
° Includes crop damage.
C Crop damage
† Storm damages are placed in categories varying from 1 to 9 as follows:
1 Less than $50
2 $50 to $500
3 $500 to $5,000
4 $5,000 to $50,000
5 $50,000 to $500,000
6 $500,000 to $5,000,000
7 $5,000,000 to $50,000,000
8 $50,000,000 to $500,000,000
9 $500,000,000 to $5,000,000,000.

GENERAL SUMMARY OF RIVER AND FLOOD CONDITIONS

MARCH 1957

All flooding reported during March was minor and very little damage was reported.

ATLANTIC SLOPE DRAINAGE

Minor flooding occurred during the first week of March at a few points on the Neuse, Cape Fear and Roanoke Rivers in eastern North Carolina as a result of rains which fell mainly during the last week of February. The Roanoke River at Williamston was above flood stage at the beginning of March, and continued in minor flood through the 15th. No damage was reported.

The heavy rains over the Yadkin and Upper Pee Dee Rivers in South Carolina during the latter part of February caused flooding over the Rocky River, a tributary of the Yadkin, and along the main stem of the Pee Dee River. The flooding along the Pee Dee was minor. The Rocky River rose rapidly from a stage of 5.7 feet at 8 a.m. on February 28 to a crest of 21.4 feet at midnight. There was some damage in the vicinity of Norwood, N. C., but the extent of damage had not been ascertained at the time of this report.

General rains occurred over the Santee River System near the end of February causing light to moderate rises on all streams. Crest stages were generally below flood stage, except the Broad River near Blair, S. C., which crested 0.6 foot above bankfull stage on March 2. The flooding on the Santee River at Rimini, S. C., throughout the month was due to backwater from the reservoir at Lake Marion which continued to fill from the rains during March. No damage was reported from the overflows.

Minor floods on the Ocmulgee and Oconee Rivers in Georgia towards the end of the month did not cause any damage.

EAST GULF OF MEXICO DRAINAGE

The only flooding in the East Gulf of Mexico Drainage was on the Apalachicola River at Blountstown, Fla., during the last 5 days of March, and on the Pearl River at Jackson, Miss., on the 26th. The high water on the Apalachicola River was due to the heavy rains on the 21st and 23d to 24th, totaling 1 to 2 inches in the upper reaches and 3 to 5 inches in the middle and lower areas. The water was not high enough to cause damage or work stoppage. On the Pearl River, locally heavy rain over the Pelahatchie Creek watershed above Jackson, Miss., produced a brief sharp rise to above flood stage at Jackson, Miss. No damage resulted.

MISSISSIPPI SYSTEM

Upper Mississippi Basin.--Light flooding occurred along the mouth of the Rum River at Anoka, Minn., due to an ice jam in the Mississippi downstream from Anoka on March 28 and 29.

The ice in several tributaries of the Upper Mississippi Basin began to break up during the month. The streams involved and dates are given in the following table:

Comparative Ice Breakup

River and Station (Minn.)	Date and Time	
Yellow Medicine: Granite Falls	24	Afternoon
Redwood: Marshall	21-22	during night
Redwood Falls	28	11:30 a.m.
Cottonwood: New Ulm	26	6:00 p.m.
Rum: St. Francis	25-26	during night
Mississippi: Fort Ripley	28-29	during night
Minneapolis	22-23	during night

The 1957 navigation season opened on the 14th at Guttenberg, Iowa, and La Crosse, Wis., and on the 29th at Minneapolis-St. Paul, Minn.

The flooding on the Meramec and Bourbeuse Rivers in Missouri during the latter part of March was due to heavy rainfall (1.75 inches) during the 24-hour period ending on the 25th. No damage resulted as no crops had as yet been planted.

Missouri Basin.--Near bankfull stages occurred on the lower Rock River at Rock Valley, Iowa, on the 25th due to the melting of the heavy snow cover (12 to 18 inches) which occurred from the 14th to the 18th. A similar rise occurred on the Big Sioux at Sioux Falls, S. Dak., on the 24th, which was produced by runoff from the Skunk, Willow and other creeks in the Sioux Falls area. The combined runoff was sufficient to make the Big Sioux about three-fourths bankfull from Hawarden to Sioux City, Iowa. This was the largest rise that had occurred on the Big Sioux since June 1954.

The Missouri River was held at low stages below Yankton, S. Dak., by reservoir control and the ice gradually melted away during the last half of March without any pronounced ice breakup. The Missouri River ice began to shift at Chamberlain on the 23d and at Mobridge, S. Dak., on the 22d. The breakup was of no consequence and was completed by the end of March.

Ohio Basin.--The only overflow in the Ohio Basin during March occurred on the Wabash River at Lafayette, Ind., on the 1st. Flood stage at this point was exceeded by less than one-half foot and no damage was reported.

Red Basin.--Flood stage was reached but not exceeded on the Ouachita River at Arkadelphia, Ark., late in the evening of the 18th. This rise was due to heavy thundershowers over the upper portion on the evening of the 17th, in the vicinity of Lakes Hamilton and Catherine which necessitated a sharp increase in the discharge from Remmel Dam on the morning of the 18th. No damage occurred.

The minor flooding on the Little River at Whitecliffs, Ark., and on the Sulphur River at Naples, Tex., beginning on the 21st was due to heavy rain on the 17th and 18th. The rainfall ranged from 0.85 inch at Wolfe City, La., to 3.96 inches at De Queen, La., with most stations reporting amounts over 2 inches. No damage resulted from the overflows.

Lower Mississippi Basin.--Flood stage was reached or slightly exceeded on the St. Francis River at Fisk, Mo., on two different occasions during the month. The first overflow from the 1st to the 4th was due to moderate rains from February 25 to 27. The second rise to flood stage on the 29th was due to moderate rains from the 24th to the 26th. Overflow was confined to areas (primarily wooded) inside local levees in the Fisk vicinity and covered an estimated 2,500 acres. Damage was negligible in both floods.

WEST GULF OF MEXICO DRAINAGE

The heavy rains on the 18th, 21st and 24th caused the Calcasieu to rise to flood stage at Kinder, La., on the 27th. No significant flooding occurred and no appreciable damage was reported.

Minor flooding occurred on the Navidad River at Ganado, Tex., from the 19th to the 23d due to moderate to heavy showers from the 17th to the 19th. Very little if any damage occurred as most of the overflow was confined to grazing lands.

PACIFIC SLOPE DRAINAGE

California Coast.--Precipitation during the period from February 20 to March 6 caused the Sacramento River to rise to a high level with some overflow occurring at all eastside weirs of the Sacramento and at Fremont Weir into Yolo Bypass. Relatively high releases were maintained from both Shasta and Folsom Reservoirs for the first several days of the month, which combined with natural flow, maintained the major rivers at levels sufficiently high to be of concern to many interests.

Columbia Basin.--A series of rather intense storms moving inland over the Pacific Northwest during the period March 6-9 deposited heavy rains over the Willamette Valley which resulted in some local flooding of tributary streams and near bankfull on the main stem of the Willamette as far downstream as Corvallis, Oreg. In the Portland, Oreg., area, heavy rains during the night of the 7th-8th resulted in a moderate overflow of Johnson Creek on the morning of the 8th, and heavy rain in the Columbia Gorge caused some mud and rock slides in that area, delaying main line trains on the Union Pacific Railroad for several hours.

FLOOD STAGE DATA

(All dates in March unless otherwise specified)

River and station	Flood stage	Above flood stages -dates		Crest *	
		From–	To–	Stage	Date
ATLANTIC SLOPE DRAINAGE	*Ft.*			*Ft.*	
Roanoke:					
Randolph, Va.	21	2	2	#21.0	2
Williamston, N. C.	10	Feb. 28	15	11.2	10
Neuse:					
Goldsboro, N. C.	14	2	14	19.1	8
Kinston, N. C.	14	6	16	16.4	11
Cape Fear:					
Fayetteville, N. C.	35	2	3	39.45	2
Lock No. 2, Elizabethtown, N. C.	20	Feb. 28	6	29.85	3
Pee Dee:					
Cheraw, S. C.	30	1	2	E32.0	1-2
Peedee, S. C.	19	3	9	20.6	6
Rocky River: Norwood, N. C.	A16	Feb. 28	1	21.4	Feb. 28-1
Santee: Rimini, S. C.	12	1	1/	14.5	31
Broad: Blair, S. C.	14	2	2	14.6	2
Ocmulgee: Abbeville, Ga.	12	31	1/	----	--
Oconee: Milledgeville, Ga.	20	26	26	21.0	26
EAST GULF OF MEXICO DRAINAGE					
Apalachicola: Blountstown, Fla.	15	27	31	16.8	29
Pearl: Jackson, Miss.	18	26	26	18.03	26
MISSISSIPPI BASIN Upper Mississippi Basin					
Bourbeuse:					
Union, Mo.	15	27	27	16.1	27
Meramec:					
Sullivan, Mo.	11	25	25	E11.0	25
Pacific, Mo.	11	Feb. 27 25	2 28	#17.0 15.8	1 27
Valley Park, Mo.	14	Feb. 28 26	2 28	#17.3 19.2	1 27
Ohio Basin					
Wabash: Lafayette, Ind.	11	1	1	11.4	1
MISSISSIPPI SYSTEM (Cont'd.) Red Basin	*Ft.*			*Ft.*	
Ouachita: Arkadelphia, Ark.	17	18	18	17.0	18
Little: Whitecliffs, Ark.	25	21	23	25.6	22
Sulphur: Naples, Texas	22	21	31	26.95	23
Lower Mississippi Basin					
St. Francis: Fisk, Mo.	20	1 29	4 29	20.8 20.0	2-3 29
WEST GULF OF MEXICO DRAINAGE					
Calcasieu: Kinder, La.	16	27	27	16.0	27
Navidad: Ganado, Tex.	21	19	23	23.8 23.8	19 22
PACIFIC COAST DRAINAGE California					
Sacramento:					
Colusa Weir, Calif.	61.9	1 2	1 10	62.5 65.9	1 7
Tisdale Weir, Calif.	45.5	1 13 18	12 14 18	49.0 45.8 45.7	7 14 18
Fremont Weir, Calif.	33.5	1	14	36.2	7
Columbia Basin					
McKenzie: Leaburg, Oreg.	12	7	9	13.4	9
Santiam: Jefferson, Oreg.	13	7	9	14.9	7-8
Willamette:					
Harrisburg, Oreg.	12	8	8	12.1	8
Oregon City, Oreg. (upper)	12	9	11	12.5	12
Oregon City, Oreg. (lower)	25	8	13	28.3	9

* Provisional
# Highest stage observed
A Tentative
1/ Continued at end of month
E Estimated

RAWINSONDE DATA

Average monthly values

MARCH 1957

ALBANY, N. Y. (1003 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	86	0.4	71	311	4.9
1,000	31	110			327	4.3
950	31	527	-.1	56	324	8.7
900	31	954	-2.7	57	312	8.5
850	31	1,405	-4.9	55	309	10.3
800	31	1,881	-6.3	55	298	13.0
750	31	2,390	-8.1	53	290	15.7
700	31	2,917	-10.7	54	289	18.5
650	31	3,491	-13.6	52	291	20.4
600	31	4,089	-16.9	46	286	23.5
550	31	4,741	-20.5	42	279	29.1
500	31	5,436	-25.3	38	277	31.1
450	31	6,173	-30.9	40	273	32.6
400	31	7,018	-36.9		269	36.3
350	31	7,928	-43.2		268	42.2
300	31	8,949	-49.7		266	47.6
250	31	10,128	-53.6		267	53.8
200	31	11,560	-53.3		267	53.4
175	31	12,420	-52.4		268	46.2
150	31	13,414	-53.1		269	39.8
125	31	14,584	-54.7		267	35.4
100	31	16,000	-57.4		269	28.4
80	31	17,403	-59.3		268	22.1
60	29	19,197	-60.0		265	16.9
50	27	20,337	-59.4		263	14.4
40	25	21,733	-59.9		268	10.9
30	20	23,529	-59.5		277	10.1
20	5	26,099	-58.5			
15						

ALBUQUERQUE, N. MEX. (833 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	1,619	9.7	39	279	1.7
1,000	31	76				
950	31	518				
900	31	976				
850	31	1,454				
800	31	1,957	7.6	37	274	8.0
750	31	2,491	3.3	42	282	11.8
700	31	3,040	-1.3	48	286	14.4
650	31	3,627	-6.2	53	279	17.5
600	31	4,245	-11.0	55	280	19.2
550	31	4,909	-15.7	54	287	22.0
500	31	5,619	-21.0	48	295	25.8
450	30	6,400	-26.6	44	290	25.4
400	30	7,230	-32.8	45	287	28.2
350	30	8,155	-39.8		290	29.7
300	30	9,188	-47.8		286	33.0
250	30	10,367	-55.6		277	42.5
200	29	11,773	-58.7		283	39.4
175	29	12,614	-57.1		277	38.9
150	29	13,587	-57.7			
125	26	14,726	-59.1			
100	25	16,107	-62.5			
80	18	17,466	-63.0			
60	15	19,225	-64.0			
50	13	20,346	-63.2			
40	12	21,719	-60.6			
30	6	23,546	-57.6			
20						
15						

AMARILLO, TEX. (888 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	1,099	7.7	62	133	2.7
1,000	30	97				
950	30	527				
900	30	977				
850	30	1,453	6.9	57	186	4.9
800	30	1,950	5.2	51	253	9.1
750	30	2,477	1.9	52	265	15.0
700	30	3,026	-2.0	53	281	17.5
650	30	3,614	-6.1	54	285	20.6
600	30	4,233	-10.5	54	288	22.0
550	30	4,895	-15.3	52	293	24.7
500	30	5,609	-20.5	48	294	26.0
450	30	6,387	-26.4	46	294	29.1
400	29	7,215	-32.8	46	293	31.3
350	29	8,141	-40.2		291	34.8
300	29	9,174	-48.0		288	42.5
250	29	10,357	-54.1		281	50.3
200	28	11,771	-56.2		273	53.4
175	28	12,620	-55.3		272	50.5
150	28	13,601	-56.7		268	47.0
125	28	14,751	-58.8		267	45.6
100	27	16,145	-61.8		271	40.0
80	27	17,521	-62.8		269	31.3
60	27	19,296	-62.6		265	18.1
50	26	20,421	-61.4		264	11.3
40	25	21,805	-60.3		258	8.2
30	24	23,613	-56.9		274	8.4
20	22	26,217	-52.2		273	12.8
15	10	28,110	-48.9			

ANCHORAGE, ALASKA (1000 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	30	1.4	63	329	2.3
1,000	31	29			333	2.9
950	31	446	-.6	57	20	3.3
900	31	870	-2.9	59	94	5.1
850	31	1,320	-5.8	63	121	9.5
800	31	1,792	-8.8	65	138	12.8
750	31	2,296	-12.0	63	158	12.4
700	31	2,813	-15.3	63	163	11.8
650	31	3,377	-18.7	59	170	12.2
600	31	3,961	-22.3	54	172	11.7
550	31	4,596	-26.2	48	178	13.4
500	31	5,277	-30.9	44	178	14.6
450	31	6,021	-36.2	44	187	16.1
400	31	6,823	-42.2		185	15.2
350	31	7,712	-48.4		189	13.2
300	31	8,711	-53.9		197	10.7
250	31	9,877	-54.0		202	12.2
200	31	11,317	-50.3		212	14.2
175	31	12,189	-49.3		217	14.4
150	31	13,200	-48.7		218	13.4
125	31	14,395	-49.0		205	13.4
100	31	15,856	-49.5		214	12.4
80	30	17,310	-50.7		205	13.2
60	30	19,176	-52.3		227	8.0
50	30	20,351	-53.3		186	5.6
40	21	21,779	-54.5		288	1.0
30	12	23,607	-55.9		3	4.9
20						
15						

ANNETTE, ALASKA (1005 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	37	5.0	73	115	3.7
1,000	31	79			116	4.7
950	31	495	2.5	66	134	9.3
900	31	931	-.5	65	142	10.3
850	31	1,385	-3.5	63	151	11.5
800	31	1,861	-6.3	61	164	11.5
750	31	2,365	-9.4	59	181	9.9
700	31	2,893	-12.4	54	186	10.9
650	31	3,461	-15.7	54	185	10.1
600	31	4,055	-19.4	51	192	10.1
550	31	4,698	-23.9	50	203	9.3
500	31	5,384	-29.2	49	206	9.9
450	31	6,136	-34.4	47	223	10.9
400	31	6,942	-40.2		224	13.8
350	30	7,847	-46.7		203	15.7
300	30	8,853	-52.8		178	13.0
250	30	10,018	-55.4		270	4.1
200	30	11,447	-52.2		289	11.1
175	30	12,313	-51.1		278	12.2
150	30	13,314	-50.8		282	11.5
125	30	14,499	-51.2		286	14.4
100	30	15,943	-52.8		287	13.8
80	30	17,377	-54.2		292	11.1
60	29	19,211	-56.3		310	8.4
50	28	20,365	-57.5		314	10.9
40	26	21,766	-58.3		341	8.2
30	15	23,564	-58.8			
20						
15						

ATHENS, GA. (985 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	246	9.6	72	328	3.1
1,000	31	120				
950	31	549	9.5	61	305	5.6
900	31	995	7.5	61	285	6.0
850	31	1,464	5.4	60	273	8.7
800	31	1,958	3.6	55	276	11.8
750	31	2,487	1.1	50	271	15.7
700	31	3,032	-1.9	43	274	20.8
650	30	3,626	-5.2	38	275	25.6
600	30	4,245	-9.0	36	272	30.5
550	29	4,917	-13.3		269	34.2
500	29	5,635	-18.1		267	39.8
450	29	6,423	-23.4		266	45.3
400	29	7,265	-29.5		266	53.6
350	29	8,203	-36.4		264	61.4
300	29	9,254	-44.1		263	70.1
250	29	10,454	-51.7		263	78.7
200	29	11,883	-56.1		263	85.7
175	29	12,730	-56.3		263	82.6
150	27	13,702	-57.8		264	75.4
125	25	14,852	-60.7		262	65.7
100	25	16,228	-64.5		264	53.0
80	23	17,590	-65.3		262	36.7
60	20	19,343	-65.0		261	21.0
50	19	20,456	-63.7		269	10.9
40	17	21,834	-61.2		247	6.8
30	14	23,652	-57.0		258	10.9
20						

BARROW, ALASKA (1020 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	8	-25.2	65	35	7.0
1,000	31	152	-24.6	71	57	7.0
950	31	535	-18.9	77	77	9.7
900	31	933	-16.5	76	84	9.5
850	31	1,363	-16.6	73	84	8.2
800	31	1,818	-16.8	64	99	6.0
750	31	2,304	-18.2	56	112	4.7
700	31	2,814	-20.7	55	143	4.9
650	31	3,362	-23.7	55	168	5.4
600	31	3,939	-27.2	53	185	6.4
550	31	4,562	-31.1	51	197	7.6
500	31	5,231	-35.2	49	204	9.3
450	30	5,963	-39.8		221	15.2
400	30	6,752	-45.0		224	14.2
350	30	7,632	-50.3		238	15.7
300	29	8,629	-54.4		232	16.7
250	28	9,789	-53.7		243	14.4
200	25	11,216	-49.3		248	15.9
175	24	12,098	-48.5		248	13.4
150	24	13,112	-48.0		243	14.0
125	24	14,313	-47.7		252	12.8
100	23	15,779	-48.0		257	14.2
80	22	17,238	-48.7		258	11.1
60	19	19,108	-50.1		267	10.1
50	19	20,295	-51.1		273	10.3
40	12	21,752	-52.0			
30						
20						

BARTER IS., ALASKA (1017 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	15	-25.0	52	61	0.8
1,000	30	140	-24.3	59	75	2.5
950	30	527	-18.6	66	90	5.8
900	30	925	-14.6	67	98	6.6
850	30	1,358	-13.9	65	121	4.3
800	30	1,818	-14.8	62	154	2.7
750	30	2,310	-16.5	57	209	2.3
700	30	2,821	-19.0	53	238	3.9
650	30	3,380	-22.2	50	254	5.8
600	30	3,953	-25.7	48	245	7.6
550	30	4,584	-29.7	45	255	9.3
500	30	5,252	-34.1	44	260	13.4
450	30	5,991	-38.9		262	15.2
400	30	6,781	-44.5		259	17.7
350	30	7,663	-50.1		256	21.6
300	30	8,657	-54.8		252	22.9
250	29	9,822	-54.7		252	18.6
200	29	11,258	-51.5		251	16.5
175	28	12,130	-50.2		251	14.2
150	26	13,139	-49.6		251	13.8
125	26	14,332	-49.6		255	12.4
100	23	15,800	-49.8		259	13.2
80	18	17,263	-50.9		263	12.8
60	17	19,128	-52.3		276	11.7
50	14	20,310	-53.5		288	12.0
40	12	21,733	-55.1		301	10.9
30	9	23,550	-56.3			
20						

BETHEL, ALASKA (1003 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	[illegible]	-5.1	80	352	3.5
1,000	31	22			341	2.5
950	31	429	-6.7	71	64	3.9
900	31	845	-7.7	71	87	3.9
850	31	1,288	-8.8	72	132	2.9
800	31	1,756	-10.4	64	120	2.5
750	31	2,255	-12.6	60	226	2.3
700	31	2,774	-15.6	57	246	2.5
650	30	3,337	-19.5	54	266	2.7
600	30	3,921	-23.1	53	256	2.3
550	30	4,558	-27.0	49	234	2.3
500	30	5,234	-31.4	44	216	5.1
450	30	5,978	-36.6		209	3.5
400	30	6,777	-42.2		231	3.9
350	30	7,668	-47.8		178	8.7
300	30	8,672	-52.7		201	14.4
250	30	9,842	-53.3		229	14.6
200	29	11,296	-49.7		244	11.7
175	28	12,173	-48.5		226	14.6
150	28	13,187	-48.1		229	11.3
125	28	14,388	-47.7		231	11.3
100	28	15,859	-48.1		229	10.7
80	28	17,327	-48.7		239	9.3
60	26	19,210	-50.3		259	6.2
50	23	20,391	-51.2		275	5.2
40	22	21,840	-52.8		282	7.4
30	11	23,709	-53.8			
20						

BISMARCK, N. DAK. (955 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	505	-2.1	69	337	2.3
1,000	31	138				
950	31	552			325	4.7
900	31	979	-2.7	60	304	5.4
850	31	1,430	-4.7	57	300	8.5
800	31	1,906	-6.0	53	301	11.8
750	31	2,417	-8.2	51	301	13.4
700	31	2,942	-10.5	45	298	16.5
650	31	3,515	-13.5	46	291	16.9
600	31	4,114	-17.0	42	291	20.8
550	31	4,767	-21.4	42	288	22.5
500	31	5,457	-26.5	44	288	23.3
450	31	6,221	-31.9	40	285	25.1
400	31	7,032	-37.9	[illegible]	279	27.8
350	31	7,938	-44.9		273	28.2
300	31	8,951	-52.1		272	30.9
250	30	10,113	-56.9		271	29.9
200	29	11,521	-54.3		263	21.6
175	28	12,382	-52.8		270	22.7
150	28	13,377	-52.2		269	17.5
125	27	14,554	-53.3		272	14.8
100	27	15,984	-55.1		270	14.4
80	27	17,404	-56.8		289	12.4
60	27	19,219	-58.5		279	10.1
50	23	20,361	-58.8			
40	20	21,755	-58.9			
30	16	23,559	-58.5			
20	7	26,097	-58.9			

BOISE, IDAHO (914 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	868	6.9	61	97	2.5
1,000	31	123				
950	31	553				
900	31	997	7.2	53	83	2.1
850	31	1,465	3.9	52	290	1.0
800	31	1,955	.1	57	257	6.0
750	31	2,472	-3.7	60	255	10.1
700	31	3,009	-7.8	63	261	13.2
650	31	3,586	-11.7	58	266	15.0
600	31	4,190	-15.4	51	266	16.7
550	31	4,844	-19.8	51	265	16.1
500	31	5,542	-24.5	51	274	19.8
450	31	6,308	-29.8	48	273	24.7
400	31	7,130	-35.7	47	276	24.3
350	31	8,045	-42.3		282	27.8
300	31	9,069	-49.8		273	23.5
250	31	10,241	-57.0		272	30.5
200	28	11,631	-57.4			
175	27	12,473	-55.3			
150	27	13,458	-54.6			
125	25	14,623	-55.4			
100	23	16,042	-57.0			
80	21	17,449	-58.9			
60	19	19,247	-59.8			
50	18	20,382	-60.5			
40	16	21,769	-61.0			
30	14	23,562	-59.5			
20						

BROWNSVILLE, TEX. (1011 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	7	20.1	79	124	7.8
1,000	30	105	19.9	75	125	9.5
950	30	550	18.2	66	141	13.6
900	30	1,009	16.2	55	159	6.2
850	30	1,494	14.2	46	228	3.1
800	30	2,003	11.6	41	278	9.1
750	30	2,547	8.7	35	276	13.2
700	30	3,107	5.4	32	262	17.3
650	30	3,713	1.5	29	254	23.7
600	30	4,348	-3.1		254	27.0
550	30	5,028	-8.3		256	29.7
500	30	5,762	-13.5		264	29.7
450	30	6,562	-19.1		267	35.4
400	30	7,422	-25.3		263	38.1
350	30	8,375	-32.4			
300	30	9,443	-40.4			
250	30	10,659	-49.4			
200	30	12,092	-56.9			
175	29	12,930	-59.2			
150	28	13,889	-62.3			
125	27	15,003	-65.7			
100	23	16,334	-69.7			
80	21	17,653	-71.8			
60	17	19,354	-68.0			
50	17	20,452	-65.7			
40	16	21,827	-61.4			
30	14	23,620	-58.3			
20	9	26,165	-52.1			

BUFFALO, N. Y. (992 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	182	0.7	80	311	2.7
1,000	31	115				
950	31	529	.4	69	274	5.4
900	31	960	-1.9	67	270	9.1
850	31	1,412	-4.0	65	265	12.0
800	31	1,889	-6.4	66	268	13.0
750	31	2,395	-8.7	60	274	15.2
700	31	2,923	-11.1	57	278	18.5
650	31	3,496	-13.8	51	279	20.4
600	31	4,093	-17.2	46	278	22.0
550	31	4,744	-21.3	43	276	25.3
500	30	5,435	-26.3	45	276	28.4
450	29	6,204	-31.8	44	269	28.2
400	29	7,017	-37.7		267	30.5
350	28	7,919	-44.3		267	35.5
300	28	8,938	-50.1		264	41.2
250	28	10,115	-53.9		259	48.8
200	27	11,550	-51.9		261	49.9
175	27	12,416	-51.5		262	48.0
150	25	13,403	-52.6		259	47.4
125	24	14,583	-54.1		262	40.8
100	24	16,006	-56.5		263	32.4
80	22	17,408	-57.7		259	25.3
60	20	19,217	-58.2		256	18.8
50	17	20,369	-58.6		254	13.4
40	16	21,770	-59.2		264	9.7
30	11	23,558	-58.2			
20						

BURRWOOD, LA. (1015 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	29	3	16.1	80	148	1.6
1,000	29	128	17.0	71	148	1.9
950	29	566	15.3	63	218	4.1
900	29	1,021	13.2	51	260	6.2
850	29	1,500	11.2	45	276	8.4
800	29	2,003	8.2	45	275	13.2
750	29	2,542	5.1	40	267	20.4
700	29	3,093	2.5	37	262	22.3
650	29	3,694	-.8	37	268	24.9
600	29	4,323	-4.9	38	267	29.5
550	29	5,001	-9.3	38	266	30.3
500	29	5,731	-14.6	38	265	35.7
450	29	6,529	-20.4		259	38.5
400	29	7,381	-26.4	41	270	43.7
350	29	8,331	-33.8			
300	29	9,393	-41.7			
250	29	10,604	-50.2			
200	26	12,036	-56.6			
175	25	12,880	-58.2			
150	23	13,847	-60.5			
125	21	14,976	-63.8			
100	17	16,331	-68.9			
80	15	17,667	-69.3			
60	13	19,396	-66.8			
50	13	20,501	-64.7			
40	12	21,878	-60.5			
30	10	23,672	-56.1			
20	[illegible]	26,284	-49.6			

CAPE HATTERAS, N. C. (1012 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	4	9.8	83	335	2.7
1,000	31	107	11.2	67	305	3.1
950	31	536	9.3	64	285	8.2
900	31	980	7.0	65	273	12.4
850	31	1,448	4.7	60	276	17.3
800	31	1,940	2.3	55	280	16.3
750	31	2,463	-.5	54	280	19.0
700	31	3,008	-2.9	46	283	25.8
650	31	3,593	-6.4	44	281	29.7
600	31	4,213	-9.9	40	276	33.8
550	30	4,879	-14.2		271	37.1
500	29	5,592	-18.7		272	42.7
450	29	6,375	-24.0		272	49.0
400	29	7,218	-30.2		273	54.8
350	29	8,154	-36.7		275	60.2
300	28	9,202	-43.6		274	70.5
250	28	10,408	-49.9		272	84.1
200	28	11,849	-54.0		269	85.7
175	28	12,704	-54.5		270	80.2
150	28	13,687	-56.0		272	72.6
125	26	14,839	-58.6		269	60.4
100	26	16,227	-62.4		271	51.9
80	26	17,597	-64.1		267	37.9
60	26	19,358	-63.7		262	22.9
50	22	20,487	-61.9		258	12.8
40	19	21,876	-59.9		233	5.2
30	17	23,674	-56.7		261	8.4
20						

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

RAWINSONDE DATA

Average monthly values

MARCH 1957

Standard pressure surface (mb.)	CARIBOU, ME. (989 MB.)					
					Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	191	- 3.9	78	311	5.6
1,000--	31	100				
950----	31	506	- 3.9	66	323	7.8
900----	31	931	- 5.6	67	339	8.4
850----	31	1,378	- 7.0	65	339	9.9
800----	31	1,849	- 9.1	60	332	9.3
750----	31	2,352	-11.2	58	324	8.7
700----	31	2,873	-13.4	49	318	8.5
650----	31	3,442	-16.4	46	310	11.7
600----	31	4,032	-19.6	44	303	12.8
550----	30	4,683	-23.1	41	290	13.6
500----	29	5,372	-27.7	41	280	14.2
450----	29	6,132	-33.3	44	281	17.3
400----	28	6,933	-39.4		282	18.6
350----	28	7,835	-45.3		273	22.3
300----	28	8,850	-50.5		270	29.1
250----	28	10,030	-52.9		266	31.5
200----	28	11,472	-51.4		271	31.7
175----	28	12,340	-51.0		271	31.3
150----	27	13,341	-51.6		273	28.4
125----	26	14,526	-53.4		274	22.1
100----	25	15,958	-56.2		276	20.4
80-----	24	17,362	-57.7		276	18.8
60-----	19	19,175	-59.2		281	12.6
50-----	14	20,316	-59.4		283	11.5
40-----	10	21,707	-59.8			
30-----	5	23,485	-59.3			
20-----						

Standard pressure surface (mb.)	CHARLESTON, S. C. (1012 MB.)					
					Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	13	11.6	81	262	1.0
1,000--	31	117	13.5	70	238	2.1
950----	31	553	12.3	60	258	6.2
900----	31	1,001	9.8	61	268	9.3
850----	31	1,474	7.1	62	270	10.3
800----	31	1,971	5.1	52	271	14.2
750----	31	2,505	2.6	44	276	19.0
700----	31	3,052	.1	38	273	23.5
650----	31	3,649	- 3.3	38	273	29.1
600----	31	4,271	- 7.2	36	271	32.1
550----	31	4,946	-11.6	36	273	34.4
500----	31	5,668	-16.8	34	270	35.7
450----	31	6,458	-22.4		271	42.2
400----	31	7,306	-28.8		268	40.8
350----	31	8,248	-35.6		267	41.4
300----	31	9,304	-42.9			
250----	31	10,512	-50.7			
200----	31	11,948	-55.7			
175----	31	12,796	-56.8			
150----	31	13,770	-57.9			
125----	31	14,911	-61.1			
100----	31	16,283	-65.4			
80-----	28	17,638	-66.7			
60-----	26	19,378	-65.6			
50-----	26	20,489	-64.1			
40-----	23	21,870	-60.8			
30-----	16	23,668	-57.5			
20-----	5	26,239	-53.7			

Standard pressure surface (mb.)	COLD BAY, ALASKA (997 MB.)					
					Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	29	0.2	82	147	0.8
1,000--	31	1			316	6.8
950----	31	412	- 2.5	81	301	3.5
900----	31	839	- 4.8	74	278	5.4
850----	31	1,286	- 7.0	66	244	5.2
800----	31	1,758	- 9.0	60	238	6.8
750----	31	2,260	-11.3	56	237	8.9
700----	31	2,782	-13.6	53	226	10.1
650----	31	3,348	-16.9	51	233	13.6
600----	31	3,938	-20.6	48	229	12.4
550----	31	4,580	-25.1	47	228	13.4
500----	31	5,261	-29.8	45	224	14.6
450----	31	6,013	-35.1	44	203	16.9
400----	31	6,816	-40.9		233	15.5
350----	31	7,710	-47.2		230	16.5
300----	31	8,716	-52.3		212	18.6
250----	31	9,887	-53.4		216	19.0
200----	30	11,333	-49.5		240	15.2
175----	29	12,209	-48.6		229	20.8
150----	29	13,222	-48.6		232	16.1
125----	29	14,420	-48.5		232	16.3
100----	29	15,886	-48.5		230	12.8
80-----	29	17,352	-49.2		231	9.5
60-----	28	19,229	-50.6		243	10.9
50-----	27	20,412	-51.6		284	4.9
40-----	24	21,855	-53.2		325	3.7
30-----	17	23,717	-54.8			
20-----						

Standard pressure surface (mb.)	COLUMBIA, MO. (986 MB.)					
					Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	238	5.5	61	109	1.0
1,000--	31	122				
950----	31	545	4.6	55	213	.8
900----	31	981	2.0	59	237	5.1
850----	31	1,440	- .2	61	260	8.4
800----	31	1,924	- 1.6	58	272	12.2
750----	31	2,441	- 3.7	57	275	16.9
700----	31	2,979	- 6.3	54	278	20.4
650----	31	3,559	- 9.5	53	279	23.9
600----	31	4,170	-13.1	48	275	24.7
550----	30	4,827	-17.1	42	278	25.8
500----	30	5,534	-22.2	40	279	29.9
450----	30	6,304	-27.8	39	277	31.7
400----	30	7,136	-34.0		274	35.0
350----	30	8,057	-40.8		268	36.1
300----	30	9,087	-48.4		270	43.1
250----	30	10,266	-54.9		266	45.3
200----	30	11,685	-55.2		262	53.6
175----	30	12,539	-53.9		265	51.7
150----	30	13,527	-54.3		263	48.8
125----	30	14,690	-56.0		268	44.7
100----	29	16,104	-58.6		265	34.4
80-----	29	17,498	-60.1		264	25.4
60-----	29	19,290	-60.6		262	15.7
50-----	29	20,423	-60.4		257	13.0
40-----	26	21,813	-59.5		255	9.7
30-----	22	23,626	-58.0		260	10.5
20-----						

Standard pressure surface (mb.)	DAYTON, OHIO (979 MB.)					
					Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	297	3.6	63	359	2.1
1,000--	31	121				
950----	31	536	3.5	58	311	3.5
900----	31	976	1.4	57	271	7.0
850----	31	1,434	- 1.0	57	269	10.3
800----	31	1,916	- 3.0	57	276	13.4
750----	31	2,431	- 5.1	52	279	15.0
700----	31	2,965	- 7.7	51	280	17.3
650----	31	3,542	-10.7	44	280	21.6
600----	31	4,150	-14.1	39	277	26.6
550----	31	4,808	-18.2	37	279	28.6
500----	31	5,511	-22.9	35	279	31.9
450----	31	6,281	-28.5	35	281	38.9
400----	31	7,108	-34.6		279	44.5
350----	31	8,027	-41.3		271	50.1
300----	31	9,056	-48.3		269	56.9
250----	31	10,238	-53.9		268	62.5
200----	31	11,664	-54.3		264	62.5
175----	31	12,521	-53.4		265	58.3
150----	30	13,510	-53.3		263	53.2
125----	29	14,678	-55.1		262	43.7
100----	28	16,097	-57.9		265	37.9
80-----	27	17,496	-59.4		262	28.7
60-----	25	19,293	-60.1		263	20.6
50-----	23	20,434	-60.0		259	15.5
40-----	21	21,824	-58.8		259	9.5
30-----	14	23,629	-57.5		273	11.7
20-----						

Standard pressure surface (mb.)	DENVER, COLO. (833 MB.)					
					Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	1,608	3.1	60	89	2.5
1,000--	31	101				
950----	31	530				
900----	31	978				
850----	31	1,446				
800----	31	1,940	3.7	47	252	1.7
750----	31	2,464	.2	44	300	8.5
700----	31	3,009	- 4.0	46	310	11.8
650----	31	3,590	- 8.5	48	304	14.4
600----	31	4,204	-13.1	48	308	18.3
550----	31	4,862	-17.6	45	309	20.4
500----	31	5,567	-22.7	45	302	22.0
450----	31	6,338	-28.3	43	295	23.7
400----	31	7,165	-34.6	39	296	28.4
350----	31	8,083	-41.7		296	32.6
300----	31	9,108	-49.5		294	41.2
250----	31	10,280	-57.1		292	46.8
200----	31	11,684	-57.6		286	43.3
175----	31	12,529	-56.0		283	42.5
150----	31	13,509	-55.5		282	38.9
125----	31	14,667	-56.4		278	34.2
100----	30	16,073	-58.8		281	26.2
80-----	27	17,464	-59.3		278	18.3
60-----	27	19,258	-61.0		275	10.3
50-----	25	20,390	-60.9		289	9.5
40-----	22	21,772	-60.4		283	6.0
30-----	17	23,577	-58.1		277	6.2
20-----	7	26,130	-55.8			

Standard pressure surface (mb.)	DODGE CITY, KANS. (922 MB.)					
					Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	28	792	5.2	68	103	3.5
1,000--	28	120				
950----	28	546				
900----	28	989	5.5	60	68	1.4
850----	28	1,454	3.8	56	328	1.2
800----	28	1,945	2.1	49	331	4.9
750----	28	2,469	- .4	43	303	9.3
700----	28	3,013	- 3.4	45	305	14.4
650----	28	3,596	- 7.3	43	304	19.0
600----	27	4,211	-11.8	43	305	23.9
550----	27	4,871	-15.9	39	300	21.4
500----	27	5,583	-21.0	40	287	22.3
450----	27	6,355	-26.8	39	287	25.6
400----	27	7,190	-33.5	39	284	27.4
350----	27	8,112	-40.7		274	32.2
300----	27	9,141	-49.1		279	36.9
250----	27	10,312	-56.5		266	44.3
200----	27	11,723	-56.6		270	41.2
175----	27	12,570	-55.6			
150----	26	13,550	-55.8			
125----	26	14,705	-57.4			
100----	24	16,104	-59.1			
80-----	23	17,494	-60.7			
60-----	21	19,282	-60.8			
50-----	18	20,410	-60.9			
40-----	13	21,804	-59.3			
30-----	10	23,610	-56.9			
20-----						

Standard pressure surface (mb.)	EL PASO, TEX. (878 MB.)					
					Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	30	1,195	15.3	31	295	6.6
1,000--	30	75				
950----	30	523				
900----	30	985				
850----	30	1,470	14.4	27	285	11.5
800----	30	1,977	10.4	30	277	15.5
750----	30	2,517	5.8	35	273	16.7
700----	30	3,071	1.4	41	268	16.7
650----	30	3,666	- 3.5	45	268	17.1
600----	30	4,289	- 8.3	43	273	20.2
550----	30	4,960	-13.1	37	275	21.8
500----	30	5,678	-18.0	36	286	22.3
450----	30	6,469	-23.6		292	24.1
400----	30	7,306	-30.2		288	20.4
350----	30	8,241	-37.4		295	22.0
300----	30	9,287	-45.0		304	27.2
250----	30	10,483	-52.3			
200----	30	11,908	-57.0			
175----	28	12,753	-56.2			
150----	27	13,730	-58.2			
125----	23	14,876	-60.7			
100----	20	16,253	-65.0			
80-----	18	17,602	-66.0			
60-----	18	19,347	-64.6			
50-----	17	20,465	-62.7			
40-----	17	21,848	-60.6			
30-----	14	23,647	-56.9			
20-----	6	26,225	-51.5			

Standard pressure surface (mb.)	ELY, NEV. (806 MB.)					
					Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	1,908	3.3	56	302	2.7
1,000--	31	113				
950----	31	579				
900----	31	995				
850----	31	1,468				
800----	31	1,967			277	2.1
750----	31	2,495	.4	54	285	6.2
700----	31	3,037	- 3.8	58	277	8.2
650----	31	3,621	- 8.2	61	288	10.7
600----	31	4,235	-12.3	58	295	15.0
550----	31	4,900	-16.5	56	297	19.8
500----	31	5,604	-21.2	54	300	26.0
450----	31	6,383	-26.6	53	297	29.7
400----	31	7,212	-32.8	51	272	27.8
350----	31	8,137	-40.0		268	25.4
300----	31	9,171	-47.8		271	30.1
250----	31	10,349	-56.4		287	27.2
200----	31	11,749	-59.4			
175----	30	12,587	-57.1			
150----	30	13,563	-56.5			
125----	27	14,715	-57.1			
100----	27	16,119	-59.4			
80-----	26	17,509	-60.7			
60-----	22	19,289	-60.4			
50-----	21	20,421	-60.7			
40-----	16	21,813	-60.1			
30-----	11	23,613	-58.1			
20-----						

Standard pressure surface (mb.)	FAIRBANKS, ALASKA (991 MB.)					
					Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	135	- 2.9	58	25	1.2
1,000--	31	62				
950----	31	470	- 3.6	51	76	3.7
900----	31	894	- 5.9	55	106	6.4
850----	31	1,340	- 7.7	57	136	6.8
800----	31	1,810	- 9.3	56	163	7.0
750----	31	2,310	-12.1	58	187	7.2
700----	31	2,831	-15.1	58	188	8.0
650----	31	3,394	-18.7	55	201	8.9
600----	31	3,979	-22.7	52	201	9.9
550----	31	4,615	-27.0	52	198	11.1
500----	31	5,292	-31.6	49	200	14.6
450----	31	6,036	-37.0		196	14.8
400----	31	6,834	-42.9		209	17.3
350----	31	7,721	-49.1		195	16.3
300----	31	8,717	-54.8		192	12.8
250----	31	9,877	-55.3		185	12.0
200----	30	11,313	-52.0		209	11.8
175----	29	12,174	-49.9		220	10.1
150----	29	13,181	-49.4		226	10.1
125----	28	14,371	-49.1		229	10.3
100----	25	15,825	-49.5		247	10.9
80-----	22	17,287	-50.6		246	9.7
60-----	16	19,165	-52.0		254	7.2
50-----	13	20,339	-53.5			
40-----	7	21,788	-55.4			
30-----						
20-----						

Standard pressure surface (mb.)	FLINT, MICH. (986 MB.)					
					Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	234	0.4	71	34	1.0
1,000--	31	121				
950----	31	535	- .2	63	333	2.1
900----	31	966	- 2.4	59	298	4.5
850----	31	1,417	- 4.4	57	290	6.2
800----	31	1,893	- 5.9	53	284	9.1
750----	31	2,402	- 7.6	52	278	13.6
700----	31	2,931	-10.1	49	278	16.7
650----	31	3,504	-12.8	43	281	20.0
600----	30	4,109	-16.2	41	280	19.8
550----	30	4,761	-20.4	38	282	23.3
500----	30	5,456	-25.0	36	281	26.8
450----	30	6,220	-30.4		284	31.7
400----	30	7,041	-36.3		285	33.6
350----	30	7,954	-43.0		281	37.7
300----	30	8,976	-50.0		277	44.1
250----	30	10,149	-55.2		271	49.7
200----	30	11,574	-54.2		268	51.3
175----	29	12,433	-52.2		267	49.5
150----	29	13,431	-52.0		266	44.1
125----	28	14,612	-54.0		266	38.3
100----	28	16,036	-55.8		266	34.0
80-----	27	17,443	-57.5		266	26.6
60-----	23	19,250	-58.8		259	19.2
50-----	22	20,396	-59.2		266	18.3
40-----	21	21,792	-58.7		268	13.0
30-----	15	23,603	-58.1		265	10.3
20-----	9	26,175	-56.2			
15-----						

Standard pressure surface (mb.)	FORT WORTH, TEX. (993 MB.)					
					Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	178	12.6	66	88	1.6
1,000--	31	115				
950----	31	549	10.1	64	123	3.5
900----	31	996	8.8	64	205	3.5
850----	31	1,467	7.1	60	261	9.9
800----	31	1,964	4.9	52	276	15.7
750----	31	2,494	2.2	50	277	19.6
700----	31	3,041	- 1.3	47	277	23.7
650----	31	3,629	- 5.4	43	277	27.0
600----	31	4,250	- 9.5	41	274	28.9
550----	31	4,918	-14.0	37	273	31.1
500----	31	5,633	-19.1	37	271	34.6
450----	31	6,416	-24.9	39	270	36.7
400----	31	7,253	-31.2		268	40.4
350----	31	8,184	-38.1		268	46.2
300----	31	9,225	-45.6		267	53.0
250----	31	10,418	-52.8		265	59.2
200----	30	11,840	-56.1		263	62.4
175----	29	12,684	-56.3		259	63.1
150----	29	13,658	-57.9		258	62.2
125----	27	14,797	-60.3		259	50.5
100----	26	16,173	-64.0		263	40.0
80-----	25	17,535	-65.0		263	30.3
60-----	22	19,286	-64.9		262	17.7
50-----	19	20,401	-62.9		262	11.7
40-----	16	21,787	-60.1		258	7.4
30-----	14	23,598	-56.4		249	5.2
20-----	12	26,198	-50.4		277	11.8
15-----	5	28,144	-45.5			

Standard pressure surface (mb.)	GLASGOW, MONT. (933 MB.)					
					Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	695	- 1.1	71	50	1.6
1,000--	31	134				
950----	31	546				
900----	31	980	- .8	59	355	2.3
850----	31	1,434	- 2.8	57	315	8.0
800----	31	1,913	- 5.2	55	311	10.5
750----	31	2,421	- 7.9	53	306	13.8
700----	31	2,950	-10.6	46	302	15.3
650----	31	3,519	-13.9	44	305	18.8
600----	31	4,120	-17.7	45	299	21.0
550----	31	4,768	-22.0	44	295	21.6
500----	31	5,460	-26.9	41	297	24.3
450----	31	6,217	-32.3	40	297	25.6
400----	31	7,031	-38.4		296	30.1
350----	31	7,935	-45.5		292	28.4
300----	31	8,945	-52.6		289	29.9
250----	30	10,110	-58.0		295	29.1
200----	28	11,518	-55.6		297	24.3
175----	27	12,371	-53.6		302	23.5
150----	26	13,363	-52.8		285	18.8
125----	25	14,534	-53.6		283	14.4
100----	24	15,966	-54.9			
80-----	23	17,385	-57.1			
60-----	23	19,198	-58.9			
50-----	21	20,338	-59.4			
40-----	19	21,730	-59.5			
30-----	14	23,535	-60.0			
20-----						
15-----						

Standard pressure surface (mb.)	GRAND JUNCTION, COLO. (848 MB.)					
					Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	1,474	7.2	50	19	3.3
1,000--	31	94				
950----	31	532				
900----	31	983				
850----	31	1,455			17	5.6
800----	31	1,954	5.5	41	270	1.9
750----	31	2,479	1.3	45	254	5.8
700----	31	3,029	- 3.4	51	270	9.5
650----	31	3,611	- 8.2	56	278	10.5
600----	31	4,225	-12.9	59	288	13.4
550----	31	4,883	-17.5	54	289	17.3
500----	31	5,589	-22.4	50	301	21.4
450----	31	6,363	-28.2	48	297	26.2
400----	31	7,188	-34.5	49	286	27.4
350----	31	8,107	-41.4		288	31.7
300----	31	9,137	-48.8		283	30.5
250----	31	10,314	-56.1		282	30.5
200----	31	11,721	-57.5			
175----	31	12,568	-55.6			
150----	31	13,551	-55.7			
125----	31	14,709	-57.0			
100----	30	16,114	-58.5			
80-----	29	17,510	-60.3			
60-----	26	19,303	-60.9			
50-----	23	20,440	-61.0			
40-----	20	21,825	-59.6			
30-----	12	23,626	-57.8			
20-----						
15-----						

Standard pressure surface (mb.)	GREAT FALLS, MONT. (885 MB.)					
					Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	1,123	0.7	60	264	4.5
1,000--	31	123				
950----	31	544				
900----	31	983				
850----	31	1,444	.1	51	262	8.7
800----	31	1,927	- 2.9	53	269	10.5
750----	31	2,440	- 6.4	55	277	13.4
700----	31	2,971	- 9.6	58	282	15.7
650----	31	3,544	-13.4	55	287	17.3
600----	31	4,143	-17.1	49	288	18.8
550----	31	4,795	-21.3	46	288	21.6
500----	31	5,487	-26.1	46	291	23.1
450----	31	6,247	-31.4	44	290	25.4
400----	31	7,063	-37.6		291	27.4
350----	31	7,970	-44.7		287	30.9
300----	31	8,982	-52.2		288	34.8
250----	31	10,144	-57.6		292	35.2
200----	31	11,551	-55.9		291	32.1
175----	31	12,404	-54.1		290	29.5
150----	31	13,393	-53.8		292	26.8
125----	31	14,565	-53.7		290	22.0
100----	31	15,992	-55.7		283	19.8
80-----	31	17,409	-56.9		288	16.3
60-----	31	19,223	-58.6		289	13.4
50-----	30	20,366	-59.3		289	7.8
40-----	26	21,769	-59.7		289	7.2
30-----	21	23,577	-59.0		308	6.2
20-----						
15-----						

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

RAWINSONDE DATA

Average monthly values

MARCH 1957

GREEN BAY, WIS. (989 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	210	- 1.3	79	305	2.7
1,000	31	119				
950	31	529	- 1.8	64	310	3.5
900	31	956	- 4.1	62	302	4.5
850	31	1,405	- 5.7	58	297	5.4
800	31	1,879	- 6.9	49	300	5.6
750	31	2,388	- 8.7	42	296	8.7
700	31	2,913	-10.9	42	284	10.5
650	31	3,488	-13.6	41	284	11.7
600	31	4,084	-17.2	39	280	14.4
550	31	4,733	-21.2	40	283	17.7
500	31	5,427	-25.8	37	280	17.9
450	31	6,188	-31.1		272	21.0
400	31	7,005	-37.2		267	22.9
350	31	7,915	-43.6		265	29.3
300	31	8,934	-50.3		265	31.7
250	31	10,107	-55.7		271	33.6
200	31	11,533	-52.7		268	37.7
175	31	12,397	-51.9		267	34.8
150	31	13,396	-51.4		267	32.8
125	30	14,581	-52.5		270	30.7
100	30	16,015	-54.5		271	23.1
80	29	17,435	-56.4		269	22.5
60	26	19,252	-57.4		266	16.5
50	22	20,397	-57.5		261	18.6
40	17	21,807	-58.0		267	17.3
30	12	23,613	-57.8			
20						

GREENSBORO, N. C. (983 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	273	7.7	68	347	3.1
1,000	31	127				
950	31	552	8.3	53	323	5.4
900	31	998	5.6	57	303	6.4
850	31	1,463	3.4	58	264	10.5
800	31	1,953	1.2	57	269	14.0
750	31	2,478	- 1.2	54	270	17.5
700	31	3,018	- 3.9	52	275	22.0
650	31	3,607	- 6.9	45	272	26.8
600	31	4,221	-10.2	38	271	28.6
550	31	4,891	-14.3	36	271	33.2
500	31	5,602	-19.2		272	38.1
450	31	6,388	-24.9		275	41.4
400	31	7,222	-31.3	38	264	42.2
350	31	8,152	-38.4		263	47.8
300	31	9,194	-44.9		263	52.8
250	31	10,393	-51.3			
200	31	11,827	-54.5			
175	31	12,680	-54.5			
150	31	13,663	-55.9			
125	30	14,820	-58.0			
100	29	16,209	-60.9			
80	26	17,576	-62.1			
60	26	19,350	-62.0			
50	22	20,476	-61.3			
40	19	21,864	-59.4			
30	16	23,670	-56.9			
20	8	26,231	-52.5			

***HAVANA, CUBA (1009 MB.)**

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	49	22.1	77	198	2.3
1,000	31	130	22.1	72	106	2.1
950	31	578	19.2	73	160	5.1
900	31	1,038	16.3	69	184	5.1
850	31	1,523	14.0	61	205	5.2
800	31	2,032	12.0	47	241	6.4
750	31	2,578	9.6	33	264	7.8
700	31	3,141	6.9	31	256	11.5
650	31	3,750	3.6	29	254	14.8
600	31	4,392	- .7		264	18.6
550	30	5,082	- 5.2		269	24.9
500	30	5,823	-10.4		267	30.7
450	30	6,636	-15.8		267	37.1
400	30	7,506	-22.3		268	43.7
350	30	8,473	-29.6		264	48.4
300	29	9,554	-38.0		268	53.4
250	29	10,786	-46.9		268	57.3
200	28	12,230	-56.2		257	69.2
175	25	13,073	-60.1		259	63.7
150	23	14,022	-65.2			
125	16	15,122	-69.9			
100	9	16,441	-75.3			
80	8	17,720	-76.1			
60	8	19,399	-71.0			
50	8	20,494	-66.1			
40	7	21,877	-60.1			
30	7	23,690	-55 8			
20						

HILO, T. H. (1016 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	9	23.1	67	46	7.4
1,000	31	145	21.4	68	44	7.2
950	31	588	17.6	76	48	6.8
900	31	1,048	14.0	80	41	5.2
850	31	1,528	10.7	82	40	3.7
800	31	2,033	9.4	63	58	4.3
750	31	2,578	8.2	35	39	3.3
700	31	3,134	5.8		34	3.3
650	31	3,739	3.0		51	1.9
600	31	4,381	- 1.0		326	2.1
550	31	5,070	- 5.7		312	5.4
500	31	5,808	-11.0		303	9.3
450	31	6,614	-16.9		304	10.7
400	31	7,482	-23.5		303	15.5
350	31	8,443	-30.7		302	20.6
300	31	9,520	-38.1		292	28.4
250	31	10,750	-46.3		282	40.8
200	31	12,206	-53.4		286	40.8
175	31	13,056	-57.6		293	43.3
150	30	14,016	-62.2		302	33.0
125	29	15,127	-67.2			
100	26	16,454	-72.6		306	17.3
80	23	17,758	-73.9			
60	20	19,463	-68.0			
50	19	20,568	-63.9			
40	18	21,947	-60.1			
30	17	23,757	-55.7			
20	11	26,399	-46.9			

INTERNAT. FALLS, MINN. (972 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	360	- 5.6	63	277	3.1
1,000	31	131				
950	31	537	- 4.5	56	289	3.9
900	31	961	- 6.7	58	313	5.1
850	31	1,405	- 8.8	60	310	5.1
800	31	1,873	-10.0	54	302	6.4
750	31	2,375	-11.7	55	303	8.4
700	31	2,896	-13.7	50	303	10.3
650	31	3,461	-16.2	49	290	12.8
600	31	4,055	-19.5	47	287	16.3
550	31	4,698	-23.0	46	286	19.4
500	31	5,388	-27.7	46	288	23.7
450	31	6,145	-32.9	47	284	26.8
400	30	6,960	-38.7	44	282	30.1
350	29	7,869	-45.1		280	31.9
300	29	8,883	-51.4		283	34.0
250	26	10,045	-55.8		284	35.2
200	18	11,441	-52.1		289	28.0
175	17	12,298	-50.7		290	24.5
150	15	13,291	-51.2		291	23.5
125	13	14,475	-51.6		288	21.6
100	12	15,911	-52.8		283	17.3
80	9	17,343	-54.7			
60	8	19,166	-57.0			
50	5	20,302	-57.6			
40						
30						
20						

JACKSON, MISS. (1003 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	101	12.1	70	33	1.0
1,000	31	124			18	2.1
950	31	558	11.2	57	184	2.3
900	31	1,004	8.7	57	245	5.4
850	31	1,475	6.5	54	255	10.3
800	31	1,970	4.3	53	257	14.6
750	31	2,499	1.5	52	263	17.9
700	31	3,046	- 1.3	45	265	20.6
650	31	3,637	- 4.5	41	264	25.6
600	31	4,259	- 8.2	37	263	30.1
550	31	4,933	-12.2	35	264	32.6
500	31	5,651	-17.2	35	263	37.1
450	31	6,439	-23.0		261	40.0
400	30	7,283	-29.1	36	259	45.6
350	30	8,222	-36.1		255	56.7
300	29	9,287	-43.3		255	66.2
250	29	10,490	-51.1		254	75.2
200	29	11,922	-55.3		254	78.7
175	28	12,773	-56.3		255	82.9
150	28	13,747	-57.6		257	73.0
125	27	14,888	-60.4		258	63.7
100	27	16,261	-64.7		255	49.7
80	22	17,613	-66.1		248	34.0
60	19	19,365	-64.8		244	21.8
50	18	20,474	-64.4		245	14.4
40	16	21,847	-61.1		244	10.7
30	15	23,644	-58.1		246	6.8
20	5	26,232	-53.9			

JACKSONVILLE, FLA. (1014 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	6	14.7	79	225	2.3
1,000	31	127	15.9	68	234	4.1
950	31	562	14.4	61	243	10.1
900	31	1,017	11.7	59	252	13.6
850	31	1,493	9.2	52	260	15.2
800	31	1,993	7.0	49	266	17.3
750	31	2,525	4.5	45	272	20.6
700	31	3,080	1.8	37	270	25.8
650	30	3,677	- 1.7	35	269	29.1
600	30	4,308	- 5.7	37	268	34.0
550	30	4,984	-10.2	38	268	39.2
500	30	5,711	-15.3	36	267	44.3
450	30	6,505	-20.8		266	47.8
400	29	7,358	-27.1		263	53.8
350	28	8,318	-33.5	43	260	62.9
300	28	9,381	-41.8		263	66.2
250	28	10,591	-50.1		266	80.4
200	27	12,026	-56.2		270	87.8
175	27	12,869	-58.1		271	84.1
150	25	13,837	-60.5		266	69.9
125	24	14,963	-63.7		269	67.6
100	24	16,315	-68.1		267	50.3
80	20	17,644	-69.9		265	37.7
60	18	19,364	-67.2		263	17.7
50	17	20,473	-65.4		254	11.8
40	15	21,847	-61.2		271	2.5
30	12	23,654	-56.5		258	8.5
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KING SALMON, ALASKA (1000 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	15	- 0.9	77	77	4.5
1,000	31	15			336	5.6
950	31	423	- 3.3	70	98	7.4
900	31	848	- 5.1	72	123	6.2
850	31	1,295	- 7.3	73	161	4.5
800	31	1,766	- 9.5	71	166	6.6
750	31	2,263	-12.4	67	170	8.0
700	31	2,786	-15.2	64	183	8.0
650	31	3,346	-18.4	59	187	8.4
600	31	3,935	-24.1	58	188	10.9
550	31	4,570	-26.4	56	189	8.4
500	31	5,251	-31.0	56	209	8.9
450	31	5,995	-36.2		216	7.4
400	31	6,797	-42.0		218	8.0
350	31	7,688	-47.9		211	10.3
300	31	8,692	-52.3		204	15.5
250	30	9,866	-53.4		208	16.9
200	30	11,313	-49.8		223	15.7
175	30	12,187	-49.1		223	14.8
150	30	13,196	-48.8		222	16.7
125	29	14,398	-48.7		229	14.0
100	27	15,858	-49.5		229	13.0
80	27	17,316	-50.2		236	10.1
60	27	19,182	-52.2		245	8.0
50	25	20,357	-53.0		257	6.6
40	23	21,792	-54.5		273	4.7
30	15	23,646	-54.9		288	2.3
20	6	26,207	-55.5			

KOTZEBUE, ALASKA (1011 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	5	-14.2	72	45	1.0
1,000	31	88			85	3.9
950	31	484	-12.1	63	85	7.0
900	31	892	-12.0	63	86	5.1
850	31	1,329	-12.5	62	100	2.9
800	31	1,791	-13.6	57	120	2.7
750	31	2,283	-15.3	50	116	2.5
700	31	2,798	-18.0	47	164	2.9
650	31	3,360	-21.3	47	193	3.9
600	31	3,934	-24.9	45	209	7.0
550	31	4,568	-28.8	43	221	8.4
500	31	5,237	-33.3	43	215	8.9
450	31	5,980	-38.3		225	12.8
400	31	6,769	-43.7		224	13.8
350	30	7,655	-49.3		221	17.7
300	29	8,658	-53.8		216	12.8
250	28	9,830	-54.1		222	17.3
200	28	11,273	-49.9		219	12.8
175	27	12,149	-48.6		227	13.4
150	27	13,162	-47.9		226	11.7
125	26	14,366	-47.3		225	11.3
100	26	15,839	-47.4		232	9.7
80	25	17,306	-47.8		227	7.6
60	18	19,182	-49.5		235	5.4
50	16	20,378	-50.6		235	5.8
40	12	21,850	-51.9		291	3.5
30	6	23,671	-54.3			
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LAKE CHARLES, LA. (1013 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	5	15.2	84	179	1.2
1,000	31	117	15.7	74	164	1.7
950	31	556	13.8	67	226	3.3
900	31	1,006	11.5	65	261	6.8
850	31	1,481	9.2	59	270	11.1
800	31	1,982	6.4	55	273	14.6
750	31	2,514	4.0	48	277	18.3
700	31	3,067	1.1	42	281	24.1
650	31	3,662	- 2.6	39	278	25.8
600	31	4,288	- 6.5	36	280	28.4
550	31	4,963	-11.1		278	30.7
500	31	5,687	-16.0		273	35.7
450	31	6,480	-21.6		272	38.3
400	31	7,330	-27.6		274	49.5
350	31	8,275	-34.8		270	52.6
300	31	9,332	-42.2		267	52.6
250	31	10,542	-49.8			
200	28	11,979	-55.7			
175	28	12,824	-57.4			
150	27	13,796	-58.3			
125	24	14,929	-61.4			
100	22	16,299	-65.1			
80	17	17,641	-66.8			
60	16	19,378	-65.4			
50	14	20,491	-64.2			
40	14	21,866	-60.3			
30	14	23,672	-56.1			
20	7	26,248	-51.9			

LANDER, WYO. (824 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,696	2.4	48	268	5.1
1,000	31	95				
950	31	527				
900	31	971				
850	31	1,439				
800	31	1,933	2.5	42	296	4.1
750	31	2,456	- 1.0	43	297	6.8
700	31	2,997	- 5.2	45	299	9.7
650	31	3,576	- 9.8	47	299	14.4
600	31	4,186	-14.3	47	297	19.2
550	31	4,841	-19.1	43	302	19.8
500	31	5,541	-24.2	40	298	21.6
450	31	6,307	-29.7	38	293	19.8
400	31	7,129	-36.1		287	22.5
350	31	8,042	-42.8		283	20.0
300	30	9,062	-50.1		265	25.3
250	29	10,229	-56.5		260	28.6
200	29	11,634	-57.3		282	24.1
175	29	12,482	-55.1		283	26.2
150	29	13,467	-53.9		287	26.0
125	29	14,635	-54.7		283	24.7
100	29	16,054	-56.9		291	21.4
80	28	17,467	-58.1		292	18.1
60	27	19,270	-59.2		285	15.0
50	26	20,405	-59.9		293	12.4
40	22	21,793	-59.8			
30	13	23,603	-58.5			
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LAS VEGAS, NEV. (936 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	660	16.5	22	250	4.5
1,000	31	87				
950	31	529				
900	31	988	15.2	22	251	5.6
850	31	1,468	11.0	27	250	7.0
800	31	1,970	6.7	32	255	7.4
750	31	2,503	2.3	37	269	7.2
700	31	3,048	- 2.3	42	284	8.0
650	31	3,635	- 6.4	44	303	9.5
600	31	4,253	-10.4	40	314	13.6
550	31	4,922	-14.5	39	306	17.7
500	31	5,633	-19.5	36	298	21.6
450	31	6,421	-24.7	36	294	25.8
400	31	7,254	-30.8	36	288	31.1
350	31	8,188	-38.4		288	35.5
300	31	9,229	-46.8		284	42.0
250	31	10,414	-55.1		283	45.3
200	31	11,819	-59.8		285	47.6
175	30	12,657	-59.2		278	50.9
150	27	13,635	-57.5		288	44.7
125	25	14,781	-59.3		282	37.1
100	23	16,170	-62.0		275	32.2
80	22	17,549	-63.4		277	23.3
60	21	19,321	-63.6		281	11.7
50	20	20,443	-63.2		292	8.7
40	19	21,825	-61.3		298	6.6
30	13	23,636	-58.4		277	7.2
20	7	26,111	-54.9			

LITTLE ROCK, ARK. (1004 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	79	10.5	67	61	0.6
1,000	30	114			37	.8
950	30	547	8.9	57	121	1.9
900	30	985	6.3	59	228	3.1
850	30	1,452	3.8	61	254	7.4
800	30	1,942	1.7	63	256	12.8
750	30	2,470	- .3	59	262	15.5
700	30	3,010	- 3.3	55	262	20.4
650	30	3,598	- 6.6	51	264	22.9
600	30	4,213	-10.5	47	269	25.4
550	30	4,880	-14.8	44	265	27.8
500	30	5,591	-19.8	41	266	30.5
450	30	6,374	-25.6	40	271	35.7
400	30	7,207	-31.6	37	272	37.9
350	30	8,140	-38.0		267	41.6
300	29	9,185	-45.0		261	47.4
250	29	10,383	-51.8		266	54.4
200	28	11,815	-54.4		262	60.8
175	28	12,668	-54.7			
150	27	13,651	-55.2			
125	23	14,795	-57.9			
100	22	16,189	-60.8			
80	17	17,567	-61.8			
60	14	19,346	-62.1			
50	14	20,472	-62.2			
40	11	21,855	-59.8			
30	8	23,661	-56.4			
20						

McGRATH, ALASKA (993 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	103	- 3.4	61	359	2.1
1,000	31	49				
950	31	452	- 5.4	56	61	6.0
900	31	876	- 7.3	60	97	6.4
850	31	1,321	- 8.1	63	118	5.1
800	31	1,790	- 9.9	64	152	7.0
750	31	2,285	-12.5	64	170	8.4
700	31	2,809	-15.6	61	178	10.7
650	31	3,366	-19.1	61	180	10.7
600	31	3,955	-22.9	58	177	11.8
550	31	4,589	-27.0	54	184	12.8
500	31	5,267	-31.6	51	195	13.0
450	31	6,009	-36.6	51	197	13.4
400	31	6,810	-42.4		194	13.4
350	31	7,699	-48.3		196	12.6
300	31	8,699	-53.3		203	12.8
250	29	9,871	-53.9		202	8.7
200	29	11,313	-50.2		229	8.5
175	28	12,179	-48.9		231	9.9
150	28	13,191	-48.5		242	10.7
125	28	14,389	-48.3		235	9.3
100	26	15,851	-48.7		251	8.4
80	25	17,313	-49.5		248	8.9
60	24	19,195	-51.0		256	6.6
50	22	20,374	-52.1		263	4.9
40	19	21,814	-53.5		298	6.2
30	10	23,664	-54.4			
20						

MEDFORD, ORE. (968 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	401	10.1	70	219	0.8
1,000	31	127				
950	31	555	9.7	62	224	2.1
900	31	1,002	6.7	62	210	5.2
850	31	1,468	3.0	67	217	8.4
800	31	1,956	- .7	72	225	12.8
750	31	2,475	- 3.9	70	234	15.9
700	31	3,010	- 6.9	62	245	18.8
650	31	3,591	-10.3	61	255	21.6
600	31	4,197	-14.0	56	261	24.5
550	31	4,856	-18.3	53	262	25.6
500	31	5,558	-22.7	51	276	28.2
450	31	6,329	-28.2	49	280	27.2
400	31	7,156	-34.2	51	283	28.7
350	31	8,075	-41.5		272	31.7
300	31	9,102	-49.3		269	28.0
250	31	10,275	-56.3			
200	31	11,680	-57.9			
175	31	12,524	-56.2			
150	31	13,503	-55.4			
125	31	14,662	-56.2			
100	30	16,069	-58.5			
80	29	17,465	-59.1			
60	27	19,256	-60.1			
50	24	20,388	-60.9			
40	19	21,777	-60.5			
30	13	23,573	-59.2			
20						

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

* Obs. near 0500 G.C.T.

RAWINSONDE DATA

Average monthly values

MIAMI, FLA.
(1016 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	4	20.1	82	227	1.0
1,000	31	138	19.8	74	237	1.4
950	31	582	17.2	69	248	2.9
900	31	1,039	14.4	66	242	7.0
850	31	1,521	12.5	54	250	10.1
800	31	2,027	10.4	46	255	13.0
750	31	2,568	8.1	37	259	16.1
700	31	3,129	5.1		255	17.7
650	31	3,735	1.3		259	20.4
600	31	4,369	- 2.7	32	262	26.6
550	31	5,055	- 7.4	36	262	31.5
500	31	5,789	-12.3		258	37.1
450	31	6,597	-17.6		257	42.2
400	31	7,459	-23.8	35	264	46.8
350	31	8,419	-31.2	36	267	51.9
300	31	9,490	-39.8		266	52.6
250	31	10,711	-48.1		273	64.9
200	31	12,150	-56.1			
175	31	12,990	-59.9			
150	30	13,940	-63.7			
125	30	15,049	-66.9			
100	28	16,371	-72.2			
80	28	17,673	-73.9			
60	25	19,367	-68.7			
50	25	20,465	-65.9			
40	25	21,832	-61.3			
30	20	23,635	-56.1			
20						

MIDLAND, TEX.
(913 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	871	14.3	38	157	1.4
1,000	31	89				
950	31	532				
900	31	990	14.2	36	148	2.5
850	31	1,470	11.3	35	244	6.2
800	31	1,973	8.0	36	265	11.8
750	31	2,505	4.6	35	271	17.7
700	31	3,060	.2	39	273	22.5
650	31	3,653	- 4.0	40	283	24.3
600	31	4,275	- 8.4	39	277	23.3
550	31	4,944	-13.3	39	277	28.6
500	31	5,662	-18.5	39	284	32.6
450	31	6,445	-24.3	37	279	33.8
400	31	7,286	-30.7		277	39.6
350	31	8,218	38.1		270	47.8
300	30	9,264	-45.6		273	49.1
250	30	10,457	-52.7			
200	28	11,881	-55.9			
175	25	12,720	-54.8			
150	24	13,701	-56.9			
125	22	14,843	-60.4			
100	20	16,214	-64.3			
80	17	17,564	-65.4			
60	14	19,310	-64.8			
50	12	20,447	-63.2			
40	9	21,823	-60.2			
30	8	23,619	-57.4			
20						

MONTGOMERY, ALA.
(1008 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	61	12.3	74	352	1.2
1,000	31	126	13.7	61	327	2.1
950	31	559	11.4	58	297	1.4
900	31	1,007	8.9	60	264	4.3
850	31	1,478	6.9	56	272	8.5
800	31	1,975	5.0	51	270	13.0
750	31	2,508	2.4	47	271	16.5
700	31	3,054	- .5	43	269	19.8
650	31	3,646	- 3.7	36	269	24.3
600	31	4,271	- 7.5	35	264	31.7
550	31	4,944	-12.1	37	264	35.5
500	31	5,664	-16.9		264	42.9
450	31	6,453	-22.3		262	48.6
400	31	7,301	-28.6	41	261	53.8
350	31	8,243	-35.7	42	260	61.2
300	31	9,297	-43.4		259	68.8
250	31	10,502	-50.7		259	77.7
200	31	11,936	-55.4		260	87.6
175	31	12,784	-56.3		262	85.3
150	30	13,756	-57.3		258	73.0
125	28	14,899	-60.4		259	64.7
100	28	16,273	-64.8		260	51.3
80	26	17,625	-65.5		263	36.1
60	24	19,377	-64.5		250	16.3
50	21	20,479	-63.2		254	10.3
40	17	21,867	-60.0		250	7.2
30	11	23,690	-56.6		262	11.3
20						

NANTUCKET, MASS.
(1011 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	14	2.4	81	18	3.9
1,000	31	99	2.6	73	7	5.2
950	31	517	1.8	61	346	9.3
900	31	948	.1	58	337	11.1
850	31	1,405	- 1.4	57	322	12.0
800	31	1,886	- 3.4	56	293	14.2
750	31	2,400	- 5.6	58	286	17.1
700	31	2,932	- 8.7	60	287	18.6
650	31	3,511	-11.3	56	287	22.1
600	31	4,115	-14.5	53	285	27.8
550	31	4,771	-18.4	43	278	29.7
500	31	5,472	-23.5	39	272	28.7
450	31	6,239	-29.3	39	267	27.6
400	31	7,065	-35.3		256	34.8
350	31	7,981	-41.9		256	40.6
300	31	9,009	-48.3		257	35.9
250	31	10,196	-52.6			
200	30	11,634	-53.0			
175	29	12,486	-52.7			
150	28	13,483	-53.5			
125	27	14,651	-55.1			
100	27	16,066	-58.2			
80	27	17,463	-60.0			
60	25	19,253	-60.2			
50	24	20,391	-60.1			
40	21	21,785	-59.8			
30	15	23,577	-59.6			
20	7	26,120	-56.8			

NASHVILLE, TENN.
(994 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	177	9.0	71	297	1.2
1,000	31	127				
950	31	552	7.1	59	294	2.9
900	31	996	4.8	60	259	3.9
850	31	1,460	2.3	60	281	7.0
800	31	1,948	.9	57	289	11.5
750	31	2,470	- 1.1	48	290	16.5
700	31	3,012	- 4.0	43	285	19.0
650	31	3,599	- 7.2	42	282	22.5
600	31	4,213	-11.1	37	275	25.3
550	31	4,876	-15.6	35	271	26.4
500	31	5,587	-20.5	36	267	29.7
450	31	6,365	-26.0	36	270	35.7
400	31	7,200	-32.2	34	271	41.6
350	30	8,121	-39.6		263	45.6
300	30	9,159	-46.5		256	50.1
250	29	10,350	-53.4			
200	28	11,771	-55.6			
175	28	12,622	-54.7			
150	28	13,606	-55.6			
125	27	14,764	-57.7			
100	24	16,157	-60.9			
80	20	17,531	-62.6			
60	19	19,305	-62.7			
50	17	20,431	-61.9			
40	17	21,816	-59.8			
30	14	23,619	-57.6			
20						

N.Y. INT. AP IDLEWILD
(1013 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	5	4.7	67	322	4.9
1,000	31	110	4.8	61	323	5.6
950	31	528	2.4	59	328	9.5
900	31	962	.1	61	332	7.8
850	31	1,418	- 1.2	63	304	9.9
800	31	1,900	- 3.5	64	295	13.8
750	31	2,412	- 5.7	59	289	16.5
700	31	2,946	- 8.0	52	284	20.0
650	30	3,526	-11.1	49	282	22.0
600	30	4,136	-14.7	47	279	26.4
550	30	4,790	-18.9	48	278	28.2
500	30	5,492	-23.7	47	277	31.9
450	30	6,260	-29.1	46	274	37.9
400	29	7,084	-35.1		272	45.1
350	29	8,002	-41.7		272	52.1
300	29	9,031	-48.1		271	57.7
250	29	10,216	-52.6		272	63.1
200	27	11,649	-52.2		273	60.8
175	27	12,511	-52.8		275	61.8
150	25	13,499	-53.4		276	54.8
125	25	14,668	-55.5		275	47.0
100	25	16,081	-58.2		275	42.0
80	23	17,473	-59.5		273	35.0
60	23	19,269	-59.9		273	23.7
50	20	20,411	-59.5		282	16.1
40	17	21,815	-59.4		284	11.7
30	12	23,619	-58.3		282	11.7
20						
15						

NOME, ALASKA
(1007 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	7	- 9.1	77	41	4.1
1,000	31	63			50	3.7
950	31	462	- 9.4	67	59	6.0
900	31	876	- 9.8	64	71	7.4
850	31	1,316	-10.9	62	69	5.8
800	31	1,780	-12.8	58	72	3.1
750	31	2,275	-14.7	54	81	2.3
700	31	2,790	-17.3	51	165	1.6
650	31	3,348	-20.5	49	184	3.1
600	31	3,929	-24.1	45	189	4.3
550	31	4,562	-28.0	43	204	6.6
500	31	5,236	-32.6	43	241	8.0
450	31	5,977	-37.5		233	9.5
400	30	6,779	-42.8		240	9.3
350	30	7,667	-48.8		214	11.3
300	30	8,665	-54.0		213	14.6
250	30	9,830	-53.5		220	14.2
200	30	11,278	-49.4		219	14.2
175	30	12,153	-48.6		227	12.2
150	30	13,166	-47.6		223	12.8
125	30	14,370	-47.1		228	10.7
100	29	15,842	-47.4		220	9.5
80	28	17,313	-47.6		225	7.4
60	26	19,207	-48.9		215	5.8
50	24	20,401	-50.2		242	4.5
40	24	21,851	-51.5		272	2.7
30	23	23,710	-53.0		338	2.7
20	11	26,351	-54.8			
15						

NORFOLK, VA.
(1013 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	[illegible]	8.2	76	28	2.1
1,000	30	115	8.6	68	16	3.1
950	30	542	6.6	68	330	6.4
900	30	981	4.9	67	308	9.9
850	30	1,445	2.3	66	295	10.7
800	30	1,933	.3	61	282	13.2
750	30	2,457	- 2.3	61	275	17.5
700	30	2,993	- 5.4	61	270	21.0
650	28	3,574	- 8.5	50	274	26.2
600	27	4,187	-12.3	44	275	30.7
550	27	4,851	-16.8	41	273	35.7
500	27	5,555	-21.3	41	273	41.6
450	27	6,334	-26.5	40	270	47.2
400	27	7,165	-32.5		269	55.2
350	27	8,093	-39.4		266	63.5
300	27	9,132	-46.2		265	72.6
250	27	10,325	-52.2		265	79.8
200	26	11,763	-54.6		264	80.2
175	26	12,617	-54.6		265	77.9
150	26	13,601	-55.6		263	65.7
125	21	14,755	-57.9		262	60.4
100	18	16,161	-61.1		263	45.1
80	14	17,536	-63.1		261	31.9
60	12	19,301	-63.5		255	16.7
50	11	20,414	-62.1		256	11.8
40	11	21,800	-59.8			
30						
20						
15						

NORTH PLATTE, NEBR.
(915 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	848	1.5	71	32	3.9
1,000	31	119				
950	31	541				
900	31	980	2.5	60	67	3.3
850	31	1,440	.7	58	285	1.7
800	31	1,925	- 1.5	58	298	7.0
750	31	2,437	- 3.5	54	314	11.8
700	31	2,980	- 6.3	47	318	15.7
650	31	3,560	- 9.9	45	311	19.8
600	31	4,169	-13.7	44	305	22.0
550	31	4,828	-18.0	43	304	22.5
500	31	5,531	-23.0	42	299	24.5
450	31	6,301	-28.9	41	292	20.8
400	31	7,125	-35.5	43	290	24.9
350	31	8,039	-42.7		281	24.5
300	31	9,060	-50.6		275	26.8
250	31	10,227	-57.1		262	29.1
200	31	11,634	-56.3		276	36.7
175	30	12,483	-54.7		272	32.2
150	29	13,475	-54.1		269	28.7
125	28	14,641	-55.7		273	30.1
100	27	16,053	-57.1		267	23.7
80	27	17,459	-58.2		274	19.0
60	26	19,260	-59.6		266	15.3
50	24	20,395	-59.7		275	10.5
40	19	21,785	-59.0			
30	13	23,592	-58.6			
20						
15						

OAKLAND, CALIF.
(1017 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	6	12.7	72	274	8.0
1,000	31	148	11.8	72	271	8.4
950	31	578	9.5	73	272	8.4
900	31	1,024	7.5	66	274	8.2
850	31	1,493	5.2	63	283	9.1
800	31	1,986	2.8	56	284	11.3
750	31	2,514	- .3	57	279	13.4
700	31	3,056	- 3.0	51	280	15.9
650	31	3,641	- 6.7	47	282	20.2
600	31	4,260	-10.6	47	285	21.8
550	31	4,925	-15.1	48	290	24.9
500	31	5,638	-19.7	47	288	30.1
450	31	6,423	-25.5	46	288	34.2
400	31	7,255	-31.7	44	288	39.2
350	31	8,186	-39.0		286	42.2
300	31	9,225	-47.1		288	49.0
250	31	10,408	-55.6		290	54.0
200	31	11,809	-60.6		286	54.0
175	30	12,641	-58.9		285	51.9
150	29	13,607	-57.5		281	45.8
125	29	14,756	-58.7		283	38.5
100	27	16,152	-61.8		284	30.7
80	24	17,534	-62.3		285	25.3
60	21	19,307	-62.3		292	11.8
50	20	20,429	-62.4		302	8.0
40	19	21,812	-61.0		294	6.6
30	15	23,604	-58.7		283	7.2
20	9	26,157	-54.1			
15	7	28,006	-52.2			

OKLAHOMA CITY, OKLA.
(967 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	391	8.2	76	141	2.9
1,000	31	111				
950	31	538	9.0	65	137	2.9
900	31	983	6.4	65	170	3.9
850	31	1,451	4.9	59	254	6.6
800	31	1,944	2.7	54	285	11.8
750	31	2,468	.1	51	288	15.5
700	31	3,013	- 3.2	50	288	19.4
650	31	3,598	- 6.6	46	285	23.3
600	31	4,216	-10.5	41	286	28.0
550	31	4,878	-15.3	39	278	25.8
500	31	5,591	-20.4	39	275	25.4
450	31	6,368	-26.1	38	271	28.7
400	31	7,202	-32.3		269	32.4
350	31	8,129	-39.3		268	34.0
300	31	9,166	-46.6		271	39.2
250	31	10,354	-53.2		261	41.6
200	31	11,780	-55.2		259	45.1
175	31	12,631	-54.9		252	46.6
150	31	13,612	-55.8		259	50.7
125	31	14,767	-57.5		256	43.3
100	31	16,162	-60.8			
80	30	17,542	-61.4			
60	25	19,322	-62.1			
50	23	20,456	-60.6			
40	19	21,858	-59.3			
30	16	23,667	-56.4			
20	5	26,244	-51.1			

OMAHA, NEBR.
(966 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	403	2.2	70	6	3.1
1,000	31	121				
950	31	538	2.5	62	1	5.1
900	31	975	1.1	60	360	4.3
850	31	1,433	- 1.2	62	328	5.2
800	31	1,914	- 2.8	61	320	8.7
750	31	2,427	- 4.7	55	311	11.3
700	31	2,964	- 7.4	51	296	14.0
650	31	3,538	-10.3	46	297	15.7
600	31	4,151	-13.8	41	284	15.5
550	31	4,806	-18.0	37	294	21.2
500	31	5,512	-22.6	36	292	25.1
450	31	6,278	-28.3	39	291	27.6
400	30	7,110	-34.9	43	284	28.9
350	30	8,026	-42.1		284	33.6
300	30	9,051	-49.6		278	35.5
250	28	10,222	-56.5		273	42.3
200	27	11,628	-55.3		272	45.8
175	27	12,481	-53.8		275	44.7
150	27	13,470	-53.7		268	38.9
125	27	14,639	-54.8		271	33.0
100	26	16,054	-57.2		273	30.7
80	25	17,455	-58.8		269	23.1
60	20	19,262	-59.5		271	17.1
50	18	20,397	-59.2		271	11.8
40	18	21,793	-59.2		266	10.9
30	12	23,593	-57.7			
20						

PEORIA, ILL.
(990 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	201	3.8	61	330	2.3
1,000	31	122				
950	31	543	2.6	53	312	1.9
900	31	974	.1	53	250	4.9
850	31	1,430	- 2.0	55	250	9.3
800	31	1,910	- 3.9	55	264	11.8
750	31	2,426	- 5.7	54	274	14.6
700	31	2,956	- 8.3	51	273	16.1
650	31	3,534	-11.2	49	274	20.6
600	31	4,138	-14.5	47	270	24.5
550	31	4,796	-18.8	47	276	26.4
500	31	5,495	-23.4	42	275	31.3
450	30	6,265	-29.0		279	35.2
400	29	7,089	-34.8		281	38.9
350	29	8,006	-41.9		281	37.5
300	29	9,003	-49.1		275	44.5
250	29	10,210	-55.3		266	47.8
200	29	11,632	-55.1		265	53.6
175	29	12,488	-53.3		266	51.3
150	29	13,480	-53.5		269	45.8
125	29	14,648	-55.3		267	38.9
100	29	16,066	-57.3		263	34.0
80	29	17,471	-59.0		265	26.2
60	28	19,276	-59.6		267	15.3
50	27	20,414	-59.7		259	12.0
40	26	21,807	-59.4		259	11.7
30	19	23,612	-57.8		267	9.7
20						

PHOENIX, ARIZ.
(972 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	341	19.6	36	280	1.9
1,000	31	96				
950	31	540	19.6	29	290	4.1
900	31	1,001	16.0	32	284	7.4
850	31	1,482	11.9	36	277	7.6
800	31	1,986	7.6	41	279	7.4
750	31	2,520	3.4	43	284	7.0
700	31	3,069	- .5	39	277	8.0
650	31	3,662	- 4.7	38	291	11.7
600	31	4,282	- 8.8	34	295	16.1
550	31	4,956	-13.0	33	304	17.7
500	31	5,671	-17.7		311	23.5
450	31	6,461	-23.3		293	25.1
400	31	7,302	-30.0		290	26.0
350	31	8,237	-37.3		302	29.5
300	31	9,282	-45.7		297	32.8
250	31	10,473	-53.9		295	35.7
200	31	11,884	-59.0			
175	31	12,723	-57.7			
150	31	13,696	-57.8			
125	31	14,839	-60.0			
100	30	16,223	-63.0			
80	27	17,586	-65.1			
60	25	19,341	-63.9			
50	24	20,461	-62.7			
40	23	21,839	-60.9			
30	17	23,638	-56.9			
20	6	26,203	-52.8			

PITTSBURGH, PA.
(972 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	353	3.7	67	290	2.3
1,000	31	120				
950	31	538	3.4	64	283	4.1
900	31	976	1.2	66	268	8.7
850	31	1,434	- .8	65	266	14.0
800	31	1,915	- 3.7	66	270	15.7
750	31	2,427	- 6.0	62	272	16.9
700	31	2,960	- 8.5	59	276	19.6
650	31	3,534	-11.6	52	276	22.0
600	31	4,140	-15.5	46	279	25.4
550	31	4,790	-20.0	41	276	28.6
500	31	5,490	-24.7	40	279	32.8
450	31	6,255	-30.2	39	280	38.7
400	31	7,075	-36.2		276	46.4
350	31	7,987	-42.6		272	50.5
300	31	9,010	-49.6		270	59.2
250	30	10,185	-54.5		268	58.1
200	28	11,608	-53.3		264	62.7
175	25	12,455	-52.7		267	60.0
150	15	13,454	-54.1		268	61.2
125	12	14,609	-56.6			
100	8	16,054	-60.1			
80						
60						
50						
40						
30						
20						

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

RAWINSONDE DATA

Average monthly values

MARCH 1957

PORTLAND, ME. (1011 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	20	0.0	73	345	4.5
1,000	31	105	.6	60	341	4.9
950	31	521	- 1.0	56	341	7.6
900	31	946	- 2.8	51	330	9.5
850	31	1,397	- 4.7	50	329	11.1
800	31	1,873	- 6.1	48	317	11.1
750	31	2,381	- 8.4	49	299	12.8
700	31	2,909	-10.3	47	287	15.0
650	31	3,483	-13.1	45	280	18.5
600	31	4,083	-16.5	44	282	20.6
550	31	4,736	-20.5	42	278	23.1
500	31	5,431	-25.0	40	275	28.2
450	31	6,196	-29.9		274	34.0
400	31	7,017	-36.3		273	37.5
350	30	7,928	-43.0		268	41.4
300	30	8,953	-48.7		266	47.0
250	30	10,140	-51.9		266	52.8
200	30	11,584	-51.4		271	53.8
175	30	12,452	-50.9		269	50.1
150	30	13,452	-51.8		266	43.9
125	30	14,629	-53.5		263	37.9
100	29	16,050	-55.5		262	33.8
80	28	17,465	-57.3		258	28.9
60	26	19,273	-58.5		264	18.1
50	24	20,408	-58.5		260	15.9
40	20	21,814	-58.2		264	10.5
30	14	23,624	-58.1		279	7.0
20	6	26,178	-57.3			

RAPID CITY, S. DAK. (902 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	966	- 0.2	69	23	3.7
1,000	31	127				
950	31	547				
900	31	984			5	7.2
850	31	1,442	.3	57	323	5.8
800	31	1,925	- 3.0	60	307	11.1
750	31	2,439	- 5.4	58	307	14.4
700	31	2,972	- 8.4	53	306	18.3
650	31	3,548	-11.9	50	300	19.2
600	31	4,152	-15.6	47	299	22.1
550	31	4,804	-20.1	47	299	24.9
500	31	5,502	-25.0	47	295	27.6
450	31	6,270	-30.4	48	297	29.7
400	31	7,086	-36.7	46	294	32.1
350	31	7,996	-44.0		293	34.6
300	31	9,012	-52.2		291	39.2
250	29	10,171	-58.3		287	40.8
200	28	11,576	-56.2		281	35.5
175	22	12,420	-53.8		287	36.5
150	18	13,409	-53.6		283	31.5
125	10	14,562	-54.0			
100						
80						
60						
50						
40						
30						
20						

ST. CLOUD, MINN. (977 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	316	- 2.8	71	341	2.5
1,000	31	128				
950	31	540	- 2.3	64	344	4.1
900	31	964	- 4.2	62	330	4.3
850	31	1,413	- 5.7	59	311	6.8
800	31	1,887	- 6.9	53	302	8.5
750	31	2,396	- 8.3	47	304	11.1
700	31	2,923	-10.4	45	302	13.0
650	31	3,497	-13.1	44	298	16.1
600	31	4,096	-16.7	42	296	18.1
550	31	4,746	-20.9	40	293	19.2
500	31	5,441	-25.8	40	289	20.2
450	31	6,203	-31.2	40	278	20.2
400	31	7,020	-37.5		278	21.4
350	31	7,927	-44.3		276	26.2
300	31	8,943	-51.1		266	29.7
250	31	10,112	-56.4		278	27.2
200	31	11,531	-53.8		284	23.5
175	31	12,391	-52.2		278	24.1
150	31	13,388	-52.2		274	22.9
125	31	14,565	-53.0		271	21.8
100	29	15,992	-54.7		273	17.3
80	28	17,414	-56.4		274	16.9
60	27	19,234	-57.8		273	13.2
50	25	20,382	-58.5		274	16.3
40	21	21,785	-58.8		275	13.4
30	17	23,595	-58.5		267	12.6
20	7	26,143	-57.1			

ST. PAUL IS., ALASKA (1001 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	10	- 4.3	86	46	6.2
1,000	31	13			42	3.5
950	31	418	- 6.3	81	98	1.6
900	31	838	- 7.2	73	125	1.6
850	31	1,282	- 8.3	65	166	3.3
800	31	1,751	-10.0	57	166	3.5
750	31	2,249	-12.2	53	180	3.7
700	31	2,771	-15.0	50	208	2.5
650	31	3,331	-18.4	48	206	3.7
600	31	3,919	-22.2	47	205	4.3
550	31	4,553	-26.3	47	213	6.2
500	31	5,235	-30.8	46	233	8.4
450	31	5,976	-35.9	46	235	11.3
400	30	6,782	-41.4		223	7.0
350	29	7,670	-47.5		236	8.5
300	29	8,674	-52.3		197	10.9
250	29	9,847	-52.8		210	10.7
200	29	11,296	-49.4		223	14.6
175	29	12,173	-48.1		222	13.0
150	29	13,188	-47.6		220	14.8
125	29	14,390	-47.5		218	14.6
100	29	15,864	-47.2		216	13.6
80	29	17,338	-47.5		207	10.7
60	28	19,233	-48.8		206	12.0
50	27	20,424	-49.6		192	6.4
40	21	21,882	-51.0		193	6.6
30	10	23,750	-52.6			
20						

SALEM, OREG. (1007 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	61	9.3	80	195	2.9
1,000	31	118	9.1	76	187	3.1
950	31	539	6.6	75	194	9.5
900	31	983	3.7	75	206	13.4
850	31	1,445	.5	76	214	17.7
800	31	1,929	- 2.5	72	221	19.4
750	31	2,445	- 5.4	66	224	20.0
700	31	2,976	- 8.4	59	231	19.6
650	31	3,555	-12.1	59	237	21.4
600	30	4,152	-15.7	59	247	22.1
550	30	4,803	-19.7	53	250	23.9
500	30	5,504	-24.4	51	249	27.6
450	30	6,269	-30.0	48	255	31.1
400	30	7,091	-36.0	48	255	37.5
350	30	8,004	-42.6		266	42.0
300	30	9,027	-49.5		270	46.6
250	30	10,199	-56.0		271	49.9
200	30	11,608	-56.7		274	46.2
175	30	12,458	-54.5		273	39.0
150	28	13,441	-54.4		275	33.2
125	28	14,605	-55.0		278	28.4
100	28	16,023	-56.5		278	20.8
80	27	17,429	-58.2		283	16.9
60	24	19,231	-59.2		288	10.5
50	20	20,373	-60.3		297	9.7
40	18	21,756	-60.9		320	6.8
30	10	23,534	-60.2			
20						

SALT LAKE CITY, UTAH (869 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,288	6.6	59	198	1.9
1,000	31	116				
950	31	550				
900	31	1,000				
850	31	1,470	6.1	50	207	2.7
800	31	1,963	2.4	52	241	3.7
750	31	2,489	- 1.8	58	253	8.0
700	31	3,025	- 6.1	63	284	10.7
650	31	3,609	-10.3	61	279	12.2
600	31	4,213	-14.4	61	279	17.5
550	31	4,873	-18.7	57	282	20.0
500	31	5,570	-23.6	55	287	23.9
450	31	6,344	-29.0	54	286	28.2
400	31	7,164	-34.8	56	289	33.8
350	31	8,082	-41.7		295	41.4
300	31	9,108	-49.3		294	46.8
250	30	10,275	-56.7		289	48.6
200	29	11,680	-58.5		284	46.2
175	29	12,523	-56.4		283	39.6
150	28	13,503	-56.1		278	35.2
125	28	14,658	-57.2		284	31.1
100	28	16,063	-58.7		280	22.7
80	28	17,456	-60.1		279	16.9
60	28	19,245	-61.0		286	9.7
50	25	20,371	-61.3		291	7.4
40	24	21,755	-60.7		292	6.4
30	20	23,550	-59.4		304	9.3
20						

SAN ANTONIO, TEX. (984 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	243	16.8	63	110	2.9
1,000	31	108				
950	31	550	15.8	59	113	7.0
900	31	1,003	13.4	59	193	3.5
850	31	1,482	10.9	53	241	8.0
800	31	1,985	7.9	48	258	13.0
750	31	2,523	4.9	44	267	17.3
700	31	3,074	1.3	41	265	22.9
650	31	3,672	- 2.5	40	265	28.0
600	31	4,296	- 6.7	42	269	29.7
550	31	4,969	-11.0	39	270	32.6
500	31	5,695	-16.1	38	272	40.2
450	31	6,487	-22.0		272	38.7
400	31	7,335	-28.5		273	44.7
350	31	8,275	-35.7		273	50.3
300	31	9,329	-43.1		273	57.7
250	30	10,535	-50.8		272	64.3
200	29	11,964	-55.9			
175	29	12,807	-57.7			
150	28	13,777	-59.6			
125	24	14,907	-62.6			
100	24	16,266	-66.6			
80	20	17,602	-67.4			
60	17	19,334	-65.9			
50	15	20,444	-64.6			
40	15	21,814	-61.1			
30	12	23,592	-57.5			
20						

SAN DIEGO, CALIF. (1000 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	124	13.3	83	298	2.7
1,000	31	127			311	3.5
950	31	564	12.1	62	313	5.1
900	31	1,010	10.4	56	301	4.7
850	31	1,484	8.1	52	304	5.4
800	31	1,983	5.9	40	300	7.0
750	31	2,515	3.1	34	305	9.7
700	31	3,065	.0	32	306	12.4
650	31	3,663	- 3.4	29	304	16.1
600	31	4,284	- 7.5	31	302	18.6
550	31	4,960	-12.1	35	298	23.1
500	31	5,679	-17.2	35	295	25.4
450	31	6,469	-23.0	36	290	27.8
400	31	7,313	-29.6	38	286	29.7
350	30	8,248	-37.1		287	34.2
300	30	9,294	-45.4		282	39.6
250	30	10,484	-54.0		288	47.4
200	30	11,897	-59.2		285	52.1
175	30	12,734	-58.6		281	52.8
150	30	13,702	-59.0		277	52.8
125	30	14,839	-61.2		279	46.6
100	30	16,213	-64.4		280	34.8
80	29	17,573	-65.6		279	26.8
60	27	19,328	-64.8		287	13.6
50	24	20,450	-63.9		279	8.9
40	21	21,830	-61.2		289	4.7
30	20	23,632	-57.3		270	7.8
20	14	26,231	-51.7		273	16.1

SAN JUAN, P. R. (1016 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	6	22.5	81	116	3.9
1,000	31	147	22.5	73	104	5.6
950	31	599	19.8	73	100	6.8
900	31	1,057	16.8	72	103	5.6
850	31	1,542	13.7	73	93	5.4
800	31	2,051	11.8	58	79	4.3
750	31	2,599	10.5	34	75	4.5
700	31	3,162	8.4		60	2.1
650	31	3,783	5.5		321	4.5
600	31	4,420	1.8		276	3.3
550	31	5,116	- 2.7		261	7.0
500	31	5,863	- 7.7		270	8.7
450	31	6,682	-13.6		282	13.2
400	31	7,559	-20.0		282	18.1
350	31	8,533	-27.3		276	25.1
300	31	9,622	-35.5		276	33.6
250	31	10,864	-45.0		272	40.8
200	31	12,319	-55.6		271	43.1
175	31	13,157	-61.6		273	40.8
150	29	14,102	-67.3		268	35.7
125	25	15,185	-72.3		263	23.5
100	20	16,480	-78.0		256	11.7
80	20	17,745	-79.1		204	4.7
60	19	19,410	-71.4		81	5.2
50	19	20,503	-65.9		118	7.2
40	17	21,870	-61.9		132	5.2
30	15	23,672	-56.9		124	4.9
20						

SANTA MARIA, CALIF. (1009 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	74	11.6	82	301	6.2
1,000	31	146	11.5	78	312	7.4
950	31	578	11.2	67	340	9.3
900	31	1,026	9.4	60	357	8.5
850	31	1,498	6.9	54	353	9.5
800	31	1,994	4.5	44	342	10.1
750	31	2,525	1.9	39	329	11.8
700	31	3,071	- 1.1	38	319	14.8
650	31	3,661	- 4.7	39	309	17.5
600	31	4,283	- 8.7	39	304	19.8
550	31	4,955	-13.1	38	300	24.1
500	31	5,671	-18.2	41	302	27.0
450	31	6,457	-23.9	45	295	26.2
400	31	7,298	-30.4	41	293	24.7
350	31	8,233	-37.7		286	28.6
300	31	9,277	-45.8		288	38.1
250	31	10,466	-54.5		282	38.7
200	30	11,868	-59.7		279	41.2
175	29	12,707	-58.4			
150	29	13,677	-57.9			
125	29	14,822	-59.7			
100	29	16,205	-62.7			
80	25	17,571	-63.7			
60	24	19,346	-63.2			
50	23	20,465	-62.8			
40	22	21,840	-61.6			
30	20	23,637	-58.1			
20						

SANTA MONICA, CALIF. (1011 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	38	14.4	74	271	5.2
1,000	31	132	14.2	69	270	5.8
950	31	567	13.6	56	273	5.8
900	31	1,018	11.2	54	321	2.7
850	31	1,493	8.3	49	337	4.1
800	31	1,992	5.4	45	333	6.6
750	31	2,518	2.5	38	323	10.3
700	31	3,071	- .5	32	308	13.4
650	31	3,661	- 4.2	33	301	15.5
600	31	4,286	- 8.4	36	301	18.8
550	31	4,955	-13.0	38	296	21.0
500	31	5,675	-18.3	42	295	26.2
450	31	6,456	-24.1	45	287	28.4
400	31	7,302	-30.6	45	283	29.5
350	31	8,234	-38.1		286	33.6
300	31	9,275	-46.4		287	38.1
250	31	10,459	-55.1		289	43.5
200	31	11,864	-60.2		285	48.2
175	31	12,696	-59.6		284	48.8
150	31	13,661	-59.4		281	45.6
125	31	14,795	-61.5		281	41.0
100	30	16,170	-64.5		284	33.2
80	30	17,526	-65.4		283	24.5
60	30	19,281	-64.3		300	12.6
50	29	20,395	-63.4		306	7.4
40	28	21,769	-60.9		301	4.7
30	26	23,572	-56.4		269	6.8
20	19	26,186	-49.7		276	17.7
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S. STE. MARIE, MICH. (988 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	221	- 4.0	80	292	2.9
1,000	31	127				
950	31	534	- 3.8	60	325	3.5
900	31	959	- 5.9	59	308	4.9
850	31	1,405	- 7.4	57	302	5.8
800	31	1,875	- 9.0	55	291	7.2
750	31	2,378	-10.8	49	292	9.9
700	31	2,901	-12.6	46	292	13.0
650	31	3,471	-15.4	42	294	15.2
600	31	4,064	-19.1	42	283	16.9
550	31	4,709	-23.4	43	289	20.0
500	31	5,397	-27.9	40	285	22.0
450	31	6,153	-33.1	41	288	25.3
400	31	6,964	-38.8		286	30.7
350	31	7,868	-44.8		286	34.0
300	30	8,877	-51.3		280	38.1
250	30	10,048	-55.2		276	39.4
200	30	11,483	-51.5		276	37.7
175	30	12,351	-50.6		272	33.4
150	29	13,357	-51.2		266	29.3
125	28	14,541	-52.6		272	27.2
100	27	15,980	-54.6		273	24.3
80	23	17,403	-56.6		263	19.4
60	19	19,229	-58.3		263	14.8
50	19	20,375	-58.4		268	13.8
40	14	21,768	-58.5		261	9.7
30	10	23,589	-58.8			
20	5	26,131	-57.9			
15						
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*** SEATTLE, WASH. (1000 MB.)**

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	124	7.2	76	194	1.4
1,000	31	121			282	.6
950	31	543	5.6	69	199	7.0
900	31	982	2.4	73	200	11.7
850	31	1,441	- .7	74	205	15.3
800	31	1,922	- 3.6	71	215	15.7
750	31	2,437	- 6.5	67	229	15.9
700	31	2,966	- 9.4	62	240	14.8
650	31	3,540	-13.2	58	238	17.1
600	31	4,139	-17.1	55	240	16.7
550	31	4,788	-21.2	53	245	19.6
500	31	5,482	-26.4	50	247	21.0
450	31	6,239	-31.6	47	254	23.7
400	30	7,054	-38.0	47	257	26.8
350	30	7,960	-44.5		263	33.0
300	29	8,985	-51.4		265	37.3
250	29	10,149	-57.2		270	41.0
200	29	11,559	-55.9		273	35.9
175	29	12,410	-54.8		276	31.1
150	28	13,396	-54.1		277	27.8
125	28	14,565	-54.2		280	24.9
100	27	15,988	-55.8		283	18.5
80	27	17,400	-57.5		284	14.4
60	26	19,207	-58.8		300	11.7
50	24	20,352	-59.7		304	9.5
40	23	21,747	-60.4		313	8.7
30	22	23,541	-60.0		328	7.4
20	17	26,087	-58.4		310	8.2
15	16	27,902	-56.8		291	12.4
10	13	30,503	-53.2			

SHREVEPORT, LA. (1004 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	76	12.7	68	20	2.3
1,000	31	113			22	4.1
950	31	543	11.1	59	186	1.9
900	31	992	8.7	59	231	7.2
850	31	1,463	6.5	56	244	11.3
800	31	1,958	4.2	56	258	16.1
750	31	2,490	2.0	49	263	19.6
700	31	3,035	- 1.4	48	271	22.1
650	31	3,630	- 4.9	45	271	26.8
600	31	4,246	- 8.7	41	271	30.7
550	31	4,916	-13.3	38	270	33.4
500	31	5,633	-18.2	35	268	39.8
450	31	6,424	-23.8	36	266	43.1
400	31	7,260	-30.0	37	268	45.5
350	31	8,196	-37.1		268	51.9
300	31	9,244	-44.6		268	62.0
250	30	10,448	-51.5		263	72.8
200	30	11,876	-56.6		259	77.7
175	30	12,722	-56.3		261	75.2
150	30	13,696	-58.0		261	67.8
125	30	14,836	-61.3		262	64.3
100	30	16,208	-64.7		260	47.4
80	29	17,563	-66.0		264	31.1
60	28	19,307	-65.8		259	16.9
50	27	20,413	-64.4		248	14.0
40	22	21,786	-61.3		254	9.7
30	15	23,595	-58.0		263	7.8
20						
15						
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SPOKANE, WASH. (930 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	722	3.8	70	196	2.1
1,000	31	124				
950	31	547				
900	31	985	3.0	67	206	4.3
850	31	1,445	.1	69	229	8.0
800	31	1,928	- 3.1	67	241	10.1
750	31	2,445	- 6.4	66	244	11.3
700	31	2,971	- 9.9	64	252	12.4
650	31	3,548	-13.4	61	259	12.8
600	31	4,143	-17.2	58	264	15.3
550	31	4,794	-21.5	58	261	16.9
500	31	5,485	-26.2	53	271	20.8
450	31	6,246	-31.5	49	277	24.5
400	31	7,060	-37.6		280	27.0
350	31	7,966	-44.5		283	31.1
300	31	8,980	-51.5		284	35.9
250	31	10,146	-56.6		287	39.2
200	31	11,555	-56.1		286	34.2
175	31	12,408	-53.7		284	29.5
150	31	13,398	-53.4		284	27.2
125	31	14,570	-53.8		285	24.1
100	28	15,998	-55.7		290	21.4
80	28	17,413	-56.9		290	16.3
60	26	19,227	-57.9		293	10.7
50	24	20,371	-59.1		296	9.1
40	21	21,772	-59.2		306	5.8
30	12	23,575	-58.9		297	7.0
20	9	26,120	-58.0			
15						
10						

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

* 7 mb, 5 obs., 32,793 m., -48.2°C.

RAWINSONDE DATA

Average monthly values

Standard pressure surface (mb.)	SWAN ISLAND, W. I. (1013 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	10	25.4	79	114	8.9
1,000--	31	121	24.5	80	108	10.3
950----	31	572	21.1	82	116	13.4
900----	31	1,036	18.8	73	131	11.1
850----	31	1,525	16.4	59	130	8.5
800----	31	2,039	14.3	49	123	4.9
750----	31	2,590	11.6	41	112	2.5
700----	31	3,154	8.9	29	130	1.6
650----	29	3,772	6.0		296	1.2
600----	29	4,414	2.0		276	3.3
550----	29	5,111	- 2.5		288	5.8
500----	28	5,859	- 7.5		269	9.7
450----	28	6,680	-13.4		265	15.2
400----	26	7,556	-19.9		261	20.0
350----	25	8,530	-27.7		260	25.3
300----	25	9,617	-36.2		261	33.2
250----	25	10,855	-45.6		253	38.7
200----	24	12,304	-56.0		242	50.9
175----	23	13,142	-61.6		244	56.1
150----	19	14,084	-66.6		252	46.6
125----	16	15,171	-71.7		256	38.1
100----	13	16,475	-76.8		263	21.8
80-----	12	17,744	-79.3		264	8.4
60-----	11	19,408	-69.9		78	11.8
50-----	11	20,507	-64.7		93	9.7
40-----	11	21,878	-62.3		102	9.1
30-----	9	23,673	-56.6			
20-----						

Standard pressure surface (mb.)	TAMPA, FLA. (1015 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	7	17.4	79	219	1.9
1,000--	31	134	17.9	72	233	3.5
950----	31	577	16.3	64	246	8.9
900----	31	1,030	13.8	58	252	10.7
850----	31	1,509	11.0	56	256	11.8
800----	31	2,013	8.8	46	261	15.9
750----	31	2,556	6.0	43	262	20.4
700----	31	3,106	3.3	35	263	22.3
650----	31	3,713	.0		268	24.7
600----	31	4,339	- 4.1	35	268	27.0
550----	31	5,022	- 8.6		265	31.5
500----	31	5,751	-13.3		267	35.9
450----	31	6,555	-19.1		267	37.7
400----	31	7,410	-25.5	39	267	42.7
350----	31	8,365	-32.6		269	52.1
300----	31	9,433	-41.0		272	56.5
250----	30	10,651	-49.1		272	59.6
200----	28	12,090	-55.9			
175----	26	12,935	-58.2			
150----	23	13,893	-61.4			
125----	21	15,010	-64.6			
100----	19	16,358	-68.9			
80-----	18	17,686	-69.8			
60-----	16	19,415	-66.7			
50-----	15	20,523	-65.7			
40-----	14	21,901	-60.1			
30-----	11	23,699	-56.5			
20-----	5	26,361	-48.2			

Standard pressure surface (mb.)	TATOOSH ISLAND, WASH. (1009 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	31	6.7	83	135	8.0
1,000--	31	102			143	6.2
950----	31	523	4.0	76	172	12.2
900----	31	958	1.2	77	190	15.5
850----	31	1,415	- 1.8	77	198	15.9
800----	31	1,895	- 4.3	73	207	14.8
750----	31	2,404	- 6.9	65	217	15.3
700----	31	2,936	-10.0	61	224	16.9
650----	31	3,506	-13.2	58	228	18.6
600----	30	4,110	-16.5	55	233	18.8
550----	30	4,759	-20.8	50	238	21.4
500----	30	5,455	-25.5	47	238	25.1
450----	30	6,214	-31.1	44	240	27.0
400----	29	7,032	-37.4		253	26.4
350----	29	7,940	-44.1		252	36.5
300----	29	8,958	-50.8		265	42.0
250----	28	10,131	-56.0		270	43.9
200----	27	11,548	-55.3		275	37.1
175----	27	12,404	-53.4		277	34.2
150----	27	13,397	-52.8		279	29.1
125----	27	14,572	-53.5		286	24.7
100----	27	16,000	-55.3		284	20.6
80-----	27	17,417	-56.9		288	15.5
60-----	23	19,232	-57.9		287	10.5
50-----	21	20,379	-59.0		301	10.7
40-----	18	21,785	-59.7		315	7.2
30-----	11	23,596	-59.6		334	8.5
20-----						

Standard pressure surface (mb.)	TOPEKA, KANS. (982 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	270	6.1	62	89	2.5
1,000--	31	120				
950----	31	542	5.4	57	91	3.7
900----	31	981	2.6	61	137	1.6
850----	31	1,442	.3	64	260	4.9
800----	31	1,926	- 1.4	63	276	9.5
750----	31	2,447	- 3.1	55	285	14.0
700----	31	2,982	- 6.0	53	292	17.5
650----	31	3,563	- 9.5	48	294	19.8
600----	31	4,172	-13.4	45	295	20.4
550----	31	4,831	-17.5	41	296	24.5
500----	31	5,535	-22.1	40	294	26.6
450----	31	6,306	-27.8	40	294	28.6
400----	31	7,135	-34.5	39	295	29.5
350----	31	8,053	-41.7		290	33.4
300----	31	9,079	-49.2		287	41.2
250----	31	10,253	-56.0		278	44.7
200----	31	11,666	-55.7		271	49.7
175----	30	12,515	-54.2		272	47.8
150----	30	13,501	-54.6		271	44.7
125----	30	14,662	-56.4		270	39.4
100----	30	16,069	-58.6		271	34.8
80-----	28	17,460	-60.2		271	24.1
60-----	26	19,249	-60.7		276	17.3
50-----	22	20,380	-60.5		263	11.3
40-----	19	21,769	-59.7		246	7.4
30-----	14	23,567	-58.3		250	8.5
20-----						

Standard pressure surface (mb.)	TUCSON, ARIZ. (923 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	781	17.5	33	279	4.3
1,000--	31	90				
950----	31	536				
900----	31	999	16.8	28	283	7.6
850----	31	1,482	12.6	34	270	9.1
800----	31	1,986	8.2	40	270	9.7
750----	31	2,521	3.8	44	258	8.4
700----	31	3,071	- .6	46	265	7.2
650----	31	3,663	- 4.2	38	279	10.1
600----	30	4,287	- 8.0	33	290	14.2
550----	30	4,959	-12.2	31	297	18.8
500----	30	5,679	-17.1		296	24.1
450----	30	6,468	-22.7		295	30.9
400----	30	7,313	-29.3		293	33.4
350----	29	8,251	-36.7		300	39.8
300----	29	9,299	-44.6		293	44.5
250----	28	10,492	-52.9		286	48.4
200----	28	11,908	-58.1		283	55.4
175----	28	12,749	-57.4		280	51.3
150----	28	13,721	-58.0		280	52.4
125----	27	14,864	-60.7		280	45.3
100----	27	16,240	-64.1		276	33.6
80-----	27	17,599	-65.6		278	24.9
60-----	26	19,349	-64.5		277	14.4
50-----	26	20,465	-62.9		278	8.7
40-----	25	21,848	-59.8		268	5.2
30-----	20	23,662	-56.4		260	6.8
20-----	7	26,282	-50.2			

Standard pressure surface (mb.)	WASHINGTON, D. C. (1004 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	88	6.5	63	345	1.9
1,000--	31	121			319	.8
950----	31	542	4.6	57	308	7.2
900----	31	979	2.3	59	302	9.5
850----	31	1,439	.4	59	290	13.0
800----	31	1,923	- 1.9	60	289	9.1
750----	31	2,441	- 4.5	59	285	16.7
700----	31	2,974	- 7.3	57	284	20.2
650----	31	3,554	-10.5	51	279	23.7
600----	31	4,160	-13.8	46	270	26.6
550----	31	4,818	-17.9	43	270	31.3
500----	31	5,521	-22.6	38	271	38.1
450----	31	6,296	-27.8		267	42.9
400----	31	7,121	-33.6		268	51.7
350----	31	8,043	-40.2		266	55.4
300----	31	9,076	-47.1		264	61.0
250----	31	10,263	-52.4		266	65.7
200----	31	11,697	-53.5		271	67.8
175----	31	12,554	-53.5		265	61.4
150----	31	13,541	-54.8		266	60.6
125----	30	14,698	-56.5		265	50.9
100----	29	16,106	-59.6		266	36.5
80-----	28	17,493	-60.8		275	31.9
60-----	28	19,278	-61.1		264	13.6
50-----	27	20,412	-60.8		261	13.6
40-----	27	21,800	-59.8		265	10.9
30-----	20	23,592	-58.1		266	8.9

Standard pressure surface (mb.)	WINNEMUCCA, NEV. (867 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	1,310	6.6	56	260	2.1
1,000--	30	122				
950----	30	551				
900----	30	1,003				
850----	30	1,475	6.7	45	243	3.1
800----	30	1,969	2.6	49	266	7.4
750----	30	2,492	- 1.7	56	266	9.5
700----	30	3,032	- 6.0	62	271	12.2
650----	30	3,612	-10.3	67	275	15.2
600----	30	4,220	-14.1	63	279	19.0
550----	30	4,879	-18.4	60	279	24.1
500----	30	5,578	-23.1	56	285	28.7
450----	29	6,353	-28.2	50	290	30.7
400----	29	7,176	-34.1	46	292	34.2
350----	29	8,096	-41.1		294	38.5
300----	29	9,125	-49.1		293	43.7
250----	29	10,297	-57.0		288	46.2
200----	29	11,698	-58.8		287	43.7
175----	28	12,541	-57.0		293	40.2
150----	28	13,519	-55.9		286	34.0
125----	28	14,676	-56.7		284	29.3
100----	27	16,081	-59.2		282	21.0
80-----	26	17,471	-60.4		287	19.2
60-----	26	19,262	-60.8		291	11.3
50-----	25	20,390	-61.3		297	9.1
40-----	24	21,778	-60.8		299	8.2
30-----	21	23,578	-59.2		285	7.6

Standard pressure surface (mb.)	YAKUTAT, ALASKA (1006 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	12	2.9	77	114	3.1
1,000--	31	61			114	4.1
950----	31	483	1.0	65	110	5.4
900----	31	908	- 1.6	64	122	8.0
850----	31	1,361	- 4.5	64	127	8.9
800----	31	1,835	- 7.0	63	133	9.3
750----	31	2,338	-10.8	61	133	9.1
700----	31	2,861	-13.9	57	138	8.9
650----	31	3,427	-17.4	57	158	6.6
600----	31	4,016	-21.1	53	162	8.2
550----	31	4,657	-25.6	50	158	8.5
500----	31	5,336	-30.4	46	163	7.6
450----	31	6,085	-35.9		168	9.3
400----	31	6,885	-41.9		171	8.7
350----	31	7,776	-47.8		184	8.2
300----	31	8,779	-52.9		191	9.9
250----	29	9,941	-53.2		196	10.1
200----	28	11,377	-50.0		221	9.5
175----	27	12,249	-48.8		227	8.5
150----	26	13,258	-48.6		220	12.2
125----	22	14,451	-48.6		223	11.7
100----	19	15,928	-49.2		256	9.7
80-----	16	17,385	-51.1		272	9.1
60-----	12	19,235	-53.2			
50-----	7	20,371	-54.2			
40-----						
30-----						

Standard pressure surface (mb.)	YUMA, ARIZ. (999 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	105	21.8	33	266	4.3
1,000--	31	96			294	3.1
950----	31	535	18.4	34	280	7.0
900----	31	998	14.6	37	282	7.2
850----	31	1,478	10.7	38	293	5.2
800----	31	1,979	6.8	39	299	7.8
750----	31	2,510	3.5	35	303	9.1
700----	31	3,063	- .1	34	310	10.9
650----	31	3,654	- 3.6	31	316	13.6
600----	31	4,279	- 7.7	33	307	15.7
550----	31	4,951	-12.3		312	22.0
500----	31	5,671	-17.6		304	21.4
450----	29	6,457	-23.2		299	26.8
400----	27	7,307	-29.6		295	30.9
350----	26	8,243	-37.3		298	32.4
300----	24	9,277	-45.9		312	40.4
250----	19	10,478	-54.2		300	42.5
200----	15	11,874	-58.7		305	43.7
175----	11	12,739	-57.9		303	43.7
150----	11	13,708	-58.8		301	45.3
125----	9	14,865	-61.7			
100----	6	16,249	-64.7			
80-----	5	17,598	-66.9			
60-----						
50-----						
40-----						
30-----						

Note: All observations scheduled at 0300, G.C.T. except at Mazatlan, Merida and Veracruz, where they are taken near 0200, G.C.T. "Number of observations" refers to those of dynamic height only. Temperature, humidity or wind data may be missing for one or more pressure surfaces of some observations. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Relative humidity data are not published for standard pressure surfaces having less than 16 actual observations.

Relative humidity data beginning with October 1, 1948, were computed and expressed in these tables on the basis of vapor-pressure over water. Upper air values of relative humidity at levels with temperatures less than 0°C, have formerly been computed and expressed on the basis of the vapor-pressure over ice. All relative humidity observations are obtained by electric hygrometer and have been adjusted to compensate for the value occurring below the operating range of the humidity element.

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

SOLAR RADIATION DATA

Solar radiation intensities, tabulated in langleys per minute on a surface normal to the direction of the sun.

MARCH 1957

Date	Sun's zenith distance								
	A.M.				0.0°	P.M.			
	78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°
	BLUE HILL, MASS.								
	Air mass								
	4.89	3.92	2.94	1.96	0.98	1.96	2.94	3.92	4.89
Mar.									
3-----	----	----	----	----	----	1.23	1.08	0.97	0.85
4-----	0.86	0.94	1.07	1.21	1.33	1.25	1.08	.95	.87
5-----	.90	1.00	1.13	1.29	1.39	1.31	1.15	1.03	.93
6-----	.95	1.04	1.14	1.25	1.36	----	----	----	----
11----	----	----	----	----	----	1.29	1.12	----	----
13----	K.68	K.81	K.95	K1.10	----	----	----	----	----
14----	K.11	K.20	K.33	K.67	----	----	----	----	----
15----	----	----	----	----	----	1.07	----	----	----
16----	----	----	----	----	----	----	.97	.87	.74
17----	.74	.86	1.00	1.13	----	1.09	.93	.79	.70
18----	.76	.86	1.00	1.20	1.33	----	----	----	----
21----	----	----	----	----	1.36	1.16	.95	----	----
22----	----	.87	1.01	1.19	----	----	----	----	----
24----	----	----	----	1.25	1.42	1.24	1.08	.94	.82
25----	----	1.07	1.16	1.31	1.43	1.26	1.10	----	----
28----	----	----	----	1.05	----	----	----	----	----
31----	.92	1.02	1.15	1.29	1.43	1.26	1.10	.99	.91
Averages	.74	.87	.99	1.16	1.38	1.22	1.06	.93	.83
	WASHINGTON, D. C. (WBCO)								
	Air mass								
	5.00	4.00	3.00	2.00	1.00	2.00	3.00	4.00	5.00
Mar.									
2-----	MK0.59	MK0.66	MK0.79	MK1.14	----	----	----	----	----
3-----	SK.85	SK.96	SK1.08	SK1.28	SK1.39	SK1.24	SK1.08	SK0.89	SK0.80
4-----	SH.75	SH.86	----	SH1.24	SH1.35	----	----	----	----
5-----	----	----	----	SK1.10	SK1.31	----	----	----	----
10----	SH.64	SH.80	----	SH1.19	SH1.42	MK1.11	MK.72	MK.50	MK.39
13----	SH.77	----	----	----	----	----	----	----	----
14----	SH.65	.74	.89	1.05	----	----	----	----	----
16----	.89	.95	1.10	1.27	----	----	1.10	.97	.82
21----	----	.59	.75	----	----	----	.88	----	----
23----	.77	.95	1.04	1.25	1.60	1.20	----	.80	.66
31----	.69	.84	.99	1.26	----	----	----	----	----
Averages	.71	.82	.95	1.20	1.41	1.18	.94	.79	.67
	TABLE MOUNTAIN, CALIF.								
	Air mass								
	3.85	3.08	2.31	1.54	0.77	1.54	2.31	3.08	3.85
Mar.									
3------	----	----	----	SH1.53	----	----	----	----	----
12-----	----	----	----	1.49	----	----	----	----	----
14-----	----	----	----	MH1.47	----	----	----	----	----
18-----	----	----	----	MH1.44	----	----	----	----	----
20-----	----	----	----	H1.41	----	----	----	----	----
22-----	----	----	----	MH1.51	----	----	----	----	----
23-----	1.20	1.29	1.39	SH1.51	----	----	----	----	----
24-----	1.11	1.20	1.31	MH1.43	----	----	----	----	----
Averages	1.16	1.24	1.35	1.47	----	----	----	----	----

Date	Sun's zenith distance								
	A.M.				0.0°	P.M.			
	78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°
	MADISON, WIS.								
	Air mass								
	4.84	3.87	2.90	1.94	0.97	1.94	2.90	3.87	4.84
Mar.									
2-----	----	----	----	----	S1.46	----	----	----	----
8-----	S0.95	S1.04	S1.17	S1.32	----	----	----	----	----
12*---	----	----	----	----	S1.33	----	----	----	----
13----	----	----	----	----	M1.08	Ci	----	----	----
16----	D.72	D.85	S1.02	S1.30	S1.42	----	----	----	----
17----	----	----	S1.20	S1.30	----	----	----	----	----
20----	I .88	M1.02	M1.14	M1.33	----	M1.36	M1.22	M1.10	M0.99
27----	M.85	M.96	M1.08	M1.28	----	----	----	----	----
28-31	Instrument Inoperative; also at Noon of 20th								
Averages	.85	.97	1.12	1.31	1.32	1.36	1.22	1.10	.99
	TUCSON, ARIZ.								
	Air mass								
	4.56	3.65	2.74	1.83	0.91	1.83	2.74	3.65	4.56
Mar.									
2-----	----	----	----	1.17	1.38	----	----	----	----
8-----	0.98	1.07	1.20	1.36	1.52	1.37	1.18	1.00	0.90
11----	.91	1.00	1.14	1.31	1.45	1.31	1.16	----	----
12----	.93	1.04	1.16	1.31	1.46	1.28	1.19	----	----
14----	.82	.93	1.06	1.23	1.46	1.27	1.03	.88	.77
17----	.90	1.00	1.13	1.32	1.46	----	----	----	----
23----	1.01	1.10	1.23	1.38	1.55	1.36	----	----	----
24----	1.06	1.17	1.28	1.42	1.57	1.35	----	----	----
25----	.99	1.08	1.21	1.32	1.53	----	----	----	----
30----	----	----	----	1.26	1.51	----	----	----	----
31----	.90	1.01	1.13	1.30	----	----	----	----	----
Averages	.94	1.04	1.17	1.31	1.49	1.32	1.14	.94	.84
	ALBUQUERQUE, N. MEX.								
	Air mass								
	4.19	3.35	2.51	1.67	0.84	1.67	2.51	3.35	4.19
Mar.									
1-7---	----	----	----	----	Cloudy	----	----	----	----
8-----	----	----	1.12	1.24	----	----	----	----	----
9-----	0.89	0.98	1.09	----	----	----	----	----	----
10----	----	----	----	----	Cloudy	----	----	----	----
11----	.93	1.02	----	----	1.39	1.29	1.16	1.04	0.95
12----	.89	.97	1.10	1.23	1.34	1.19	1.08	----	----
13----	.87	.96	1.08	1.18	----	----	----	----	----
14----	.95	1.03	1.13	1.24	1.36	----	----	----	.96
15-20	----	----	----	----	Cloudy	----	----	----	----
21----	.87	----	----	1.17	----	----	----	----	----
24----	----	----	----	----	1.33	D1.08	D.95	D.73	D.71
25----	M	M	1.05	1.24	1.34	----	----	----	----
26----	----	----	----	----	Cloudy	----	----	----	----
27----	.86	.94	1.03	1.15	1.33	1.20	1.04	.93	.85
28-31	----	----	----	----	Cloudy	----	----	----	----
Averages	.89	.98	1.09	1.21	1.35	1.19	1.06	.90	.87

K	smoke
D	dust
I	intense haze - indeterminable
M	moderate haze - indeterminable
S	slight haze - indeterminable
*	Dust aloft on the 12th
SH	slight haze
SK	slight smoke
MK	moderate smoke
H	haze
MH	moderate haze

Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station listed in Table 30 appears in Monthly Weather Review, Volume 75, No. 3, March 1947, p. 47.

SOLAR RADIATION DATA

MARCH 1957

Daily totals and average daily totals by weeks of solar and sky radiation, plus the radiation reflected from the ground, as received on a vertical surface facing south at Blue Hill, Mass. during the month

								Avg								Avg								Avg
Date	5	6	7	8	9	10	11		12	13	14	15	16	17	18		19	20	21	22	23	24	25	
Langleys	579	510	64	31	69	230	547	290	86	262	250	283	108	431	499	274	128	31	525	456	453	500	488	369
Date	26	27	28	29	30	31	1																	
Langleys	105	307	352	191	126	478	434	285																

Daily totals and average daily totals by weeks of diffuse (sky) radiation as received on a horizontal surface at Blue Hill, Mass. during the month

								Avg								Avg								Avg
Date	5	6	7	8	9	10	11		12	13	14	15	16	17	18		19	20	21	22	23	24	25	
Langleys	63	101	113	61	132	215	103	113	122	145	176	154	130	149	95	139	220	45	124	152	143	84	73	120
Date	26	27	28	29	30	31	1																	
Langleys	220	233	173	182	152	74	106	163																

Note: Langley is the unit used to denote one gram calorie per square centimeter.

NET RADIATION

Net radiation in langleys per day (midnight to midnight) at Raleigh, N. C., during the month

MARCH 1957

Date.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langleys. . .	*55	190	90	133	*90	*5	*91	*53	131	195	228	165	117	*121	*157	233	212	*33	*136	196	232	*-13	**	*146	*-12	*95	*237	234	239	247	288	144

* Estimated values owing to occurrence of rain during period. While rain is falling, radiation is assumed to be zero.

** Radiometer inoperative.

The measurement is made with a Beckman and Whitley net exchange radiometer over a plot of Bermuda grass. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the North Carolina State College at Raleigh. The instrument with which they were measured has not been checked by the Weather Bureau.

SOLAR RADIATION DATA

Table 33.--Daily totals and weekly averages of solar radiation (direct and diffuse) received on a horizontal surface, tabulated in langleys.

MARCH 1957

1957	Aklavik, MacKenzie	Albuquerque, N.Mex.	Annette, Alaska	Apalachicola, Fla.	Astoria, Oreg.	Atlanta, Ga.	Barrow, Alaska	Bethel, Alaska	Bismarck, N. Dak.	Blue Hill, Mass.	Boston, Mass.	Brownsville, Tex.	Canton Island Pacific Area	Caribou, Me.	Charleston, S. C.	China Lake, Calif.	Cleveland, Ohio	Columbia, Mo.	Davis, Calif.	Dodge City, Kans.	E. Lansing, Mich.	Edmonton, Alberta	El Paso, Tex.	Ely, Nev.	Fairbanks, Alaska	Ft. Worth, Tex.	Fresno, Calif.	Gainesville, Fla.	Glasgow, Mont.	Grand Junction, Colo.	Grand Lake, Colo.	Great Falls, Mont.	Greensboro, N. C.	Griffin, Ga.	Hatteras, N. C.	Indianapolis, Ind.	Ithaca, N. Y.	Lake Charles, La.
Mar. 5------	157	315	262	352	222	227	58	272	250	480	447	548	675	332	141	509	444	299	81	119	392	378	533	153	205	153	288	158	357	---	231	322	165	188	---	303	479	333
Mar. 6------	135	483	121	470	46	136	125	265	309	439	376	575	645	410	102	562	231	385	381	303	339	361	552	206	183	65	211	98	(439)	420	406	388	94	101	---	70	457	484
Mar. 7------	148	552	75	224	157	73	126	293	432	115	105	556	676	404	156	586	200	484	273	547	196	193	581	473	189	473	358	347	(331)	372	207	331	104	81	---	166	56	257
Mar. 8------	167	---	227	594	59	119	78	264	396	75	54	596	696	327	113	465	91	356	199	541	425	295	614	342	145	488	311	384	450	367	166	361	82	145	---	462	43	579
Mar. 9------	179	454	139	611	210	335	151	340	316	146	130	515	706	108	480	505	527	269	410	---	440	194	509	334	202	(470)	287	568	306	329	433	388	420	370	---	397	18	558
Mar. 10------	178	278	73	596	250	591	175	194	276	302	275	440	689	216	566	580	523	252	472	367	383	217	288	553	123	(193)	491	578	363	265	368	209	509	543	---	278	205	476
Mar. 11------	169	601	213	573	302	527	176	172	295	502	467	269	699	493	557	612	267	258	281	516	60	394	642	511	152	480	447	545	432	494	436	297	499	483	---	89	146	160
Average-------	162	447	159	489	178	287	127	243	325	294	265	500	684	327	302	545	326	329	299	399	320	290	531	368	171	(332)	342	383	(383)	374	321	328	267	273	---	253	201	407
Mar. 12------	198	591	262	456	304	375	130	(277)	429	151	115	440	679	423	459	630	492	486	312	446	458	366	637	373	---	466	269	540	384	412	511	122	317	334	---	488	308	154
Mar. 13------	189	556	75	250	340	115	156	233	209	307	256	611	(695)	266	266	628	468	490	507	494	406	382	600	368	166	(378)	568	337	366	315	268	400	276	94	---	491	269	515
Mar. 14------	131	622	408	297	47	135	241	76	373	312	267	460	(701)	169	436	647	497	300	486	510	426	395	649	554	252	444	510	516	451	542	561	491	122	149	---	377	470	536
Mar. 15------	139	534	410	578	351	533	171	202	517	341	256	147	701	400	441	656	525	541	229	520	213	365	597	335	122	527	269	378	487	537	583	394	299	427	---	510	143	521
Mar. 16------	137	488	419	569	244	618	(243)	247	495	185	121	301	707	71	513	---	563	495	478	527	384	215	457	274	196	(252)	598	495	403	162	392	322	550	566	---	487	489	543
Mar. 17------	95	609	181	581	469	581	194	161	409	455	420	264	693	317	569	---	553	179	356	488	524	---	721	530	117	(79)	364	540	358	234	415	131	517	541	---	317	251	31
Mar. 18------	105	378	296	155	419	73	156	138	261	530	486	466	(599)	316	269	680	132	45	523	522	269	370	665	418	---	(307)	564	239	227	362	513	542	204	73	---	91	297	364
Average------	142	540	293	413	311	347	(184)	(191)	385	326	274	384	(682)	280	422	648	461	362	413	501	383	349	618	407	171	(350)	449	435	382	366	463	343	326	312	---	394	318	381
Mar. 19------	183	---	76	585	325	476	191	---	338	244	232	272	584	515	467	404	106	115	533	539	51	392	223	426	141	(431)	451	569	507	554	532	533	377	479	---	33	19	441
Mar. 20------	155	135	203	561	298	640	---	315	507	47	34	159	696	395	592	652	89	508	503	61	310	154	525	478	185	111	533	522	494	532	548	530	469	581	---	319	22	175
Mar. 21------	150	497	186	58	350	193	280	206	499	500	498	604	681	217	495	644	403	133	556	78	508	107	643	232	213	405	598	273	320	390	584	321	514	191	---	301	191	549
Mar. 22------	188	363	86	602	345	126	296	358	104	509	474	623	662	527	---	703	359	117	565	28	411	378	461	378	277	(477)	593	525	314	217	371	362	66	106	---	187	439	566
Mar. 23------	174	373	93	480	163	573	257	337	92	534	490	559	697	564	378	711	591	74	512	255	534	427	529	629	207	(470)	---	508	503	472	469	545	272	538	---	407	514	259
Mar. 24------	262	646	367	37	401	75	282	432	166	572	536	606	224	378	51	690	551	11	412	230	513	333	706	573	---	(122)	552	46	440	598	643	372	308	58	---	118	580	581
Mar. 25------	228	658	173	367	469	462	257	298	513	575	538	603	708	488	---	618	75	56	348	551	250	349	696	233	297	210	525	466	506	516	588	283	77	417	---	---	453	591
Average-------	191	445	169	384	336	364	261	324	317	426	400	489	665	440	397	632	311	145	490	249	368	306	540	421	220	(318)	542	416	441	468	534	421	298	339	---	228	317	452
Mar. 26------	238	632	416	650	536	239	289	449	459	234	202	623	692	570	434	619	234	108	496	(639)	129	283	681	636	327	608	384	398	311	456	561	441	101	248	---	183	152	642
Mar. 27------	308	669	185	660	399	623	301	385	464	416	395	323	693	574	629	617	139	533	487	632	417	476	736	591	334	147	476	619	371	589	567	266	529	615	---	90	127	596
Mar. 28------	313	613	388	496	178	549	347	232	565	431	485	56	700	583	567	460	245	450	441	603	368	416	649	379	312	613	336	474	572	534	568	561	428	545	513	267	329	230
Mar. 29------	241	431	444	581	297	636	350	358	584	305	201	644	651	582	(547)	543	201	478	322	434	218	382	439	190	321	(482)	328	363	454	515	558	219	559	628	447	493	321	560
Mar. 30------	331	409	44	645	129	595	353	449	70	198	121	325	671	594	608	711	498	438	504	37	512	239	516	377	346	229	544	621	330	382	443	346	609	602	622	477	364	304
Mar. 31------	323	560	225	279	324	486	376	228	335	621	607	535	604	579	533	636	619	115	458	42	550	76	710	449	350	79	575	367	474	433	507	407	563	508	662	331	593	198
Apr. 1------	263	422	28	68	380	208	329	299	284	580	559	617	689	472	235	671	133	313	572	40	90	379	610	322	159	(580)	627	---	252	131	352	110	88	287	372	35	299	621
Average-------	288	534	247	483	321	477	335	343	394	398	367	446	671	565	(508)	608	295	348	469	(347)	326	322	620	421	307	(391)	467	474	395	434	508	336	411	490	523	268	312	450

Note.--Langley is the unit used to denote one gram calorie per square centimeter.
Values in parentheses are interpolated.

Table 33.--Daily totals and weekly averages of solar radiation (direct and diffuse) received on a horizontal surface, tabulated in langleys. - Continued

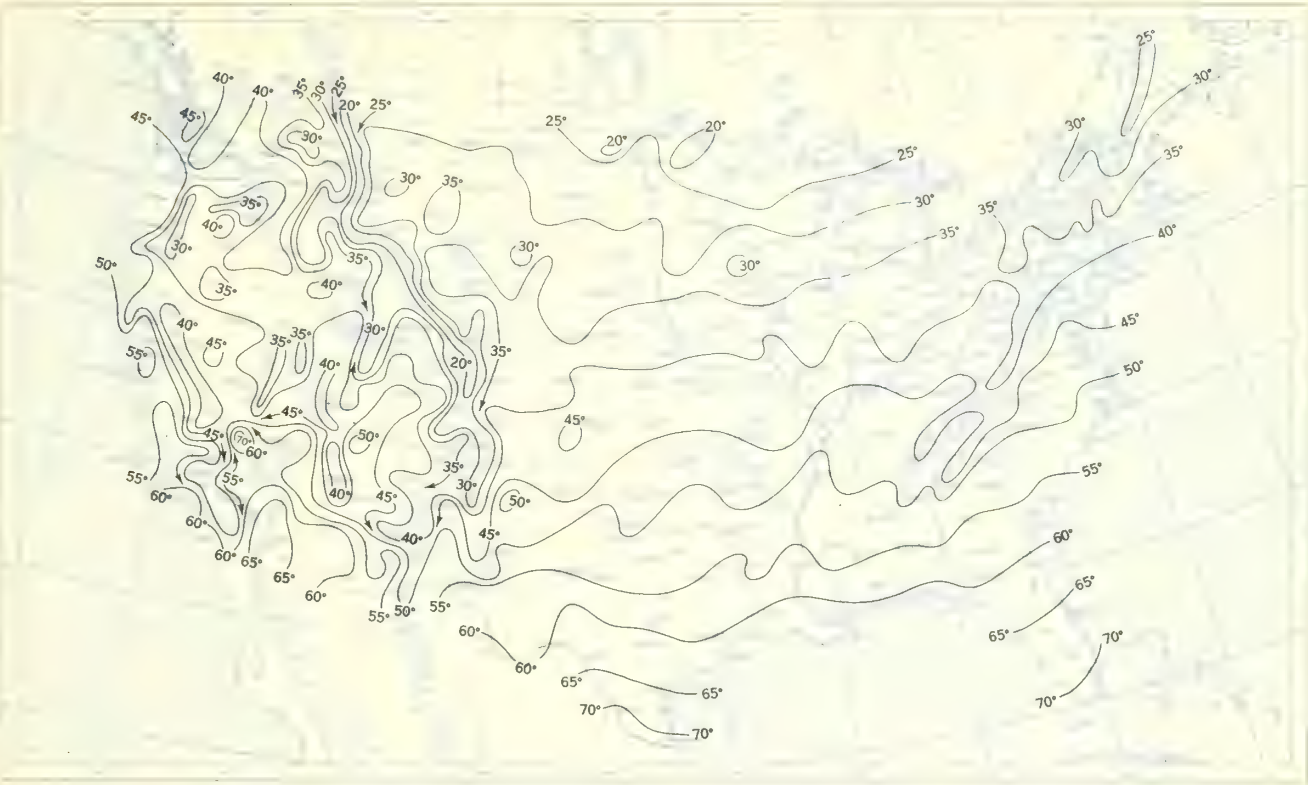
MARCH 1957

	Lander, Wyo.	Las Vegas, Nev.	Little Rock, Ark.	Los Angeles, Calif. (urban)	Los Angeles, Calif.	Madison, Wis.	Medford, Oreg.	Miami, Fla.	Midland, Tex.	Nashville, Tenn.	Newport, R. I.	New York, N. Y.	Oak Ridge, Tenn.	Oklahoma City, Okla.	Ottawa, Ontario	Phoenix, Ariz.	Portland, Me.	Prosser 4 NE, Wash.	Rapid City, S. Dak.	Riverside, Calif.	St. Cloud, Minn.	San Antonio, Tex.	Santa Maria, Calif.	S. Ste. Marie, Mich.	Sayville, N. Y.	Schenectady, N. Y.	Seabrook, N. J.	Seattle, Wash. (U. of W.)	Seattle-Tacoma, Wash.	Spokane, Wash.	State College, Pa.	Tampa, Fla.	Toronto, Ontario	Tucson, Ariz.	Upton, N. Y.	Wake Island Pacific Area	Washington, D. C. (Silver Hill Obs.)	Winnipeg, Manitoba
1957																																						
Mar. 5------	146	447	61	257	257	242	111	385	493	161	495	440	173	347	438	498	467	166	(202)	241	320	---	428	346	516	385	---	---	86	205	471	105	378	531	512	507	474	334
Mar. 6------	344	495	50	388	350	242	182	260	228	72	411	258	62	82	459	495	465	118	(536)	424	442	372	508	169	355	376	---	---	77	228	287	415	409	515	370	501	206	348
Mar. 7------	362	507	115	493	466	377	188	563	561	65	162	119	32	402	252	483	168	162	(487)	557	440	592	539	399	123	185	---	---	209	112	66	517	104	516	133	591	130	391
Mar. 8------	375	438	492	278	88	365	210	526	553	218	62	30	99	521	215	541	103	82	(539)	465	156	578	77	416	51	64	---	---	51	126	79	310	85	574	51	71	86	318
Mar. 9------	246	387	517	121	176	324	300	599	528	150	161	73	346	492	83	365	258	311	(282)	176	432	334	264	362	107	133	---	---	344	157	249	378	413	380	147	338	206	390
Mar. 10------	430	560	298	545	534	164	414	637	426	424	453	498	494	361	489	418	160	472	(335)	554	263	307	560	435	465	380	---	---	---	217	423	607	462	310	516	671	509	88
Mar. 11------	476	554	128	521	505	44	36	542	535	260	520	379	481	515	246	558	485	227	(525)	555	405	401	556	35	486	328	---	303	389	279	196	620	80	584	528	585	389	328
Average-------	340	484	237	372	339	251	206	502	475	193	324	257	241	389	312	480	301	220	(415)	425	351	431	419	309	300	264	---	---	193	189	253	422	276	487	322	466	285	314
Mar. 12------	311	476	411	303	456	431	259	515	568	362	166	175	469	504	199	558	94	265	(466)	335	432	279	462	194	196	126	261	---	232	178	358	504	358	585	205	550	340	426
Mar. 13------	285	578	490	571	552	(381)	354	529	565	400	474	442	214	529	449	535	390	486	(299)	516	287	365	574	383	500	188	436	241	352	235	189	414	267	590	477	606	448	299
Mar. 14------	619	592	333	546	535	143	150	587	594	227	450	366	311	550	434	576	286	259	(545)	605	40	472	576	340	512	354	476	39	47	310	510	413	411	598	496	635	480	341
Mar. 15------	515	551	554	536	525	242	71	297	561	483	339	53	---	561	89	565	103	135	(575)	527	220	454	338	214	117	220	166	126	140	206	178	361	265	585	141	605	142	394
Mar. 16------	414	261	490	503	555	450	367	604	545	501	318	533	591	297	297	457	76	289	(464)	386	501	179	596	324	521	380	492	---	132	203	534	541	280	538	519	659	498	452
Mar. 17------	511	400	35	192	177	446	202	574	366	354	509	507	550	120	327	550	436	475	(240)	375	514	365	286	327	543	301	311	210	375	133	499	628	303	611	534	469	451	450
Mar. 18------	540	547	378	391	326	56	403	484	471	77	515	434	106	544	513	514	422	424	(341)	429	220	554	415	449	496	276	350	322	428	282	322	310	416	550	523	553	275	334
Average-------	457	487	384	435	447	(307)	258	513	524	344	396	359	374	444	330	537	258	333	(419)	453	316	381	464	319	412	263	356	188	244	221	370	453	328	580	414	583	376	385
Mar. 19------	479	496	546	342	345	291	449	397	440	229	144	42	270	412	360	256	463	494	(568)	298	539	299	452	247	78	143	37	340	368	395	42	615	39	186	79	656	52	475
Mar. 20------	567	581	266	552	545	515	168	432	388	362	42	61	241	72	93	256	768	94	(588)	618	538	266	508	451	89	77	51	161	255	185	133	591	53	277	113	625	113	466
Mar. 21------	435	568	37	230	376	321	313	603	577	102	530	266	293	127	331	519	484	415	(522)	334	463	642	608	438	484	259	365	200	223	402	297	447	514	524	542	689	444	470
Mar. 22------	377	614	152	646	607	335	419	209	364	144	493	317	49	445	514	641	542	436	(148)	683	444	557	632	482	410	362	188	283	412	440	335	659	415	624	385	675	105	436
Mar. 23------	426	615	148	613	596	462	312	521	465	398	529	537	357	366	549	649	508	375	(372)	691	494	622	630	535	564	400	514	326	190	390	580	626	438	678	541	683	564	443
Mar. 24------	556	598	515	592	574	335	213	572	---	136	577	558	146	184	536	651	566	467	(598)	655	508	481	620	534	591	472	479	---	437	372	543	332	540	677	588	693	415	230
Mar. 25------	455	561	---	538	534	227	337	424	---	296	592	451	401	128	520	631	571	504	(606)	609	401	643	549	547	539	457	284	367	460	471	338	159	367	628	557	(700)	131	379
Average-------	471	576	278	502	511	355	316	451	447	238	415	319	251	248	415	515	557	398	(486)	555	484	501	571	462	394	310	274	280	335	379	324	490	338	514	401	(674)	260	414
Mar. 26------	454	489	---	488	479	210	526	168	---	194	204	90	182	620	562	597	227	527	417	524	508	608	537	538	212	189	64	420	431	515	129	568	59	613	224	704	335	500
Mar. 27------	616	602	---	511	490	(463)	484	671	---	137	429	82	138	126	552	644	624	423	(514)	589	450	326	527	491	187	205	80	138	449	411	177	653	300	645	288	664	234	282
Mar. 28------	574	274	520	350	388	(329)	275	508	---	435	243	395	501	607	547	365	461	251	622	423	511	645	525	432	295	442	204	215	157	474	238	591	407	460	243	598	202	181
Mar. 29------	377	382	533	548	539	447	86	283	---	378	333	321	437	537	554	449	425	237	592	574	348	539	560	473	336	299	341	241	152	156	229	275	278	349	341	577	462	186
Mar. 30------	323	622	396	(615)	617	516	148	639	---	444	276	415	525	261	587	639	232	447	305	642	575	117	640	587	543	314	402	---	251	154	422	616	560	658	523	683	386	273
Mar. 31------	280	442	167	(592)	585	251	215	554	---	253	638	607	506	408	577	622	614	436	490	634	205	499	631	337	669	490	594	---	387	152	643	465	568	657	660	673	624	480
Apr. 1------	142	535	409	640	623	75	535	375	---	104	587	439	76	323	190	464	494	581	208	652	408	658	662	458	550	403	378	---	355	350	298	121	151	573	(558)	640	161	458
Average-------	395	478	405	(535)	532	(327)	324	457	---	278	387	336	338	412	510	540	440	415	(450)	577	429	484	583	474	399	335	295	254	312	316	305	470	332	565	(405)	649	343	337

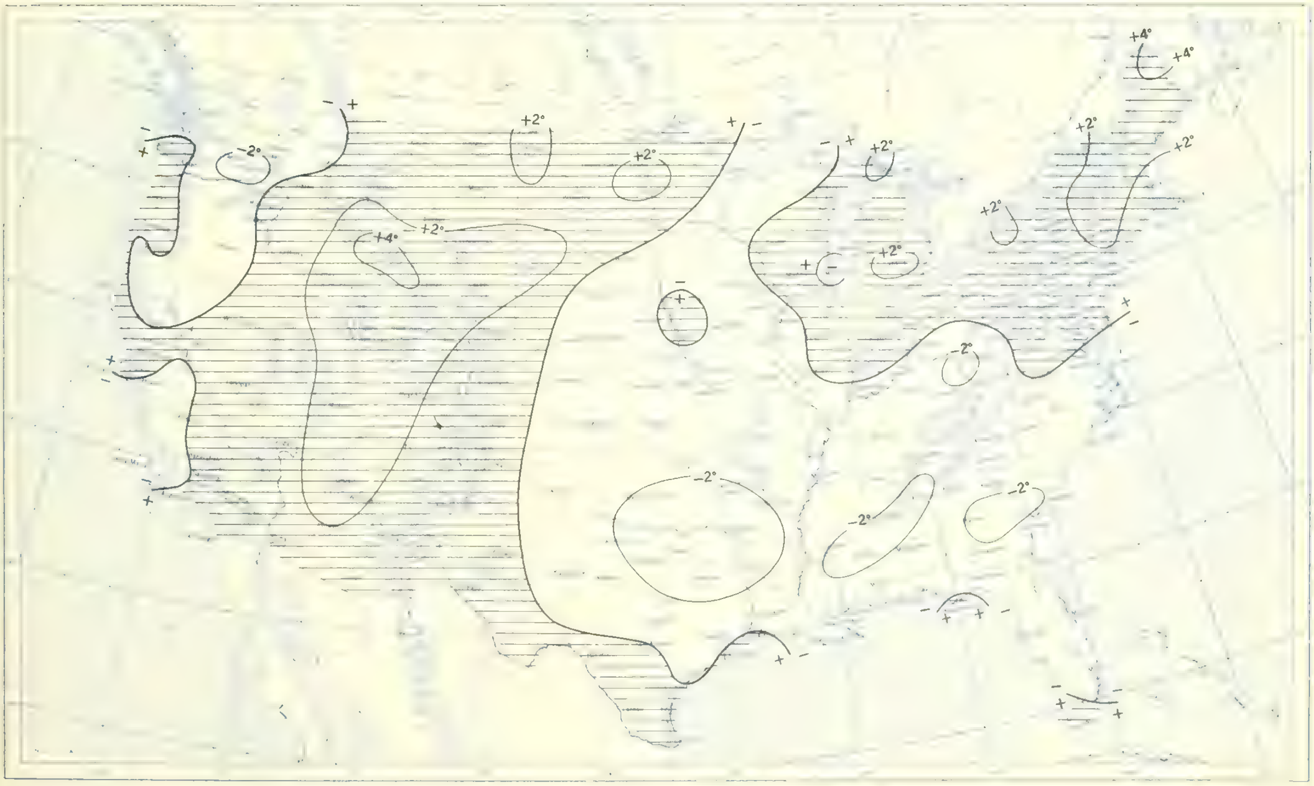
Note.--Langley is the unit used to denote one gram calorie per square centimeter.
Values in parentheses are interpolated.

NWRC, Asheville, N. C. --- 6/7/57 --- 1900

Chart I. A. Average Temperature (°F.) at Surface, March 1957.



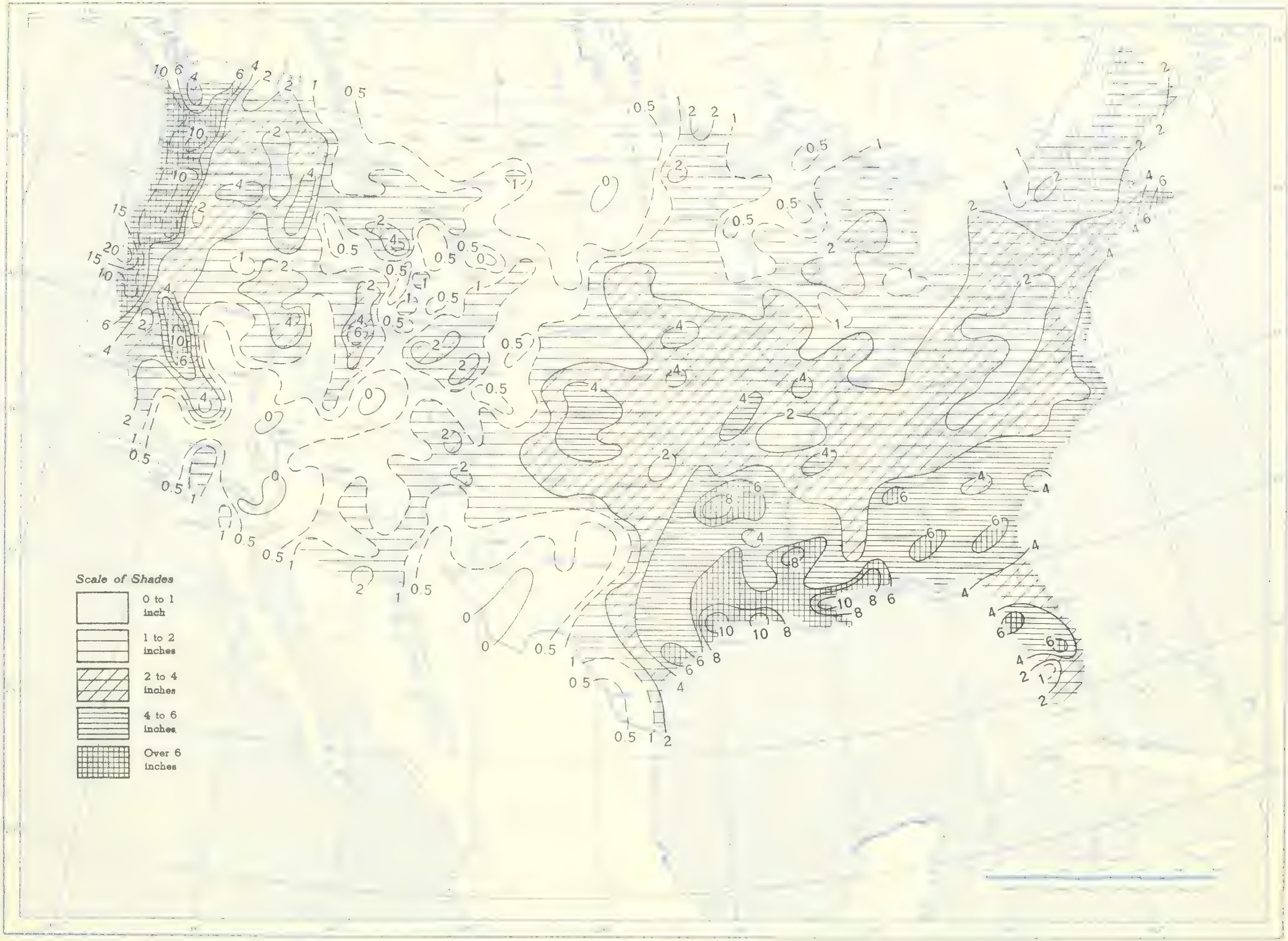
B. Departure of Average Temperature from Normal (°F.), March 1957.



A. Based on reports from over 900 Weather Bureau and cooperative stations. The monthly average is half the sum of the monthly average maximum and monthly average minimum, which are the average of the daily maxima and daily minima, respectively.

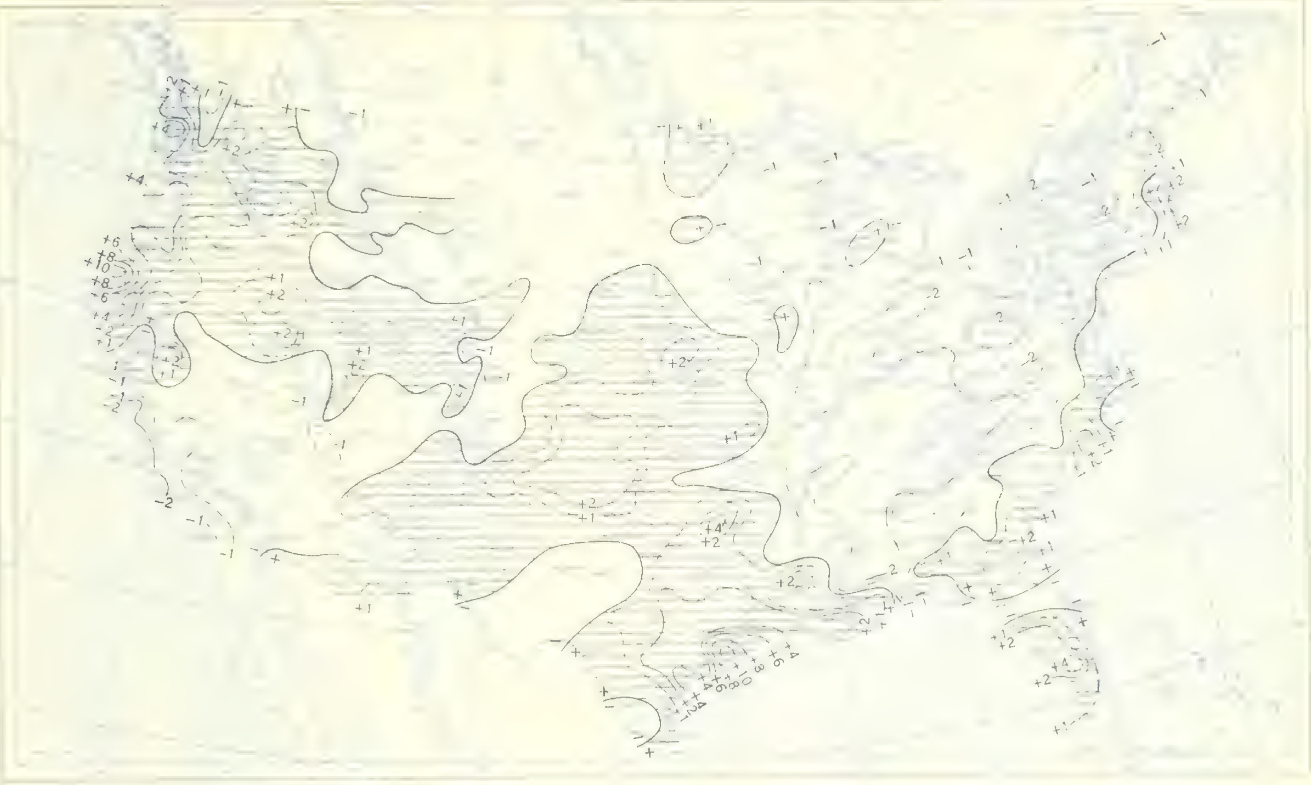
B. Departures from normal are based on the 30-yr. normals (1921-50) for Weather Bureau stations and on means of 25 years or more (mostly 1931-55) for cooperative stations.

Chart II. Total Precipitation (Inches), March 1957.

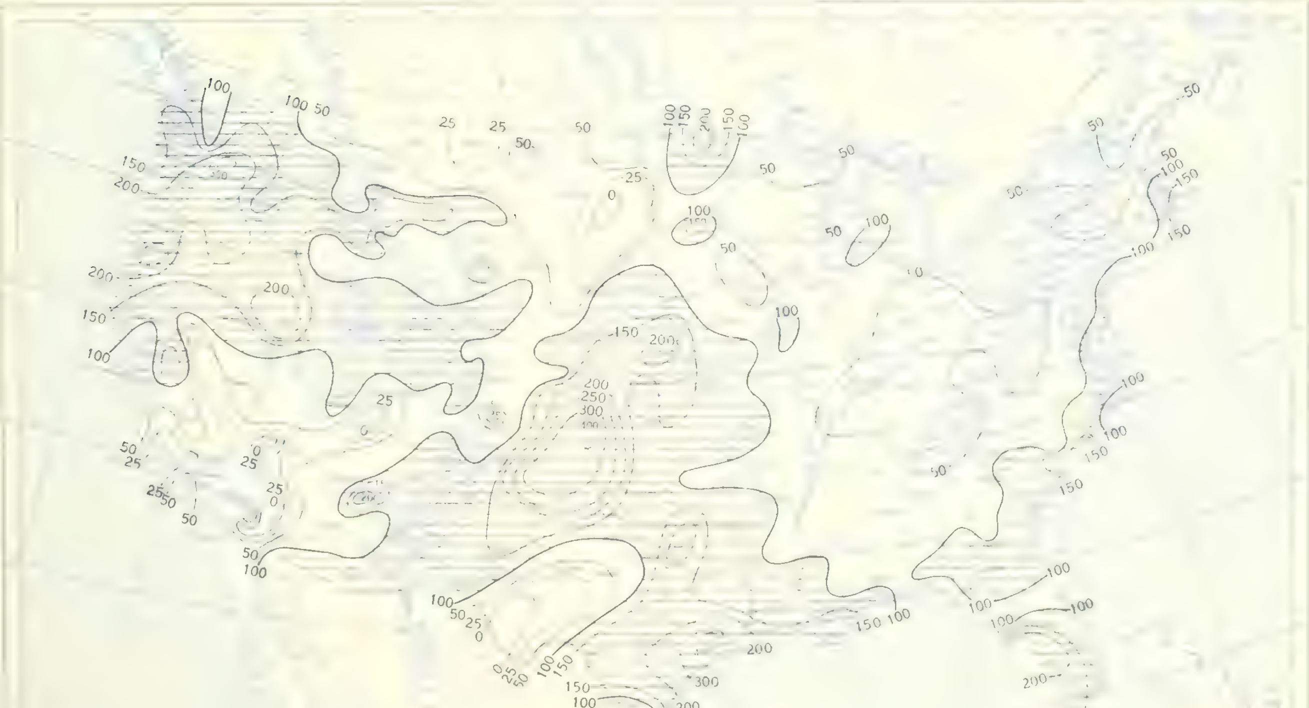


Based on daily precipitation records at about 800 Weather Bureau and cooperative stations.

Chart III. A. Departure of Precipitation from Normal (Inches), March 1957.

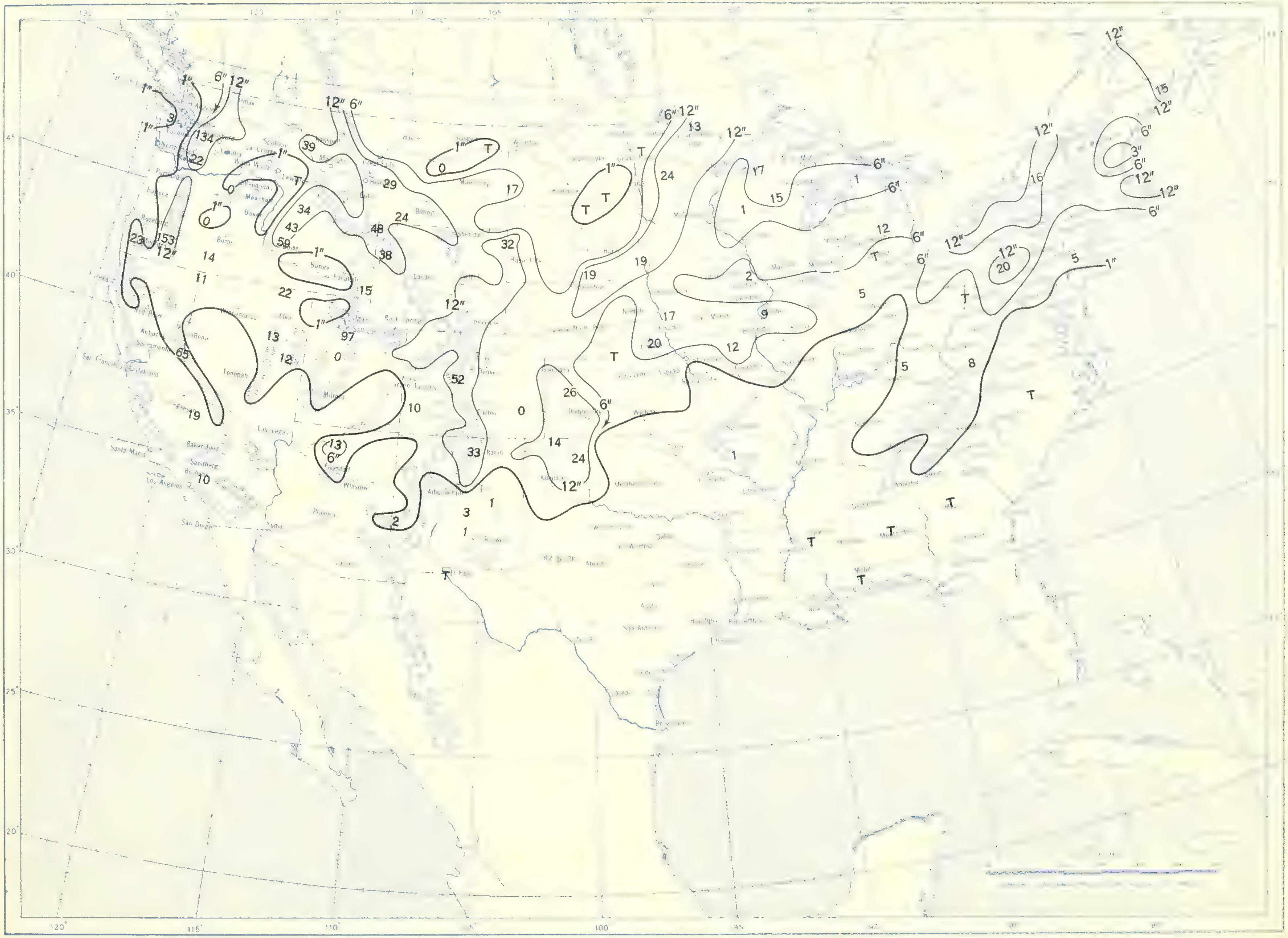


B. Percentage of Normal Precipitation, March 1957.



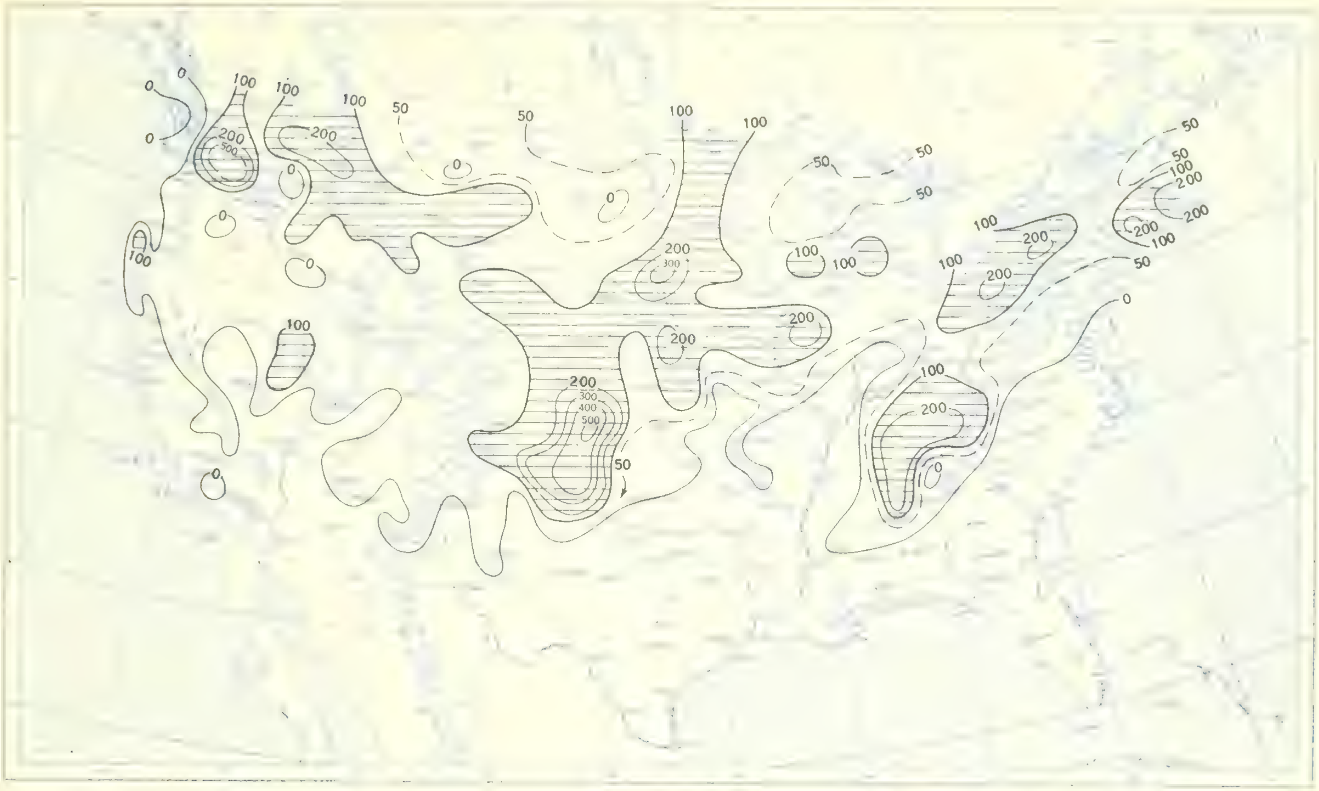
Normal monthly precipitation amounts are computed from the records for 1921-50 for Weather Bureau stations and from records of 25 years or more (mostly 1931-55) for cooperative stations.

Chart IV. Total Snowfall (Inches), March 1957.

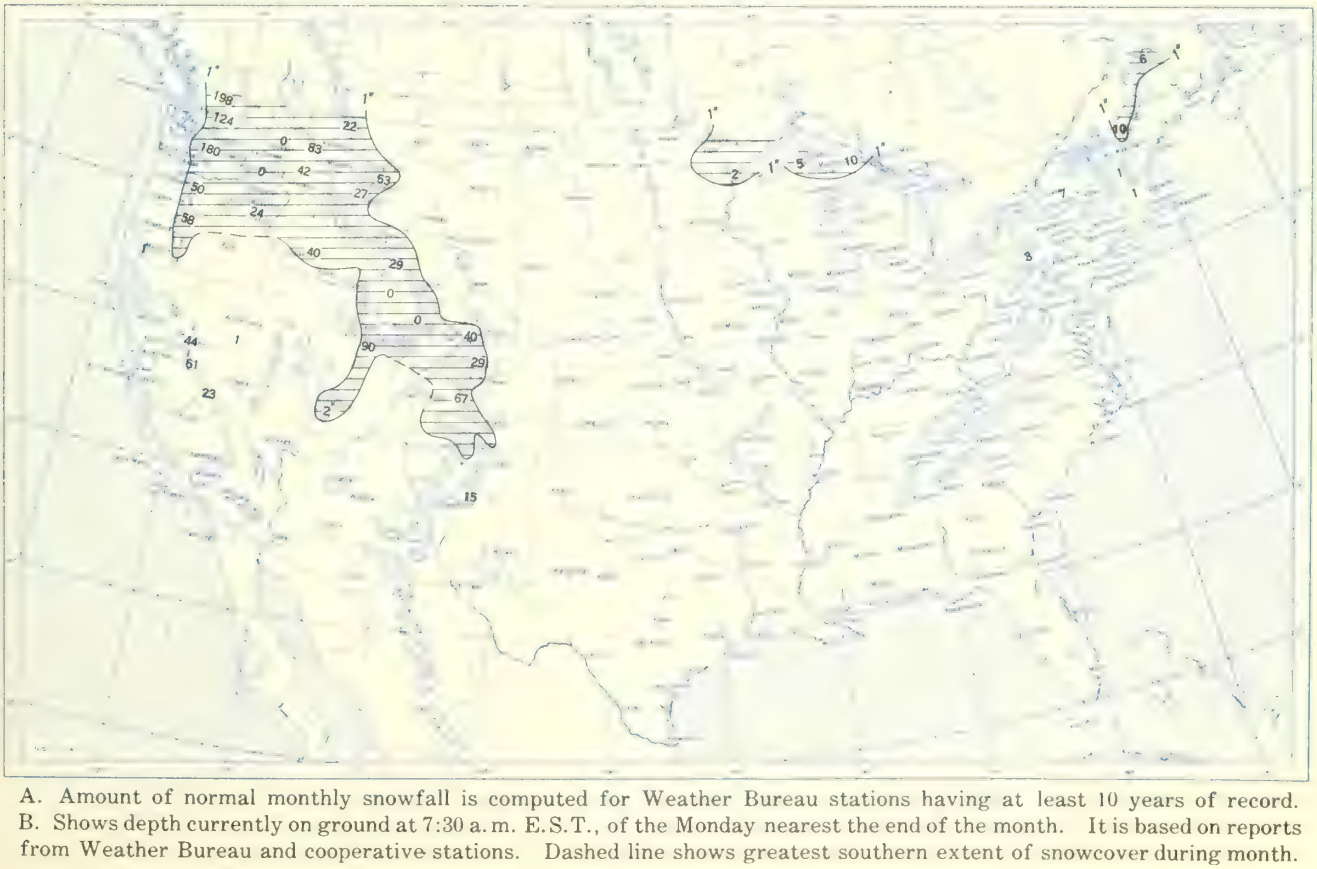


This is the total of unmelted snowfall recorded during the month at Weather Bureau and cooperative stations. This chart and Chart V are published only for the months of November through April although of course there is some snow at higher elevations, particularly in the far West, earlier and later in the year.

Chart V. A. Percentage of Normal Snowfall, March 1957.

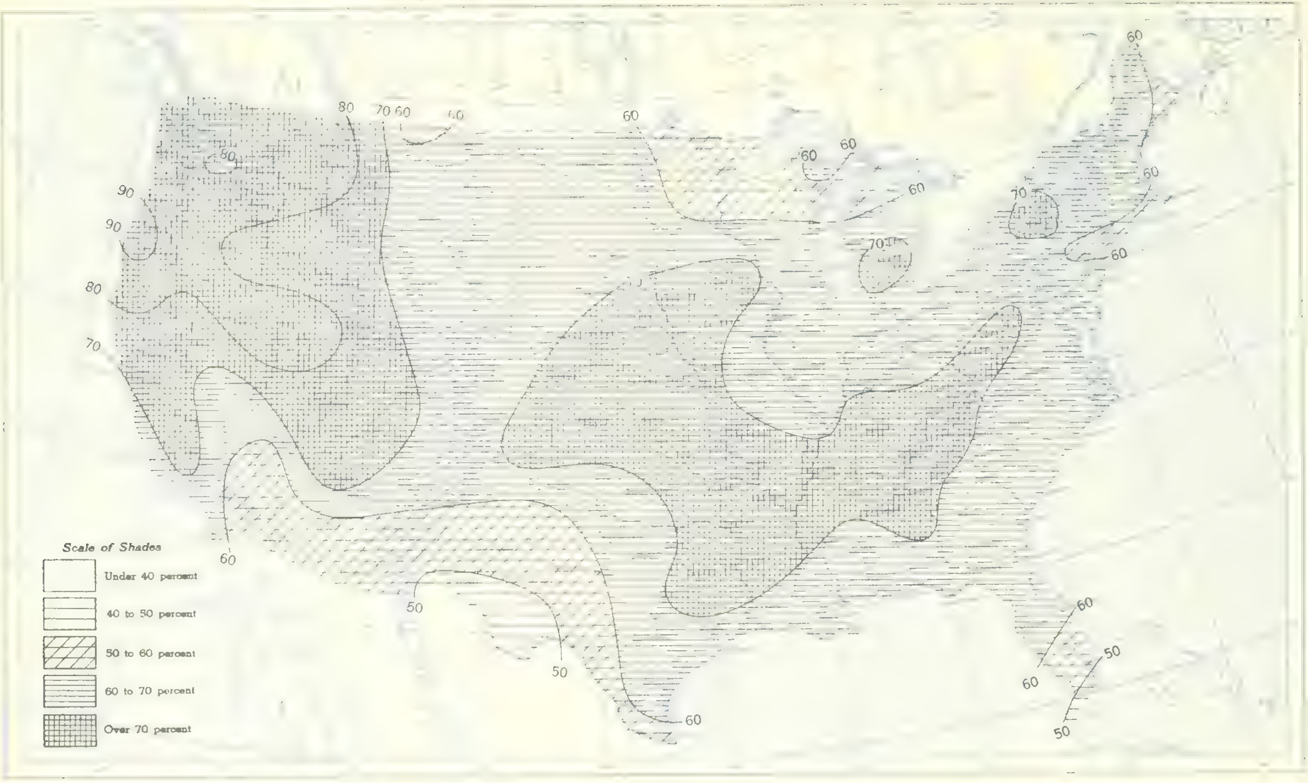


B. Depth of Snow on Ground (Inches). 7:30 a. m. E. S. T., March 25, 1957.

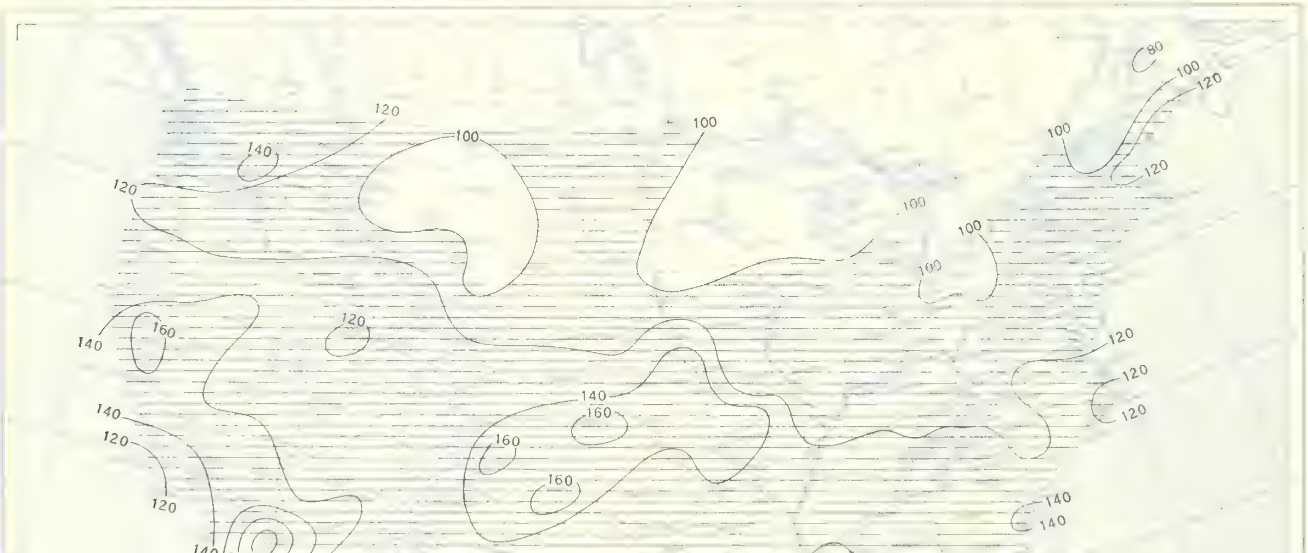


A. Amount of normal monthly snowfall is computed for Weather Bureau stations having at least 10 years of record.
B. Shows depth currently on ground at 7:30 a. m. E.S.T., of the Monday nearest the end of the month. It is based on reports from Weather Bureau and cooperative stations. Dashed line shows greatest southern extent of snowcover during month.

Chart VI. A. Percentage of Sky Cover Between Sunrise and Sunset, March 1957.

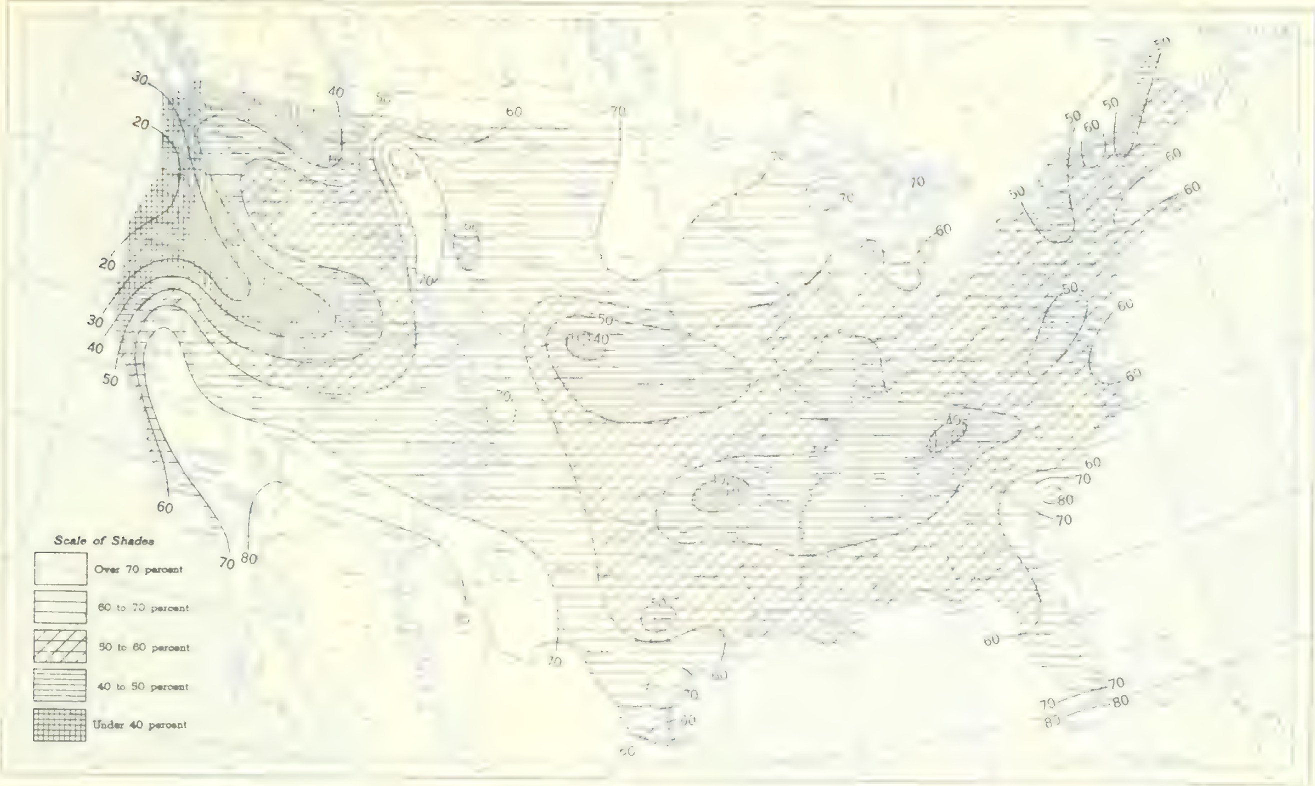


B. Percentage of Normal Sky Cover Between Sunrise and Sunset, March 1957.

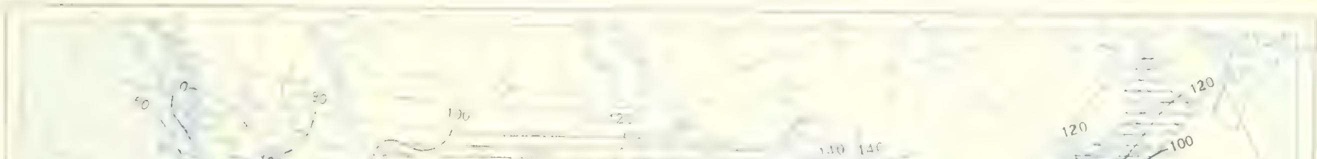


A. In addition to cloudiness, sky cover includes obscuration of the sky by fog, smoke, snow, etc. Chart based on visual observations made hourly at Weather Bureau stations and averaged over the month. B. Computations of normal amount of sky cover are made for stations having at least 10 years of record.

Chart VII. A. Percentage of Possible Sunshine, March 1957.



B. Percentage of Normal Sunshine, March 1957.



A. Computed from total number of hours of observed sunshine in relation to total number of possible hours of sunshine during month. B. Normals are computed for stations having at least 10 years of record.

Chart VIII. Average Daily Values of Solar Radiation, Direct + Diffuse, March 1957. Inset: Percentage of Mean Daily Solar Radiation, March 1957. (Mean based on period 1951-55.)

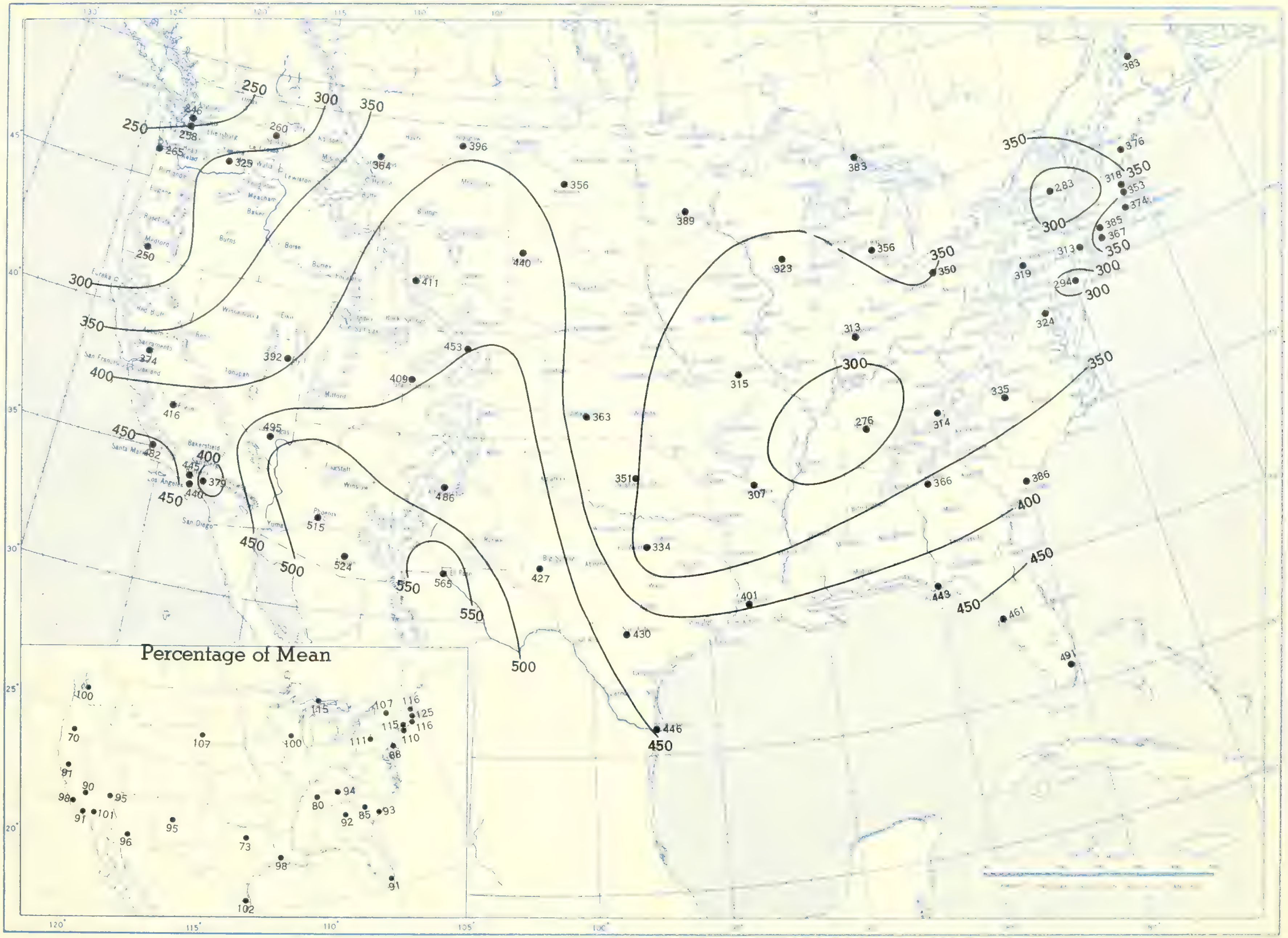
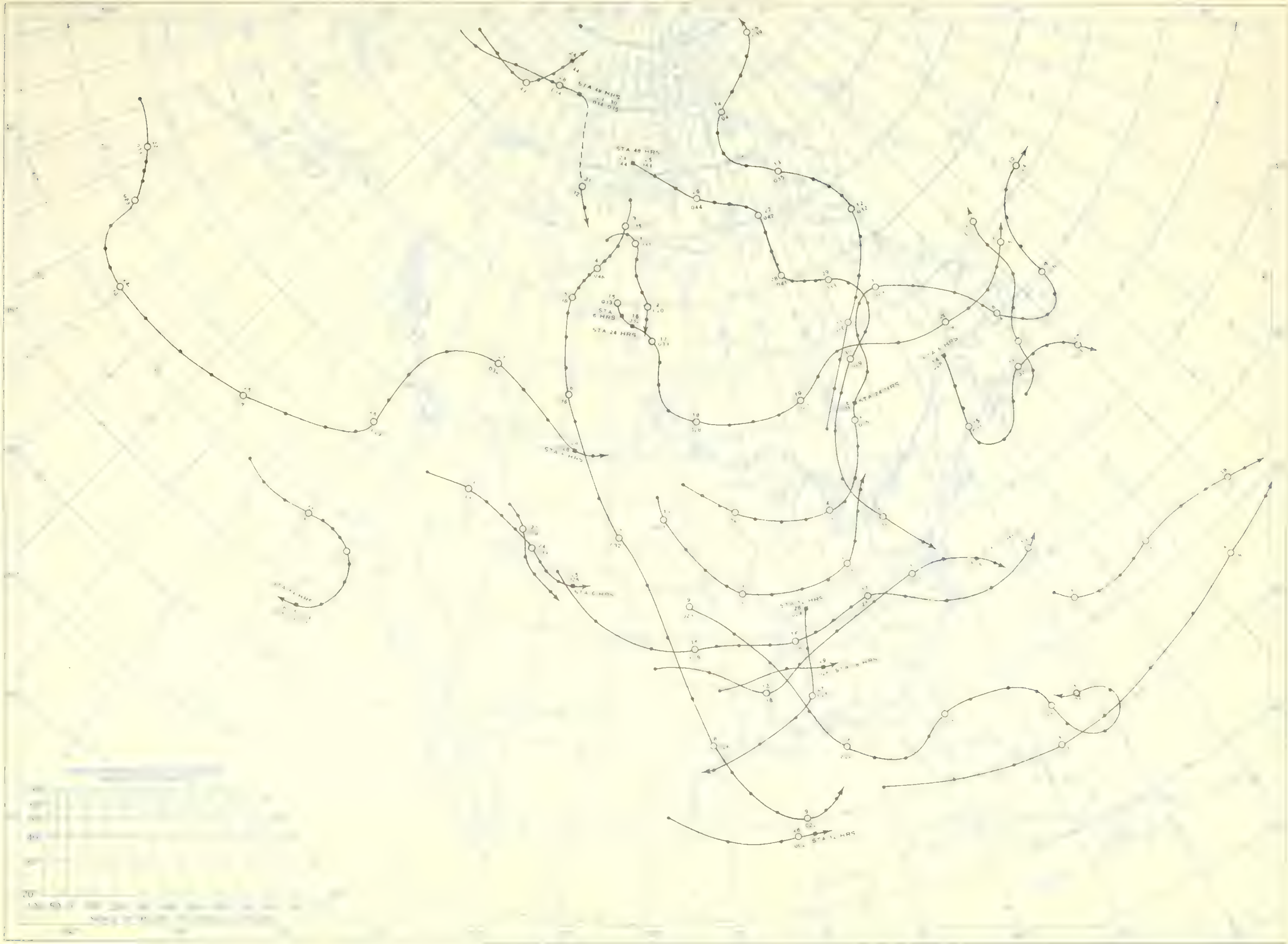


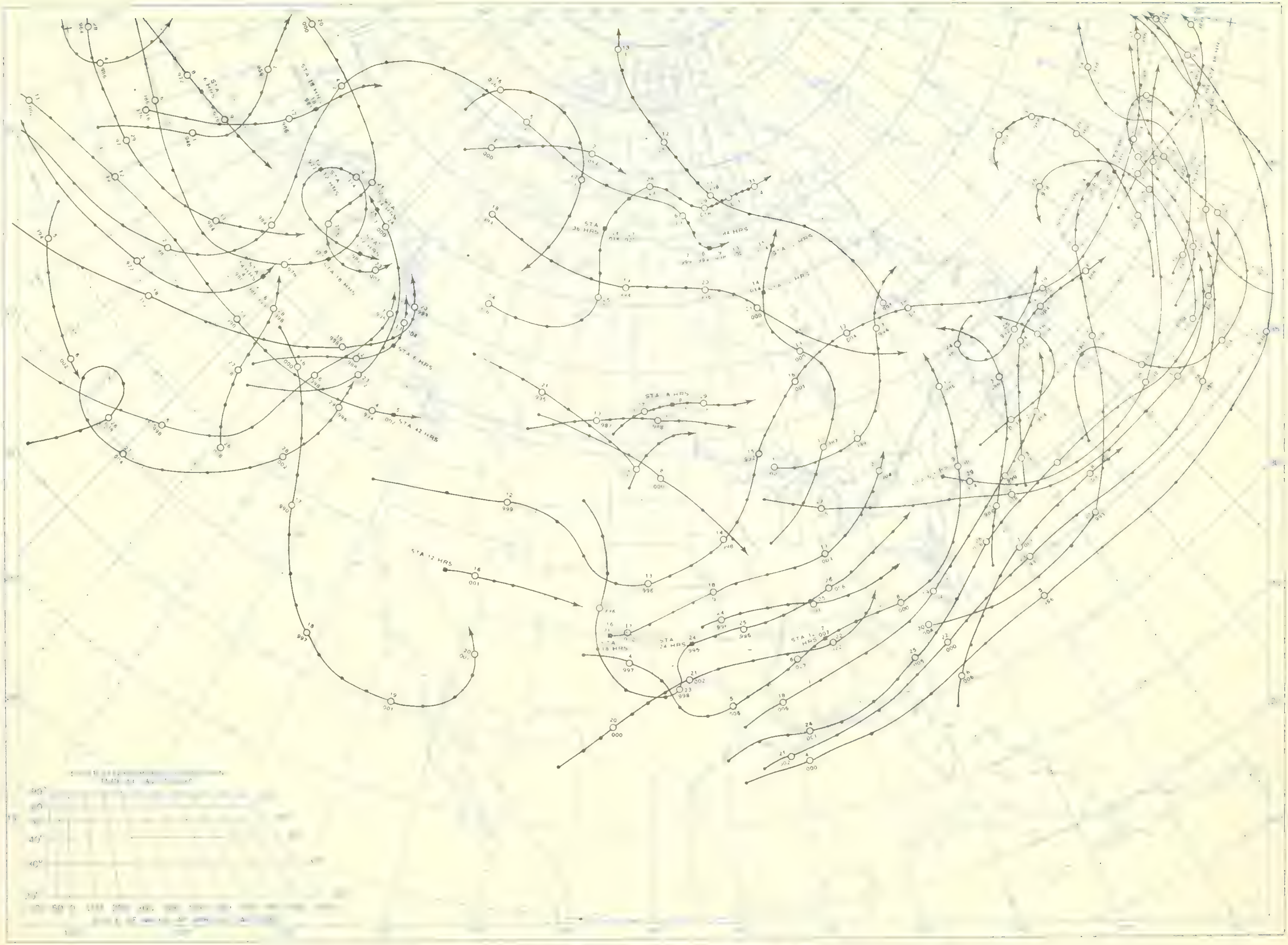
Chart shows mean daily solar radiation, direct + diffuse, received on a horizontal surface in langleys (1 langley = 1 gm. cal. cm. $^{-2}$). Basic data for isolines are shown on chart. Further estimates are obtained from supplementary data for which limits of accuracy are wider than for those data shown. The inset shows the percentage of the mean based on the period 1951-55.

Chart IX. Tracks of Centers of Anticyclones at Sea Level, March 1957.



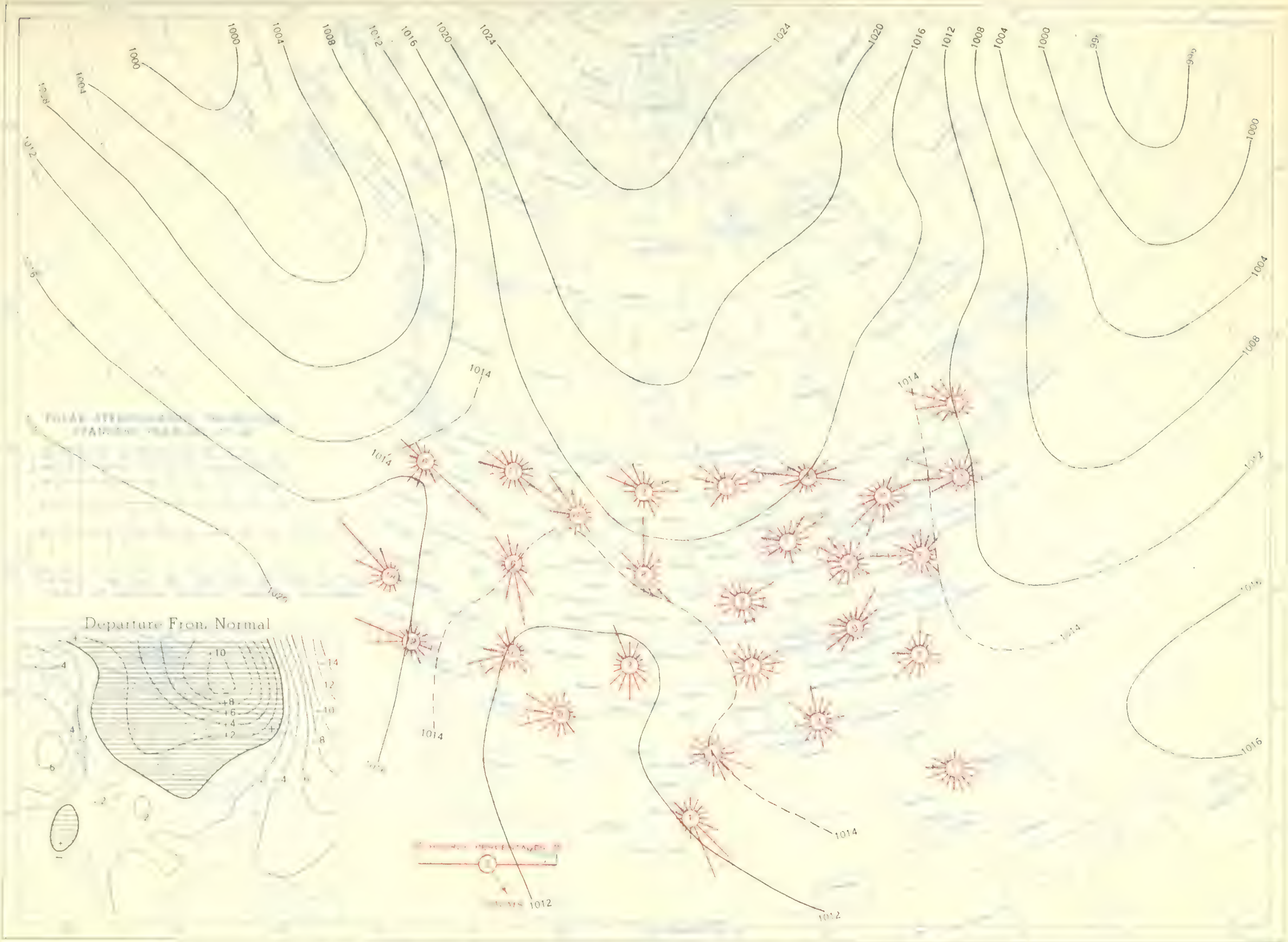
Circle indicates position of center at 7:30 a. m. E. S. T. Figure above circle indicates date, figure below, pressure to nearest millibar. Dots indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.

Chart X. Tracks of Centers of Cyclones at Sea Level, March 1957.



Circle indicates position of center at 7:30 a. m. E. S. T. See Chart IX for explanation of symbols.

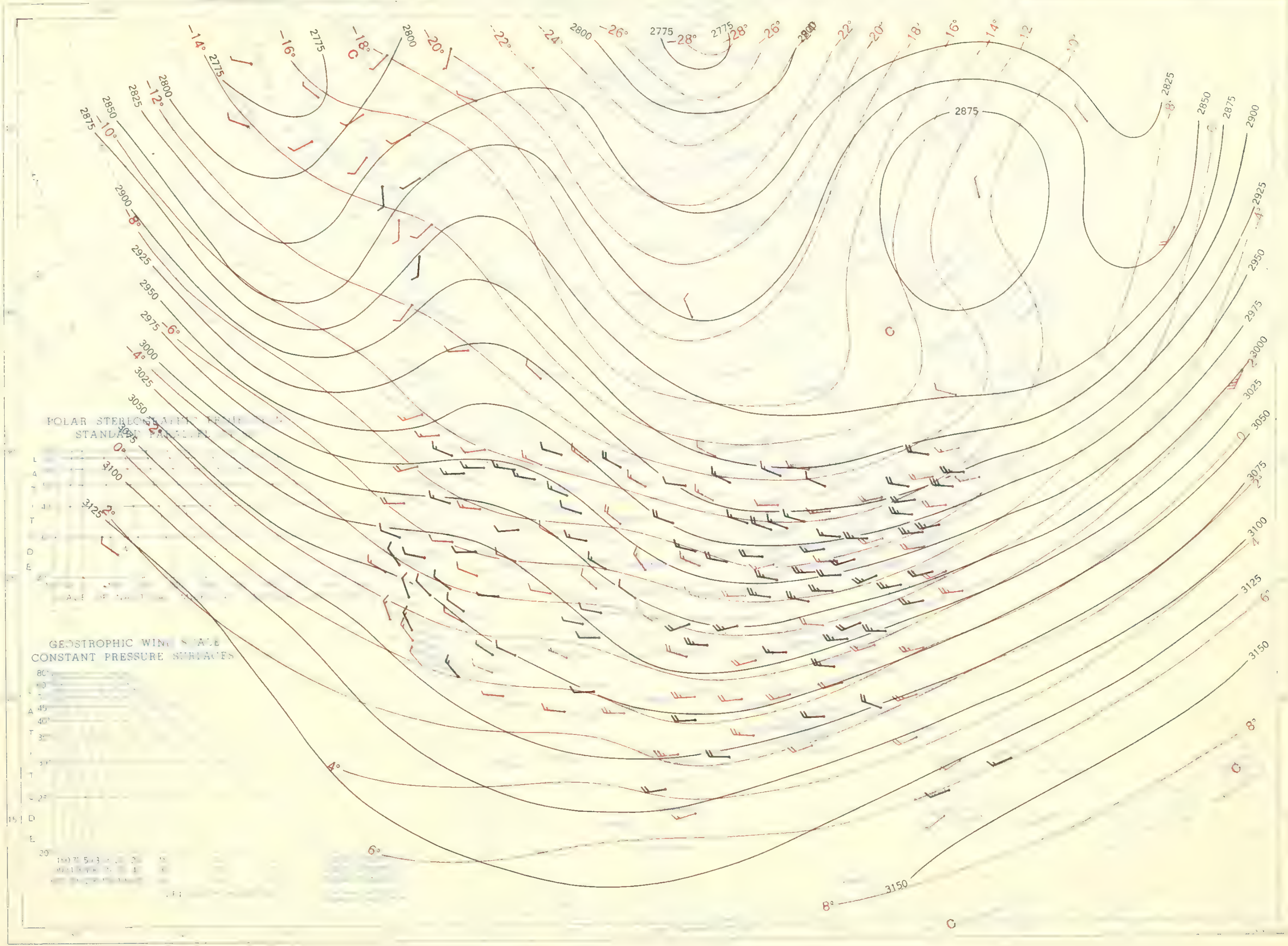
Chart XI. Average Sea Level Pressure (mb.) and Surface Windroses, March 1957. Inset: Departure of Average Pressure (mb.) from Normal, March 1957.



Average sea level pressures are obtained from the averages of the 7:30 a. m. and 7:30 p. m. E. S. T. readings. Windroses show percentage of time wind blew from 16 compass points or was calm during the month. Pressure normals are computed for stations having at least 10 years of record and for 10° intersections in a diamond grid based on readings from the Historical Weather Maps (1899-1939) for the 20 years of most complete data coverage prior to 1940.

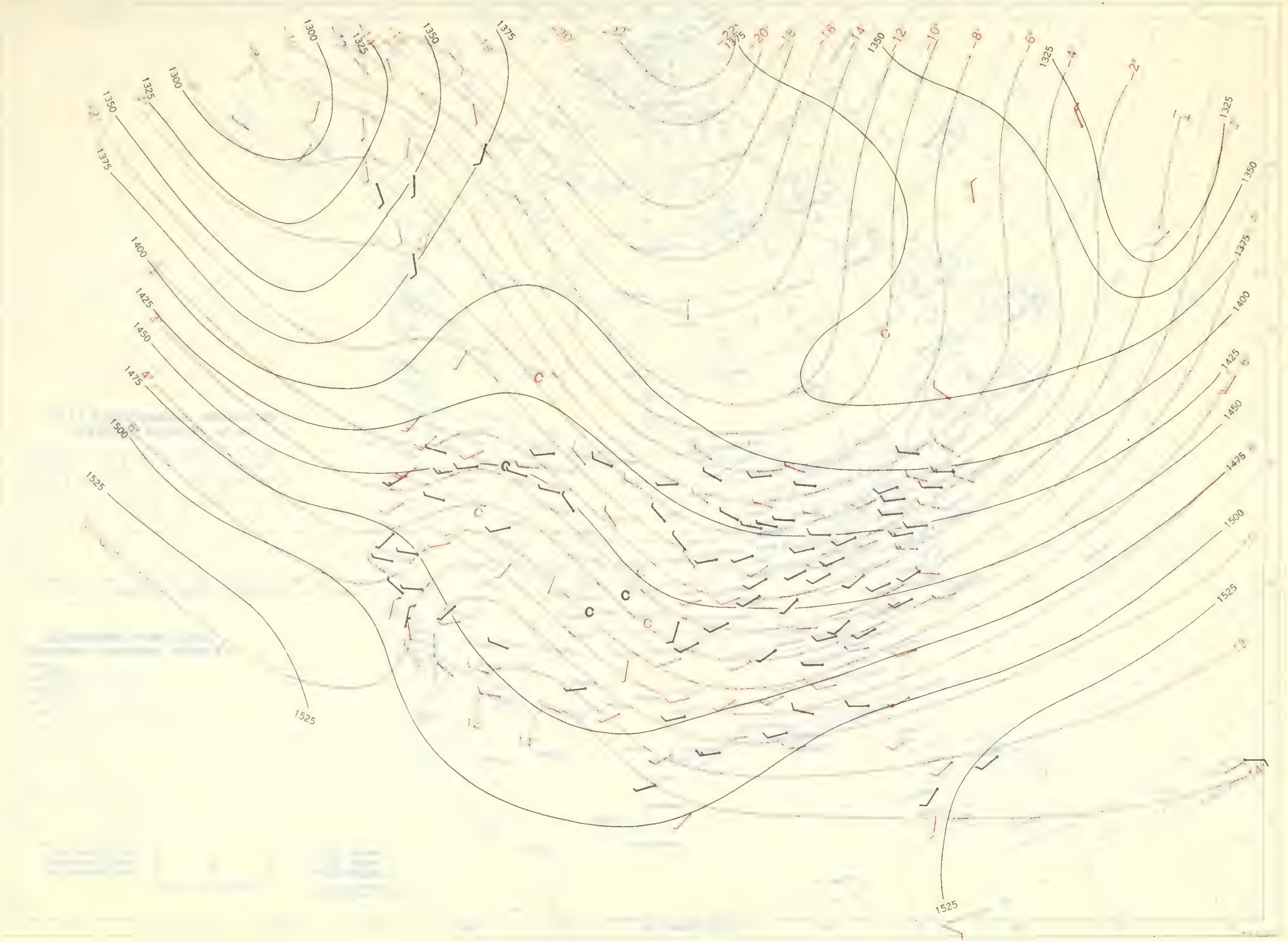
700-mb.

Chart XII. [redacted] Surface, 0300 GMT, March 1957. Average Height and Temperature, and Resultant Winds.



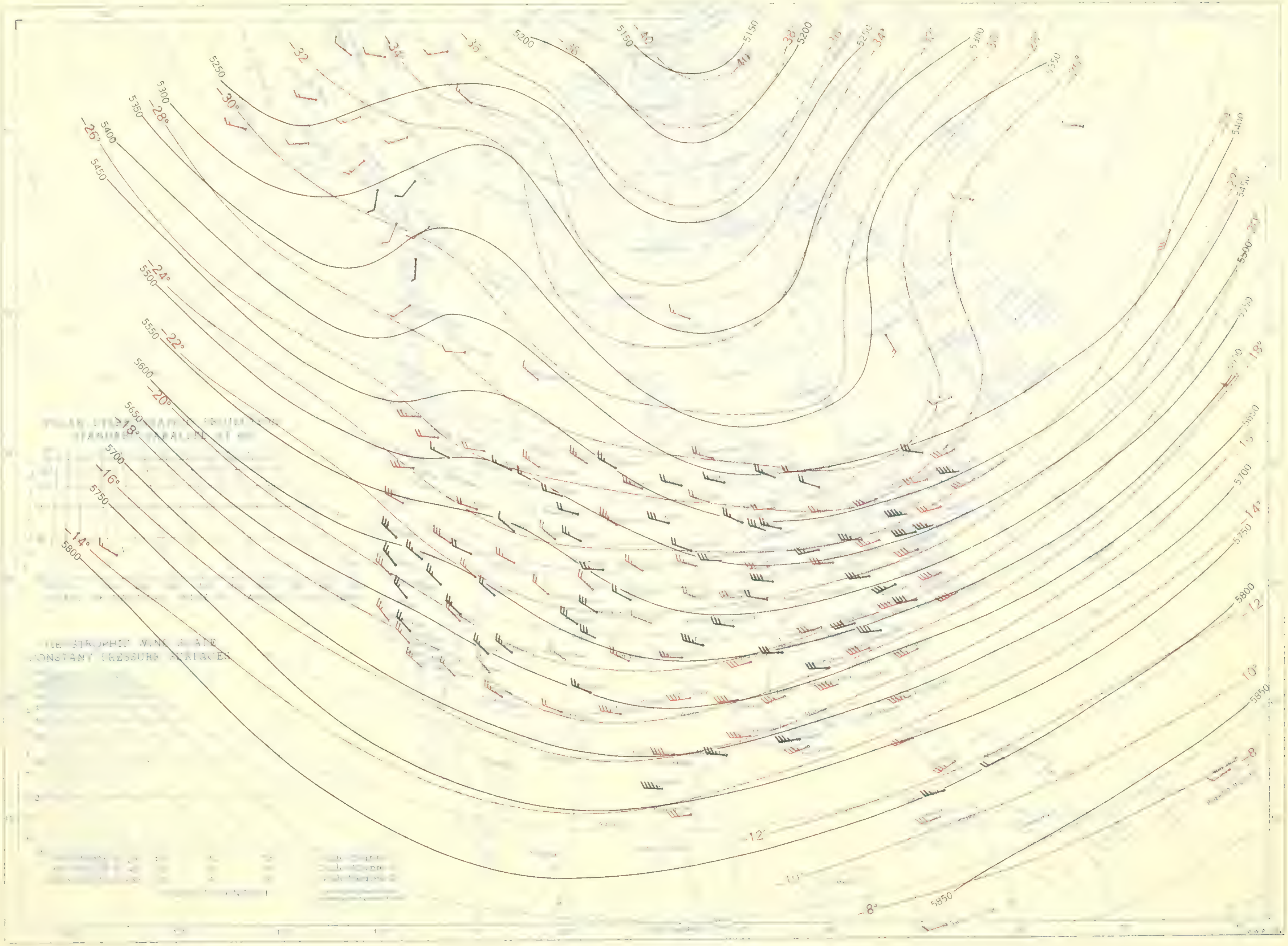
Height in geopotential meters (1 g.p.m. = 0.98 dynamic meters). Temperature in °C. Wind speed in knots; flag represents 50 knots, full feather 10 knots, and half feather 5 knots. Winds shown in red are based on rawins taken at the indicated pressure surface and time. Those in black are based

Chart XIII. [redacted] Surface, 0300 GMT, March 1957. Average Height and Temperature, and Resultant Winds.



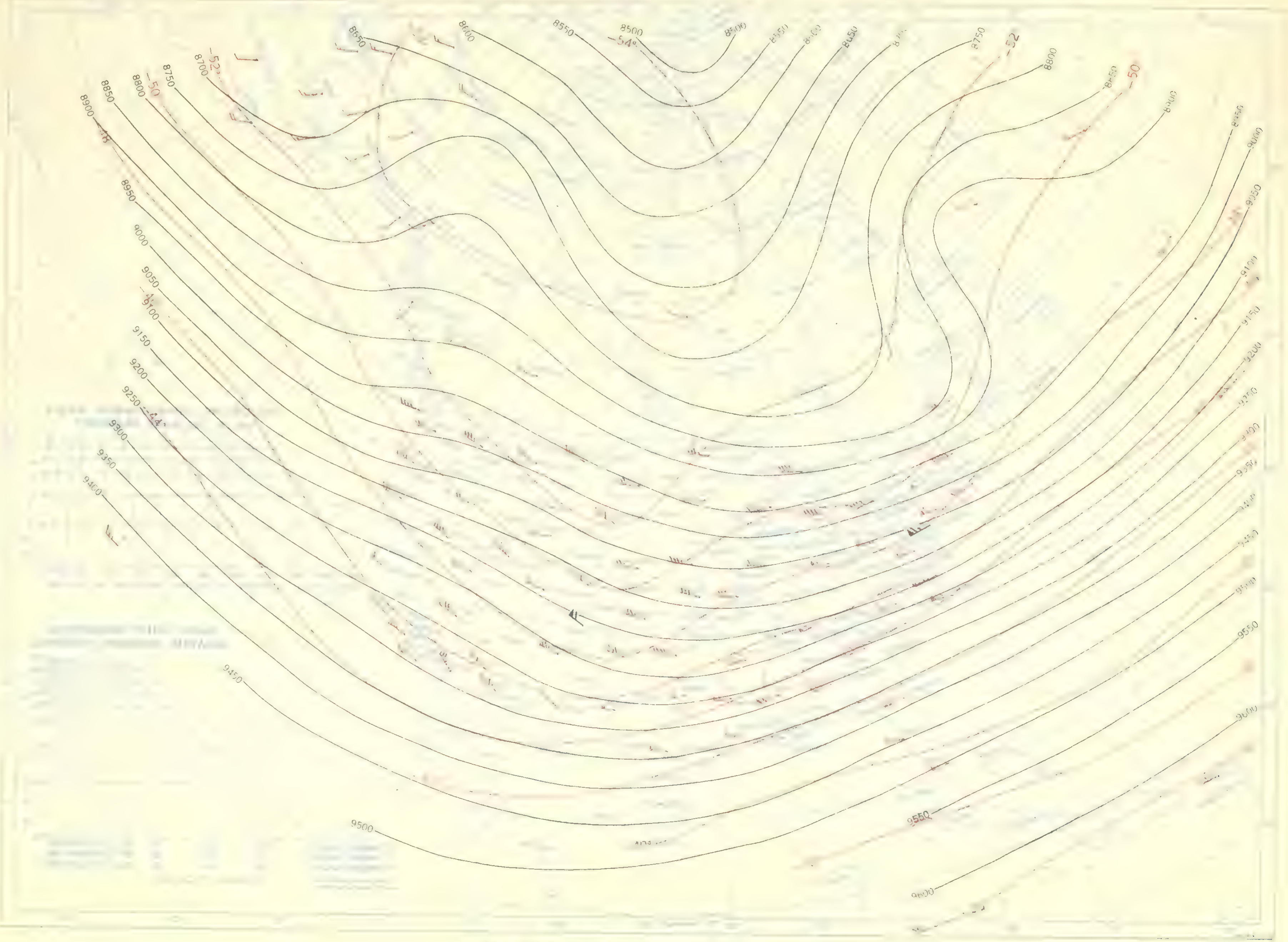
See Chart XII for explanation of map.

Chart XIV. 500-mb. Surface, 0300 GMT, March 1957. Average Height and Temperature, and Resultant Winds.



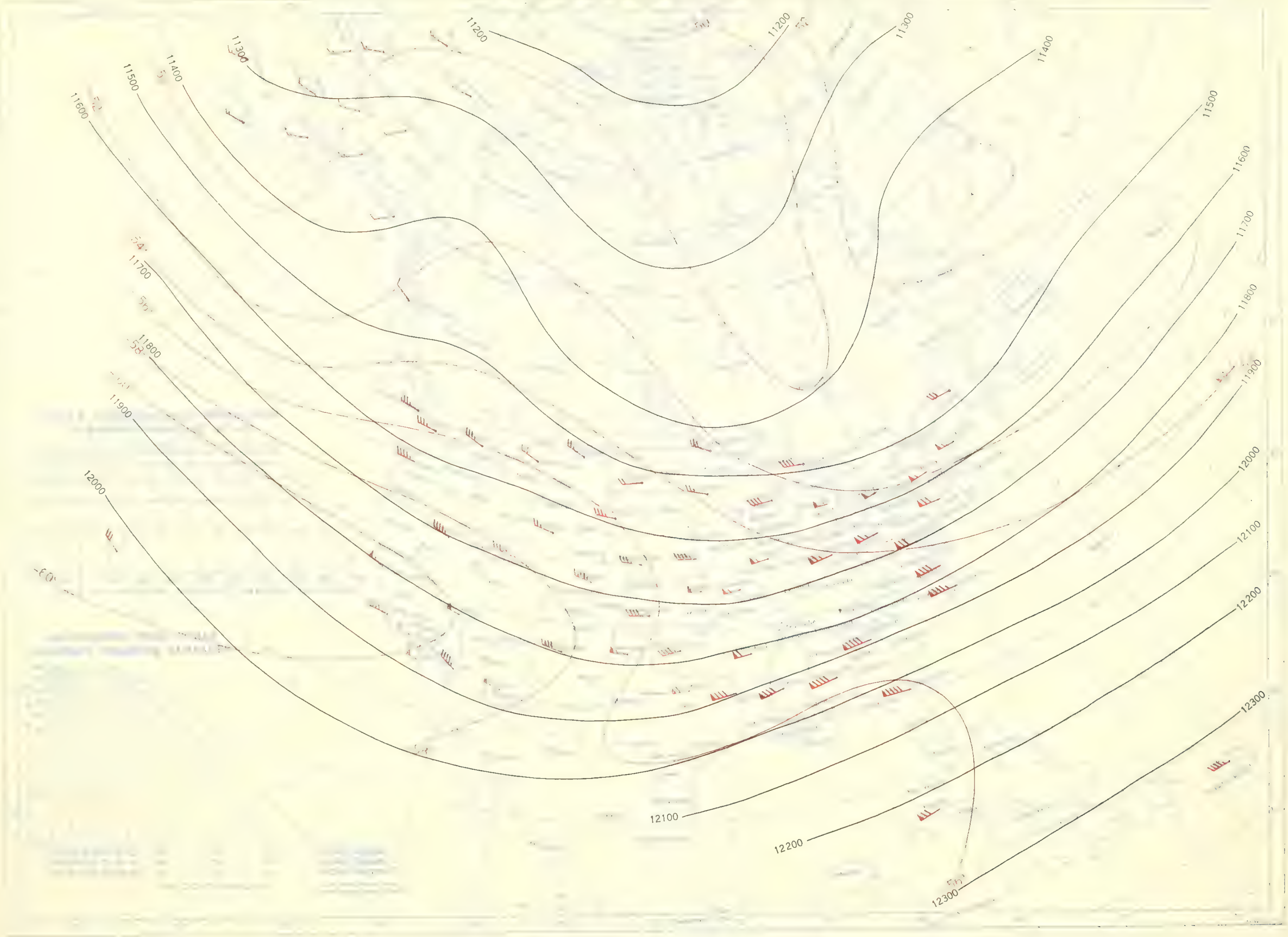
See Chart XII for explanation of map.

Chart XV. 300-mb. Surface, 0300 GMT, March 1957. Average Height and Temperature, and Resultant Winds.



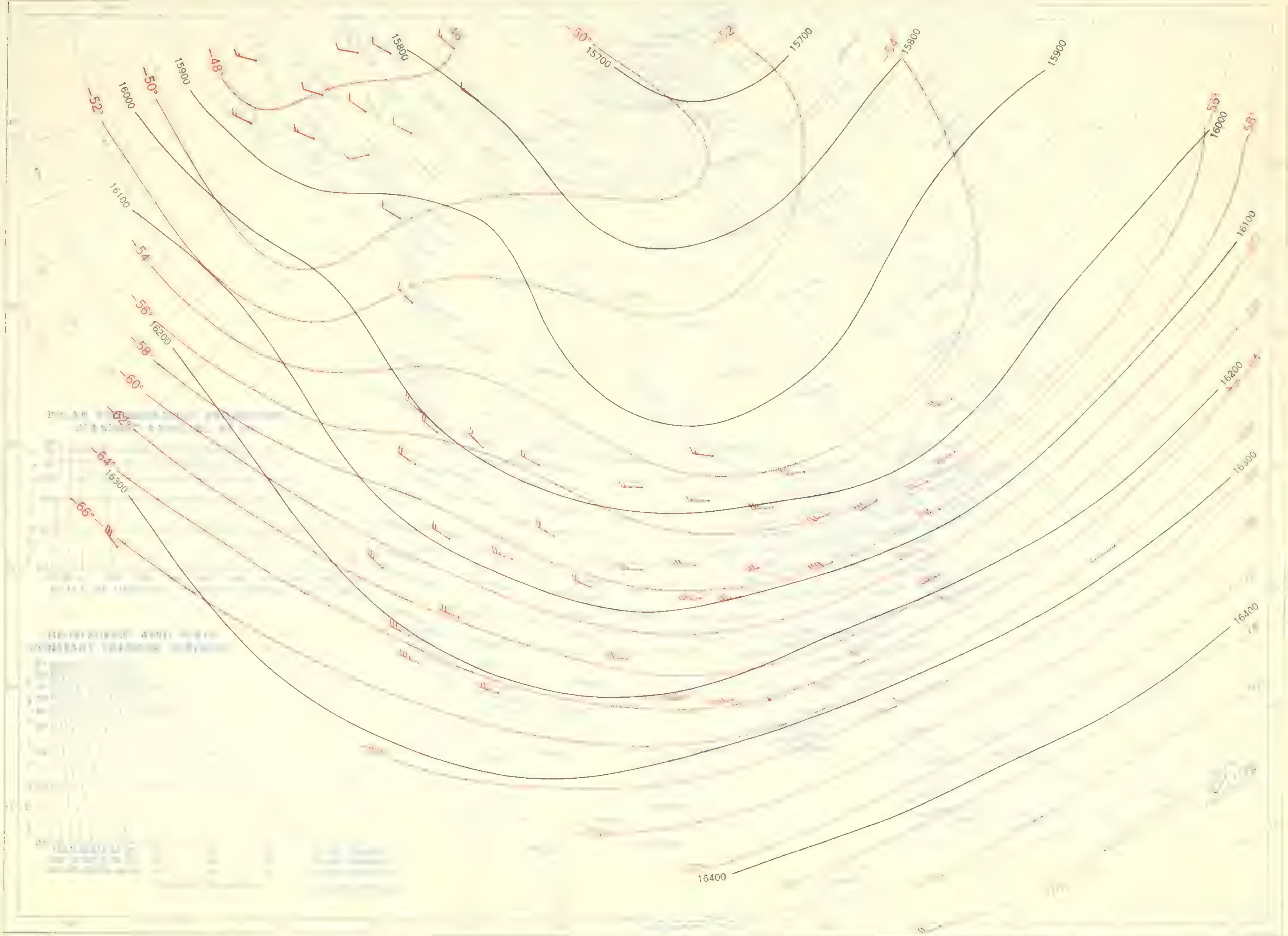
See Chart XII for explanation of map.

Chart XVI. 200-mb. Surface, 0300 GMT, March 1957. Average Height and Temperature, and Resultant Winds.



See Chart XII for explanation of map. All winds are from rawin reports.

Chart XVII. 100-mb. Surface, 0300 GMT, March 1957. Average Height and Temperature, and Resultant Winds.



See Chart XII for explanation of map. All winds are from rawin reports.

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APRIL 1957
Volume 8 No. 4

ASHEVILLE: 1957

CONTENTS

SURFACE DATA

Page

General Summary of Weather Conditions---------------------- 97

Condensed Climatological Data - States-------------------- 98

Climatological Data - Stations--------------------------- 99

Heating Degree Days--------------------------------------- 104

Storm Data and Unusual Weather Phenomena------------------ 105

General Summary of River and Flood Conditions------------- 139

Flood Stage Data-- 143

UPPER AIR DATA

Rawinsonde Data--- 146

SOLAR RADIATION DATA

Solar Radiation Intensities------------------------------- 152

Blue Hill Data-- 153

Net Radiation--- 153

Daily Totals and Average Daily Totals by Weeks------------ 154

CHARTS I-XVII

NOTE.--This publication contains all of the climatic data formerly printed in the MONTHLY WEATHER REVIEW.

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CLIMATOLOGICAL DATA

NATIONAL SUMMARY

Volume 8 No. 4 APRIL 1957

GENERAL SUMMARY OF WEATHER CONDITIONS

Unusually wet, cloudy weather in a large area which forked out from the lower Great Plains to Montana and Ohio was the main weather feature of April. Topsoil moisture was further replenished in much of the Great Plains, and serious floods occurred in central and eastern Texas. Unseasonably heavy snows fell from Colorado and Wyoming to Ohio during the first half of the month. The month was unusually dry, however, in the Far Southwest, from eastern North Carolina northward through Maryland and Delaware, and in New England.

The month was quite cool in the western Plains, unusually warm in the East, and about normal elsewhere. East of the Rockies the first half of the month was unusually cold in central and northern areas, but above normal temperatures persisted throughout the area during the second half.

Tornadoes and other local destructive storms occurred with great frequency in south-central areas.

TEMPERATURE.--Temperatures were unusually low east of the Rockies from about the 7th to the 15th. During this period cold Canadian air twice moved down over most of the United States. The first of these reduced temperatures to record low levels for the season in the central and lower Great Plains, ranging from 9° at North Platte, Nebr., on the 12th to 45° at Laredo, Tex., on the 14th. Fort Worth, Tex., recorded 30° on the 13th, the latest freeze and lowest temperature ever recorded there in April. The lowest temperature of the month, -27°, was recorded at Taylor Park, Colo., on the 8th, the lowest in north-central areas, -17° at Deerfield, S. Dak., on the 12th, and the month's lowest in the Northeast was -5° at Mount Mansfield, Vt., on the 11th.

Summerlike temperatures east of the Rockies during the second half of the month set new records for persistency from the Ohio Valley to the middle Atlantic coast. A good example of this occurred at Louisville, Ky., where daily maximum temperatures of 80° or above were recorded from the 19th through the 28th, a period of 10 days. Stations scattered throughout the East reported one or more record high date temperatures; stations from Baltimore, Md., to Portland, Maine, reported their warmest Easter Sunday on record; and Escanaba, Mich., and Huntington, W. Va., recorded their highest temperatures on record for April, 82° on the 29th and 92° on the 26th, respectively. Most stations west of the Great Lakes and in the Pacific States recorded their highest temperatures on the 29th or 30th when maxima reached the 90° level in Minnesota, North Dakota and Washington. The month's highest temperature, 103°, was recorded at Rio Grande, Tex., on the 24th.

PRECIPITATION.--Measurable precipitation equaled the previous record at Topeka, Kans., and a trace or more on 23 days set a new record at Billings, Mont. Topeka also recorded its greatest number of cloudy days in April, 24.

Precipitation exceeded 6 inches from central Texas to Indiana and totaled over 2 inches in all except a few sections of the Great Plains. The month's greatest total was 20.48 inches at Glenfawn, Tex., and some totals exceeding 15 inches were measured in Arkansas, Louisiana, Oklahoma and Missouri. Numerous stations reported record totals for April, among which were Fort Smith, Ark., 10.32 inches; Shreveport, La., 11.19; and Del Rio and Dallas, Texas, 6.49 and 13.85 inches respectively.

The month's precipitation was less than 50 percent of normal in eastern North Carolina and less than 75 percent of normal from that area to Maryland and Delaware. In New England 3 months of dry weather and high temperatures during the second half of April created a serious fire hazard, and numerous fires occurred in Massachusetts, New Hampshire and Maine.

SNOWFALL.--Snowfall was widespread in northern areas east of the Rockies the first half of the month. Some unusual falls and depths are listed below:

Rapid City, S. Dak.: Total 16.2 inches, most since 1929.
Denver, Colo.: Depth 15 inches on 3d.
Pueblo, Colo.: 16.8 inches on 1st-2d, 24-hour record for April.
Cleveland, Ohio: 7.6 inches on 7th-8th, 24-hour record for April.
Sioux Falls, S. Dak.: 107 inches, record April total.
Atlantic City, N.J.: 1.0 inch on 13th, most so late in season.

The snowpack in the central and northern Rocky Mountains at the end of the month was near to above normal, but it was below normal in the mountains of California and Arizona.

SEVERE STORMS.--During a blizzard which hit south-central and eastern Colorado on the 1st and 2d, up to 50 inches of snow fell in the mountains. Damage was estimated at many hundreds of thousands of dollars.

A coastal storm in the Pacific Northwest with winds up to 70 m.p.h. at Portland, Oreg., on the 14th, caused some damage.

Of the month's numerous tornadoes, the most notable, perhaps, was that which on the afternoon of the 2d swept through Dallas, Tex. Motion pictures of the storm in the most destructive part of its path through the city were taken. As far as known this is the first motion picture of a tornado to be obtained.

CONDENSED CLIMATOLOGICAL SUMMARY

Section	Temperature						Precipitation			
	Monthly extremes						Monthly extremes			
	Station	Highest	Date	Station	Lowest	Date	Station	Greatest	Station	Least
		°F			°F			In.		In.
Alabama	3 Stations	91	26+	Heflin	27	15	Coden	14.28	Belle Mina 2N	1.88
Arizona	do	98	11+	Alpine	10	8	Bright Angel RS	2.33	4 Stations	.00
Arkansas	do	89	22+	Lead Hill	12	13	Sparkman 4E	19.07	Monticello 3S	4.56
California	Greenland Ranch	100	29	White Mtn. 2	-1	2	Lakeshore	6.63	8 Stations	.00
Colorado	Two Buttes 1NW	92	18	Taylor Park	-27	8	Wetmore	8.56	Gunnison	.46
Connecticut	2 Stations	88	21+	Putnam	14	1	Wolcott Reservoir	5.98	Cream Hill	3.46
Delaware	do	93	27+	Georgetown 5SW	26	11+	Newark University Farm	3.90	Georgetown 5SW	1.23
Florida	5 Stations	92	5+	Jasper 9ESE	36	15	Ft. Lauderdale	14.70	Lake Trafford	1.32
Georgia	2 Stations	93	20+	Blairsville Exp. Sta.	22	15	Suches	15.80	Brooklet 1W	1.27
Idaho	Orofino	90	29	Obsidian 2NNW	-2	7	Elk River 1S	4.11	Challis	.29
Illinois	Harrisburg	88	20	2 Stations	16	12	Grand Tower 2N	13.18	Galena	2.07
Indiana	Madison	93	22	Goshen College	9	9	Bluffton Waterworks	9.55	Elkhart	4.11
Iowa	Glenwood	87	25	3 Stations	11	12	Centerville	8.91	Cherokee 3N	.64
Kansas	Hays 1S	88	20	do	12	8+	Winfield	10.43	Elkader	.92
Kentucky	2 Stations	93	25+	5 Stations	21	13+	Berea College	10.21	Hazard Water Works	2.96
Louisiana	Port Sulphur	93	28	Converse	29	9	Jennings	15.72	Franklin	3.45
Maine	4 Stations	85	21	Fort Kent	-3	3	Rockland	4.06	Gilead	1.24
Maryland	3 Stations	94	28	2 Stations	15	15	Unionville	5.37	Preston 1S	1.39
Massachusetts	Plymouth	90	21	do	13	1+	Rochester	5.37	Newburyport	1.90
Michigan	4 Stations	85	20+	Champion Van Riper Pk.	-6	8	Niles	7.13	Kinross AF Base	1.09
Minnesota	Meadowlands 2SSW	90	29	Meadowlands 2SSW	2	12	Leonard 8NE	4.49	Windom	.45
Mississippi	Belzoni	93	27	4 Stations	29	9+	Pascagoula High School	11.03	Bluff Lake	3.11
Missouri	2 Stations	88	19+	2 Stations	6	13	Elijah	15.56	Harrisonville	2.16
Montana	4 Stations	86	29	Lincoln 14NE	-8	7	Red Lodge	6.57	Havre 14N	.16
Nebraska	Ashland 3NE	87	25	2 Stations	4	8+	Falls City	5.12	Winnebago	.85
Nevada	2 Stations	90	7+	Gibbs Ranch	8	7	Jarbidge	2.58	Carp	.10
New Hampshire	Surry Mountain Dam	88	28	Fabyan	5	4	Mount Washington	4.44	Betblehem	1.03
New Jersey	Hammonton 2NNE	91	28	2 Stations	18	4+	Westfield	8.00	Fortescue	1.39
New Mexico	Bitter Lakes WL Ref.	93	19	Red River	-7	8	Lake Maloya	4.20	6 Stations	.00
New York	2 Stations	90	28+	2 Stations	4	10+	Pleasantville	6.72	Ticonderoga	1.07
North Carolina	do	95	22+	Celo 2S	15	15	Haywood Gap	16.70	Moorehead City	.26
North Dakota	Arvilla State Park	90	30	Munich 4SW	-2	11	Forman	5.12	McVille	.36
Ohio	2 Stations	92	26+	2 Stations	10	9	Saint Marys 2W	9.41	Gallipolis 5W	2.54
Oklahoma	Hollis	92	18	Bartlesville 2W	9	13	Kiamichi Tower	16.11	2 Stations	1.29
Oregon	Drain 1NNE	95	28	Crater Lake NP Hdq.	10	15	Government Camp	7.74	Redmond	.07
Pennsylvania	Port Clinton	93	28	2 Stations	13	13	Boswell 6WNW	9.47	Connellsville	3.19
Rhode Island	Providence WB AP	87	21	Kingston	20	1	Greenville	4.76	Block Island WB AP	3.70
South Carolina	2 Stations	93	22+	Union 7SW	28	10	Caesars Head	10.23	Florence WB Airport	.53
South Dakota	Milbank	85	30	Deerfield 5NW	-17	12	Miller	5.59	Redig 9NE	.59
Tennessee	Loudon 1E	92	21	Mountain City 2	18	15	Memphis WB City	9.37	Summitville	2.08
Texas	Rio Grande City 2ESE	103	24	Tulia	19	13	Glenfawn	20.48	Valentine 10WSW	.00
Utah	St. George PH	86	30	Scofield Dam	4	8	Alta	9.16	Wendover CAA AP	.06
Vermont	2 Stations	87	27+	Mount Mansfield	-5	11	Manchester Center	4.38	Gilman	1.17
Virginia	Boykins	96	28	Burkes Garden	16	15	Montebello 3NE	11.41	Back Bay Wildlife Rfg.	1.28
Washington	Richland	92	30	Mount Spokane Summit	19	25	Long Beach 3NNE	7.75	Connell 12SE	.18
West Virginia	3 Stations	95	26+	3 Stations	13	15	Kumbrabow State Forest	7.37	Clendenin 2SW	1.87
Wisconsin	3 Stations	87	30	Laoma 4SSW	3	8	Monroe 1W	4.43	Eau Claire CAA AP	.71
Wyoming	Dixon	80	30	Lake Yellowstone	-9	7	Lander WB AP	5.46	Basin	.26
Puerto Rico	Caguas	96	1	Cidra 3E	53	21	San Sebastian	6.12	Cambalache Exp. Forest	.07
Hawaii	Puunene CAA AP	92	18+	Haleakala RS	34	10+	Pepeekeo AF	43.80	Waimea	.17

+ And also on a later date or dates.

Note: Dates in Table 1 apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for times of observations).

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure		Temperature										Average dew point	Average relative humidity	Precipitation							Wind					No. of days (sunrise to sunset)			Sky cover, tenths (sunrise to sunset)	Possible sunshine
												No. of days							No. of days		Snow, Sleet				Fastest mile							
		Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F or above	Min 32° F or below			Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy		
	Ft	Mb	Mb.	°F	°F	°F	°F	°F		°F				°F	%	In	In	In			In	In	M p. h.		M p h			0-3	4-7	8-10	0-10	%
ALABAMA																																
Birmingham	610	994.2	1019.3	77	53	64.9	3.0	87	29	33	9	0	0	51	66	5.41	0.76	3.75	6	4	0.0	0	9.2	S	52	SE	1	6	12	12	6.0	61
Mobile	211	1010.5	1018.6	77	58	67.3	.6	87	29	39	9	0	0	58	78	7.33	2.23	5.13	10	6	.0	0	11.3	SE	--	---	--	6	10	14	6.4	--
Montgomery	198	1010.8	1018.9	78	55	66.6	1.9	88	29	37	15	0	0	55	71	7.55	2.74	4.59	9	5	.0	0	7.4	SE	52	E	1	6	12	12	6.3	[illegible]
ARIZONA																																
Flagstaff	6993	------	------	55	26	40.2	-1.9	65	13	20	8	0	27	--	--	1.04	-.22	.33	6	0	7.4	2	--	---	--	--		9	10	11	5.6	-
Phoenix	1114	972.2	1011.0	80	53	66.5	-.6	91	30	42	22	1	0	36	35	.12	-.23	.12	2	0	.0	0	5.7	E	*24	WSW	6	19	10	1	3.6	91
Prescott	5014	843.9	1011.5	65	37	50.7	-2.2	75	13	27	22	0	6	--	--	.39	-.41	.15	4	0	T	0	10.6	SSW	65	SW	6	10	12	8	5.6	80
Tucson	2558	923.1	1010.1	82	51	66.2	1.2	91	13+	42	22+	3	0	26	25	.16	-.16	.16	2	0	.0	0	8.4	SE	35	W	1	20	6	4	2.7	92
Winslow	4880	847.6	1009.1	68	38	53.2	-.8	80	13	29	5+	0	4	18	31	.17	-.32	.10	4	1	.1	T	10.5	WSW	*56	WSW	6	8	13	9	5.5	--
Yuma	199	1006.1	1011.3	87	56	71.4	-1.4	97	29	43	22	13	0	30	28	.10	.00	.10	1	1	.0	0	8.1	W	32	NW	1	19	8	3	2.5	97
ARKANSAS																																
Fort Smith	458	998.3	1015.6	70	51	60.5	-2.1	85	2	30	13	0	2	51	76	10.32	5.83	3.39	20	18	T	0	9.3	ENE	42	NW	7	2	4	21	8.5	2
Little Rock	257	1003.4	1016.3	72	53	62.9	.4	84	21	32	12+	0	2	52	73	11.34	6.18	3.60	18	15	T	0	10.3	SSE	36	E	3+	3	8	19	7.6	43
Texarkana	361	------	------	74	55	64.0	-1.0	84	2+	33	13	0	0	--	--	10.64	5.34	3.16	17	14	.0	0	9.7	SE	--	---	--	--	--	--	---	--
CALIFORNIA																																
Bakersfield	489	997.0	1015.3	76	50	63.3	.3	93	29	42	2	2	0	44	54	.96	.21	.68	6	3	.0	0	[illegible]	NW	*28	NNW	6	11	9	10	5.2	--
Bishop	4108	870.6	1010.8	71	36	53.8	-.9	80	5+	25	7	0	6	--	--	.41	.16	.22	7	0	T	0	---	---	--	---	--	14	5	11	5.1	--
Blue Canyon	5280	837.5	1014.2	53	36	44.8	-.3	71	28	25	1	0	12	--	--	4.15	-.50	1.90	10	2	12.4	9	----	---	-	---	--	8	9	13	6.2	
Burbank	699	989.2	1015.2	70	50	60.2	-.3	86	27+	41	21	0	0	46	66	1.19	-.02	.62	3	0	.0	0	4.3	S	*29	NW	1	9	10	11	5.5	--
Eureka (U)	43	1016.3	1018.6	56	45	50.6	.0	62	13	38	7	0	0	--	--	1.96	-.92	1.00	11	0	.0	0	8.1	---	34	SW	13	6	9	15	7.0	53
Fresno	331	1003.1	1015.1	74	47	60.5	-1.0	90	29	42	1+	1	0	43	58	1.38	.42	.93	5	0	.0	0	6.6	NW	29	NW	1	12	9	9	4.8	75
Los Angeles (U)	312	------	------	70	53	61.7	.2	85	28	45	21	0	0	48	67	1.47	.30	.83	4	1	.0	0	6.3	---	38	NW	1	10	9	11	5.3	60
Los Angeles	99	1011.9	1015.5	67	53	60.1	.9	78	2	45	21	0	0	49	73	1.33	.37	.86	5	0	.0	0	8.4	WSW	*35	N	1	5	15	10	5.8	--
Mt. Shasta (R)	3544	891.6	1015.9	58	35	46.7	.0	79	28+	26	15	0	7	--	--	3.30	.24	1.30	10	1	2.0	1	----	--	-	-	--	6	12	12	5.9	
Oakland	3	1015.9	1016.3	67	48	57.9	2.3	87	28	43	15	0	0	44	65	.94	-.52	.46	7	1	.0	0	10.0	W	*32	SW	17	12	10	8	4.9	--
Red Bluff	341	1002.7	1015.6	72	49	60.4	.4	91	28	41	15	1	0	40	52	1.61	-.18	.61	7	1	.0	0	10.6	NNW	38	SE	17	12	6	12	5.5	[illegible]
Sacramento	17	1013.9	1015.1	73	48	60.5	2.3	90	28	43	1+	1	0	44	60	1.50	.12	.69	5	1	.0	0	11.2	SW	35	NW	2	13	8	9	4.6	87
Sandberg (R)	4517	861.2	1013.5	57	41	48.8	-1.7	73	5	29	21	0	3	--	--	.62	-.12	.45	3	0	T	0	16.7	---	*44	N	2	11	9	10	5.0	--
San Diego	19	1012.2	1015.3	67	54	60.7	.2	77	8	47	21	0	0	50	70	.84	.01	.42	6	1	.0	0	7.5	WNW	34	SW	20	8	13	9	5.3	62
San Francisco(U)	52	------	------	64	51	57.7	2.0	85	28	47	20	0	0	--	--	1.09	-.40	.47	7	1	.0	0	9.1	---	31	SW	17	13	13	4	4.1	77
San Francisco	8	1015.9	1016.5	66	48	56.9	2.8	86	28	43	24	0	0	46	72	1.58	.29	.84	7	1	.0	0	10.3	WNW	47	WNW	6	12	8	10	4.9	--
Santa Maria	238	1007.5	1016.3	66	42	53.8	-2.0	79	27	35	7	0	0	45	73	.94	-.26	.69	4	0	.0	0	7.4	WNW	*23	NW	1	12	9	9	4.9	--
COLORADO																																
Alamosa	7536	767.4	1012.8	54	24	39.0	-2.7	68	14+	3	3	0	28	--	--	1.38	.84	.81	7	1	14.2	11	----	---	--	---	--	3	12	15	6.7	--
Colorado Springs	6173	807.7	1015.9	50	28	39.3	-7.2	69	18	0	8	0	17	29	70	5.90	4.50	2.45	15	3	42.7	18	10.4	SE	*41	SW	22	4	11	15	6.9	--
Denver	5292	834.7	1013.6	53	30	41.4	-6.1	72	21	9	7+	0	14	28	64	4.13	2.08	2.05	15	2	25.5	16	13.8	S	52	SE	21	5	9	16	7.1	47
Grand Junction	4849	855.4	1011.2	60	38	48.9	-2.9	72	13+	27	7+	0	7	28	51	1.51	.76	.52	14	6	1.8	T	9.8	E	42	SE	18+	3	10	17	7.4	58
Pueblo	4639	854.4	1014.3	56	33	44.6	-5.2	80	21	2	8	0	13	32	69	4.02	2.78	2.49	14	3	21.2	5	10.0	E	47	N	2	6	11	13	6.6	63
CONNECTICUT																																
Bridgeport	7	1018.9	------	59	41	50.0	3.7	85	21	30	1	0	10	--	--	4.06	.57	1.40	15	1	2.4	2	----	---	--	---	-	6	12	12	6.3	-
Hartford	169	1012.7	1018.6	62	39	50.1	2.1	86	21	23	1	0	13	37	65	4.35	.79	1.56	12	0	5.5	3	12.9	SSW	38	NW	9	5	13	12	6.6	59
Middletown (U)	133	1013.1	------	60	38	49.1	---	86	21	23	1	0	11	--	--	4.64	----	2.01	14	2	3.8	2	9.7	---	*45	NW	9	--	--	--	---	--
New Haven	6	1018.6	1019.0	58	39	48.4	2.3	83	21	26	1+	0	5	--	--	4.62	.73	1.74	14	2	2.2	2	8.2	---	26	E	25	7	11	12	6.4	58
DELAWARE																																
Wilmington	78	1016.2	1019.6	65	43	54.1	2.3	88	21	28	11	0	5	42	68	3.73	.09	1.67	14	3	T	T	11.9	ENE	--	---	--	6	11	13	6.2	-
DIST. OF COLUMBIA																																
Washington (U)	72	------	------	70	49	59.4	4.7	93	28	32	13	2	1	--	--	3.24	.04	1.53	9	1	T	T	8.0	---	34	NW	9	--	--	--	---	---
Wash. Nat'l. AP	14	1015.5	1020.1	70	49	59.2	4.8	92	28	33	13+	2	0	43	62	2.73	-.33	1.20	10	2	.1	T	11.0	S	54	NW	9	9	8	13	6.0	56
FLORIDA																																
Apalachicola (U)	13	1017.1	------	75	63	69.0	1.5	80	22+	48	9	0	0	--	--	6.99	2.71	3.62	4	3	.0	0	9.5	---	34	SE	1	15	8	7	4.3	74
Daytona Beach	31	1018.6	1020.2	80	61	70.5	1.5	90	5+	47	7	2	0	61	76	1.73	-1.20	1.17	5	2	.0	0	12.1	E	*35	SE	1	9	13	8	5.3	--
Fort Myers	15	1017.7	------	85	64	74.7	1.7	88	3+	58	16	0	0	--	--	2.69	.32	1.36	12	7	.0	0	9.6	---	*25	S	19	8	13	9	5.7	--
Jacksonville	24	1018.6	1020.0	81	60	70.3	1.9	88	8	46	10	0	0	59	70	1.61	-1.73	.56	6	0	.0	0	9.6	ESE	40	SE	1	8	10	12	5.8	71
Key West (U)	9	1016.2	------	86	73	79.2	2.2	90	12	68	27+	1	0	--	--	1.67	-.73	.78	8	5	.0	0	9.2	---	22	E	16	8	13	9	5.6	78
Lakeland (U)	214	------	------	81	64	72.4	.8	88	2	56	15	0	0	--	--	6.77	3.90	1.80	9	[illegible]	.0	0	8.1	---	--	---	--	5	14	11	6.3	71
Miami (U)	8	------	------	80	71	75.4	1.3	86	9+	63	15	0	0	--	--	4.90	1.46	1.24	16	8	.0	0	14.5	---	44	NE	15	5	22	3	5.2	67
Miami	8	1017.1	1018.3	82	70	76.2	1.3	89	9	63	15	0	0	68	79	5.04	1.05	1.75	10	8	.0	0	9.1	E	20	E	16+	1	18	11	6.8	--
Miami Beach	9	------	------	81	72	76.6	1.2	90	9+	67	15	2	0	--	--	3.41	.80	1.02	12	--	.0	0	----	---	--	---	--	6	12	12	---	--
Orlando	106	1015.1	1019.5	82	62	72.3	.7	89	5+	54	15	0	0	62	76	4.74	1.78	2.00	9	4	.0	0	10.5	ESE	*38	SSE	1	7	12	11	5.8	--
Pensacola (U)	13	1016.2	------	73	62	67.5	.5	80	29	43	9	0	0	--	--	5.64	.74	3.87	9	2	.0	0	11.8	---	40	SE	1	--	--	--	---	57
Tallahassee	64	1016.5	1019.2	79	59	68.7	1.5	87	26	43	10	0	0	58	72	5.26	.77	1.49	10	6	.0	0	7.0	ESE	--	---	--	4	16	10	6.2	
Tampa	19	1017.7	1019.1	82	63	72.7	1.2	87	3+	56	7+	0	0	63	76	6.59	4.08	2.81	10	6	.0	0	10.8	ENE	*28	NNW	1	7	11	12	6.0	68
West Palm Beach	15	1017.1	1018.1	83	69	76.2	2.4	88	9	63	1	0	0	67	77	8.36	4.23	2.90	17	5	.0	0	14.4	E	*29	SE	5	3	13	14	6.9	--
GEORGIA																																
Atlanta	977	978.5	1020.1	75	54	64.3	2.6	85	29	37	9	0	0	51	66	6.04	1.62	4.05	7	2	.0	0	11.0	SE	*46	W	8	9	12	9	5.6	66
Athens	798	990.6	1019.7	76	52	64.0	2.3	88	29	35	9	0	0	51	68	3.94	-.65	2.32	9	4	.0	0	9.3	S	*47	SW	8	10	10	10	5.6	--
Augusta	426	1013.1	1019.8	79	51	64.6	1.4	89	22	33	10	0	0	54	73	1.98	-1.50	1.16	5	2	.0	0	7.2	SE	*29	W	6	13	6	11	5.2	--
Columbus	382	1005.1	------	79	54	66.5	3.1	89	21	37	10	0	0	--	--	6.19	1.96	3.49	10	5	.0	0	----	---	--	---	--	8	13	9	5.8	--
Dawsonville	1110	------	------	74	46	60.0	---	85	28	27	15	0	6	--	--	7.49	----	3.75	10	3	.0	0	----	---	--	---	--	--	--	--	---	--
Macon	354	1005.7	1019.3	80	55	67.8	2.1	89	3+	36	15	0	0	54	64	2.85	-.96	2.22	6	5	.0	0	10.8	ESE	57	SE	1	9	11	10	5.5	77
Rome	637	996.1	------	77	50	63.2	2.7	90	29	30	10	1	2	--	--	5.80	1.18	4.08	9	7	.0	0	----	---	--	---	--	6	11	13	6.1	--
Savannah	38	1017.8	1020.4	77	55	65.8	.1	85	22	39	15	0	0	58	78	2.96	.49	1.04	7	3	.0	0	9.2	ESE	29	SE	1+	9	9	12	5.8	79
Thomasville (U)	283	------	------	80	59	69.4	2.0	89	25	42	9	0	0	--	--	3.68	-.62	1.55	9	6	.0	0	----	---	--	---	--	--	--	--	---	--
IDAHO																																
Boise	2842	918.4	1014.8	60	38	48.7	-1.2	79	29	27	7	0	4	34	60	1.15	.05	.59	6	0	T	0	10.5	NW	15	NW	24	6	9	15	6.6	70
Idaho Falls 46W (R)	4933	845.6	1014.2	54	29	41.6	-.9	72	29	18	16	0	25	--	--	1.43	.68	.51	10	3	4.5	2	8.8	--	a37	WSW	5	--	--	--	---	--
Idaho Falls 42NW (R)	4790	------	------	55	28	41.4	-1.0	73	29	18	8+	0	23	--	--	1.10	.51	.42	7	--	---	--	12.1	---	a50	NW	1	--	--	--	---	--
Lewiston	1413	962.8	1014.5	62	39	50.5	-.9	84	29	32	16	0	1	--	--	.68	-.46	.34	7	2	.0	0	----	---	--	---	--	3	7	20	7.6	--
Pocatello	4444	859.8	1013.7	55	33	44.2	-2.1	72	29	25	7+	0	14	31	63	1.74	.42	.94	11	2	4.9	2	11.6	SW	44	W	24	6	7	17	7.2	[illegible]
ILLINOIS																																
Cairo (U)	314	1004.1	------	73	53	63.0	3.0	86	22	32	13	0	1	--	--	7.81	3.85	3.23	13	9	T	T	9.6	---	59	SW	3	5	11	14	6.7	60
Chicago	610	994.9	1018.2	58	41	49.6	1.5	80	23	21	12	0	9	40	72	6.09	3.27	1.90	19	5	2.3	2	9.7	S	33	SW	20	3	5	22	7.9	45
Moline	589	994.9	1017.5	60	41	50.4	.5	83	19	22	12+	0	9	39	69	3.49	.48	1.47	12	1	6.5	5	11.6	ENE	33	E	3	5	6	19	7.2	41
Peoria	654	995.3	1017.5	60	42	51.1	.6	81	19	21	12	0	6	42	74	5.61	2.17	1.02	17	8	1.6	T	12.6	S	38	E	3+	3	6	21	7.9	39
Springfield	589	994.2	1017.8	61	45	52.9	1.2	81	19+	23	12+	0	6	45	76	8.86	5.44	1.96	19	9	4.9	1	13.2	S	54	SW	25	2	6	22	8.0	41
INDIANA																																
Evansville	383	1002.0	1018.0	70	49	59.3	2.2	85	19+	26	13	0	6	48	71	6.32	2.53	2.18	15	6	T	0	10.4	SSW	36	N	8	2	11	17	7.3	52
Fort Wayne	801	986.8	1018.3	58	41	49.3	1.5	81	26	14	9	0	10	42	79	7.11	3.86	1.76	17	5	10.6	3	13.0	S	57	SW	5	2	6	22	8.0	36

See footnotes at end of table.

State and station	Elevation of ground	Pressure		Temperature								No. of days		Average dew point	Average relative humidity	Precipitation					Snow, Sleet		Wind					No. of days (sunrise to sunset)			Sky cover, tenths (sunrise to sunset)	Possible sunshine
																			No. of days						Fastest mile							
		Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F or above	Min 32° F or below			Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max. depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy		
	Ft	Mb	Mb	°F	°F	°F	°F	°F		°F				°F.	%	In.	In.	In			In.	In.	M p. h.		M p. h.			0–3	4–7	8–10	0–10	%
INDIANA (Cont'd.)																																
Indianapolis	793	988.2	1018.6	62	44	53.3	2.5	82	19+	20	9	0	9	45	77	7.83	3.98	2.34	20	8	3.7	2	12.7	SE	43	SW	5	2	5	23	8.1	34
South Bend	768	989.5	1018.1	57	40	48.3	1.0	80	30	19	9	0	10	42	79	6.05	2.65	1.66	20	6	6.5	3	11.1	S	*35	SW	25	3	4	23	8.0	--
IOWA																																
Burlington	694	991.9	1018.1	60	42	51.2	.2	83	19	20	12	0	9	41	72	5.12	1.69	1.11	15	2	1.8	1	11.6	ENE	40	E	3	3	9	18	7.5	50
Des Moines	948	985.8	1017.6	59	41	50.0	-.4	82	25	19	12	0	11	38	68	2.84	.39	1.16	13	4	1.3	1	13.4	E	63	SW	25	4	7	19	7.5	53
Dubuque	1065	991.5	1017.5	58	39	48.3	1.4	81	30	19	12	0	12	35	61	2.71	.02	.78	14	3	.7	1	----	---	--	---	--	3	11	16	7.1	--
Sioux City	1094	975.3	1017.1	60	37	48.4	-.8	82	29	15	12	0	11	32	57	1.06	-1.08	.83	6	2	7.5	7	14.7	NNW	57	S	19	8	4	18	6.7	62
Waterloo	870	------	------	59	38	48.9	.7	81	30	20	12	0	13	--	--	2.71	.32	1.07	6	3	T	T	13.5	---	--	---	--	--	--	--	---	--
KANSAS																																
Concordia (U)	1375	965.8	------	59	42	50.8	-3.2	78	19	23	12	0	7	--	73	5.22	2.96	1.87	15	6	4.9	2	8.6	---	28	NW	5	4	6	20	7.5	52
Dodge City	2594	925.8	1014.3	61	41	50.7	-3.1	82	18	22	12	0	8	39	71	1.60	-.66	.51	10	4	.8	1	17.0	SSE	52	S	19	6	7	17	7.0	47
Goodland	3645	886.6	1014.5	56	32	44.0	-3.2	78	18	12	8	0	14	34	74	2.15	.34	.78	12	1	9.6	4	13.4	SSE	*62	WNW	19	4	7	19	7.4	--
Topeka	877	980.4	1016.6	61	44	52.3	-2.2	78	18+	20	12	0	7	44	76	5.01	1.51	1.41	17	7	1.4	1	13.2	S	63	SE	19	4	2	24	8.3	28
Wichita	1321	965.8	1014.9	62	45	53.3	-2.9	78	24	24	12+	0	7	46	79	3.31	-.21	1.07	15	10	1.3	1	14.3	SSE	36	NW	5	3	6	21	8.2	37
KENTUCKY																																
Lexington	979	982.9	1018.9	68	48	57.9	3.4	86	28	24	9	0	6	48	73	7.66	3.90	2.88	13	8	T	T	11.5	S	--	---	--	6	11	13	6.6	--
Louisville	474	998.6	1017.9	69	49	59.1	3.1	85	21+	29	9+	0	4	48	70	6.09	2.08	2.27	15	8	.2	0	10.8	SE	43	SE	4	3	11	16	7.0	52
LOUISIANA																																
Baton Rouge	64	1014.2	1017.2	79	59	69.2	2.4	87	18	40	9	0	0	59	75	6.08	1.58	2.69	10	10	.0	0	11.7	SE	--	---	--	4	7	19	7.3	--
Lake Charles	12	1014.2	1015.8	76	61	68.6	.6	84	25	44	9	0	0	62	83	13.71	9.44	4.06	9	9	.0	0	10.9	SSE	*35	SSE	3	3	12	15	7.3	--
New Orleans (U)	9	1014.9	------	78	62	70.1	.3	85	28	45	9	0	0	--	--	6.35	.90	1.98	7	4	.0	0	7.7	---	26	S	3+	6	17	7	5.4	60
New Orleans	3	1015.2	1017.1	78	61	69.4	1.1	85	21	46	9	0	0	60	77	6.79	1.39	3.62	8	5	.0	0	10.4	SSE	*30	SSE	3	7	12	11	5.8	--
Shreveport	252	1006.4	1015.7	75	55	65.1	-2.0	85	18+	36	13	0	0	55	76	11.19	6.60	3.24	17	13	.0	0	10.7	SE	--	---	--	3	6	21	8.0	43
MAINE																																
Caribou	624	990.8	1015.1	45	28	36.3	1.6	68	21	10	4	0	23	26	68	2.57	-.06	.88	13	1	4.2	5	13.2	WNW	*47	NW	21	5	9	16	6.8	--
Portland	61	1013.6	1017.6	55	34	44.6	2.7	85	21	17	1	0	11	31	64	1.91	-1.84	.76	8	0	5.5	5	11.4	WNW	33	W	10	7	9	14	6.1	62
MARYLAND																																
Baltimore (U)	14	------	------	69	50	59.3	5.0	92	21	32	13	3	1	--	--	3.27	-.45	1.15	11	--	----	--	----	---	--	---	--	--	--	--	---	--
Baltimore	146	1015.1	1020.0	67	46	56.2	3.8	90	27+	30	11	2	4	45	69	2.46	-1.26	.87	8	2	.4	T	11.1	ENE	56	W	9	8	10	12	6.1	58
Frederick	294	------	------	65	44	54.6	1.7	89	27+	24	15	0	5	--	--	4.31	.81	1.51	13	--	.0	0	----	---	--	---	--	--	--	--	---	--
MASSACHUSETTS																																
Blue Hill Obs.(R)	629	994.4	1018.1	58	38	46.8	3.1	84	21	25	15	0	11	--	60	4.01	.02	1.74	9	1	3.6	1	16.4	NW	40	WNW	21	7	12	11	5.8	53
Boston	15	1013.1	1018.7	58	41	49.4	2.2	88	21	31	4+	0	4	33	59	3.78	.32	1.95	9	1	1.1	1	18.5	SW	*46	W	7	9	8	13	6.1	68
Nantucket	43	1018.2	1018.9	52	38	45.3	1.7	68	24	31	1+	0	3	37	76	2.67	-.78	.85	10	0	.7	T	14.2	W	40	N	9	8	6	16	6.6	59
Pittsfield	1153	975.0	------	57	35	45.9	3.9	83	27	19	1	0	15	--	--	2.69	-.92	.37	13	0	8.7	5	----	---	--	---	--	--	--	--	---	--
Worcester	986	980.7	------	58	37	47.3	3.5	83	21	23	15	0	11	--	--	3.91	.42	1.63	10	0	8.0	3	15.0	---	*39	W	7	7	10	13	6.3	--
MICHIGAN																																
Alpena (U)	587	995.3	------	49	34	41.8	2.2	84	20	19	12	0	13	--	74	2.99	.84	1.23	12	3	4.7	2	11.3	---	40	E	4	4	11	15	6.8	51
Detroit	619	991.9	1019.0	58	41	49.1	2.7	83	24	24	12	0	11	38	66	4.44	1.53	1.10	21	4	2.8	1	11.0	S	43	W	6	4	8	18	7.6	38
Detroit (Willow Run)	722	989.2	1018.1	58	40	48.9	2.3	84	24	24	9+	0	12	39	73	4.82	1.88	1.39	13	6	3.9	3	12.1	SW	*43	E	4	3	7	20	7.6	--
East Lansing (U)	856	------	------	58	40	48.9	3.6	83	26	22	12	0	11	--	--	3.72	.89	.80	14	5	.3	T	6.1	---	19	SW	5	--	--	--	---	49
Escanaba (U)	594	993.9	------	47	33	40.0	1.8	82	29	20	3	0	14	--	76	2.92	.82	1.61	13	3	8.0	5	10.1	---	34	N	2	6	8	16	6.6	62
Flint	761	989.8	1018.3	56	38	47.1	2.7	81	20+	21	12+	0	12	39	75	3.48	.87	1.15	14	5	1.4	T	9.8	WNW	*29	WNW	6	2	9	19	7.7	--
Grand Rapids	681	992.6	1018.1	56	38	47.1	2.3	79	19+	16	13	0	13	38	74	4.55	1.65	2.18	15	3	2.9	T	11.9	WNW	36	S	19	2	4	24	8.5	37
Marquette (U)	677	989.8	------	50	33	41.6	2.9	79	26+	19	8	0	15	--	66	2.27	-.24	.96	14	1	17.8	9	8.5	---	40	SW	20	4	12	14	6.6	69
Muskegon	627	994.6	1018.0	54	38	45.8	2.2	79	19	19	15	0	13	38	73	3.25	.91	1.37	12	3	1.0	T	----	---	--	---	--	2	7	21	8.0	--
Sault Ste. Marie	721	994.9	1018.4	47	30	38.4	1.6	70	30	12	12	0	16	32	79	2.47	.52	1.09	14	2	8.4	4	10.4	ESE	32	ESE	4	7	10	13	6.6	48
MINNESOTA																																
Duluth	1409	975.6	1017.4	50	29	39.1	2.3	82	30	9	12	0	18	28	69	1.84	-.66	.89	15	2	6.7	4	14.4	NW	52	NE	4	8	9	13	6.1	60
Intern'l. Falls	1179	975.3	1017.3	49	26	37.7	.5	86	30	9	8+	0	22	26	67	2.78	1.05	1.46	14	0	4.1	3	13.4	W	*35	SSE	24	7	8	15	6.6	--
Minneapolis	830	983.7	1018.0	57	37	46.9	.9	87	30	18	11+	0	13	31	59	1.23	-.68	.70	5	2	9.6	6	13.1	NW	43	W	20	7	12	11	6.0	66
Rochester	1017	979.7	1017.7	56	35	45.6	.6	83	30	19	12	0	14	32	63	.86	-1.45	.28	7	3	1.7	1	11.6	NW	--	---	--	8	11	11	6.1	--
St. Cloud	1034	978.3	1017.2	54	31	42.7	-.2	84	30	13	11	0	16	32	66	.90	-1.06	.39	7	2	5.1	4	10.2	WNW	*46	S	20	6	12	12	6.1	--
MISSISSIPPI																																
Jackson	305	1005.5	1017.5	77	54	65.8	.9	87	21+	35	9	0	0	55	72	4.75	-.07	2.54	10	5	.0	0	8.6	SSE	43	SE	3	5	13	12	6.2	64
Meridian	294	1004.2	------	79	52	65.4	1.1	89	29	34	10	0	0	--	--	3.61	-1.85	2.25	7	5	.0	0	----	---	--	---	--	7	12	11	5.8	--
Vicksburg (U)	234	1007.7	------	77	57	67.0	1.2	87	2	36	13	0	0	--	--	3.16	-1.68	1.00	10	5	.0	0	9.4	---	38	NW	4	4	14	12	6.5	46
MISSOURI																																
Columbia	778	988.2	1016.8	63	46	54.5	.0	85	24	23	12	0	6	44	73	4.48	.68	1.04	17	6	4.0	1	11.1	SSE	36	E	3	4	4	22	8.1	40
Kansas City	741	981.7	1016.9	62	47	54.6	-1.2	82	24	24	12	0	4	43	69	3.72	.11	1.63	13	5	2.9	1	12.0	NE	42	N	3	4	5	21	8.2	39
St. Joseph	809	980.7	------	61	44	52.7	-1.8	82	25	22	12	0	7	--	--	3.56	.21	1.01	16	4	3.0	T	13.8	---	*46	S	19	4	4	22	8.1	--
St. Louis (U)	465	------	------	65	49	57.0	.5	85	24	25	12	0	3	--	--	7.25	3.24	1.54	21	8	.3	T	11.1	---	39	S	24	4	4	22	7.6	44
St. Louis	552	996.3	1017.1	65	48	56.4	.8	86	24	26	12	0	4	46	73	8.18	4.25	1.24	19	8	1.8	T	10.2	S	--	---	--	3	3	24	8.0	--
Springfield	1265	968.2	1015.9	64	47	55.3	-.2	81	24	18	13	0	6	47	78	6.73	2.39	1.90	19	12	4.4	4	13.7	S	49	S	18	3	7	20	7.9	56
MONTANA																																
Billings	3568	891.0	1016.0	52	33	42.3	-3.9	77	29	19	12	0	16	30	66	3.55	2.50	1.62	11	1	6.5	1	12.3	NE	40	N	23	4	8	18	7.6	49
Butte	5530	827.3	1016.7	47	24	35.7	-2.5	73	29	3	2	0	29	25	--	.47	-.57	.24	9	0	5.6	5	7.6	NW	*36	N	1	1	8	21	8.2	--
Glasgow (U)	2277	940.4	1016.5	53	29	41.0	-3.4	80	29+	7	11	0	21	27	61	1.33	.33	.97	6	1	T	T	11.1	ESE	*29	WNW	15	4	9	17	7.3	--
Great Falls	3664	887.2	1015.2	53	32	42.8	-1.5	81	29	18	11	0	14	27	59	.95	.00	.27	13	0	4.0	1	13.0	SW	56	SW	5+	1	14	15	7.4	68
Havre (U)	2488	925.8	1015.9	56	32	43.8	-1.3	86	29	16	12	0	16	30	62	.68	-.22	.31	6	1	4.1	3	8.8	---	33	SW	15	5	14	11	6.1	57
Helena	3893	872.0	1015.9	53	31	42.1	-1.1	79	29	16	2	0	15	26	58	.67	-.21	.50	9	1	6.3	1	9.1	WSW	41	W	23	2	6	22	7.9	49
Kalispell	2965	------	------	54	33	43.2	-.5	79	29	25	12	0	18	--	--	1.39	.37	.57	10	3	.4	T	----	---	--	---	--	3	9	18	7.5	--
Miles City	2629	930.9	1016.3	54	32	42.9	-3.1	82	30	13	12	0	17	31	--	1.92	.84	.62	11	1	2.0	1	12.2	SE	*35	WNW	23	4	4	22	7.9	--
Missoula	3200	901.1	1016.5	56	33	44.8	.1	81	29	23	16	0	12	29	59	.53	-.37	.17	8	1	T	T	8.0	W	36	W	14	1	4	25	8.4	48
NEBRASKA																																
Grand Island	1841	949.5	1016.3	58	37	47.6	-3.3	80	19	18	12	0	12	37	71	3.49	1.27	2.05	7	2	7.2	4	13.9	SE	--	---	--	3	8	19	7.7	--
Lincoln (U)	1166	------	------	60	41	50.4	-2.2	80	25	20	12	0	8	--	--	2.20	-.09	.68	10	2	5.4	2	11.4	---	58	S	19	4	8	18	7.2	61
Norfolk	1544	960.0	1016.5	58	35	46.4	-1.9	79	19+	13	12	0	13	35	64	1.33	-.95	.69	7	4	4.3	4	----	---	--	---	--	3	10	17	7.1	--
North Platte	2779	915.3	1015.6	55	34	44.3	-4.4	72	15+	12	12	0	13	36	75	3.07	1.01	.82	13	2	13.1	8	12.1	SSE	43	SW	22	2	8	20	8.1	53
Omaha	978	976.6	1017.2	61	41	50.8	-1.4	82	25	18	12	0	9	39	68	2.37	.22	1.48	7	3	2.8	1	13.8	N	43	S	19	6	6	18	7.1	56
Omaha,N.Omaha AP	1323	968.2	------	58	39	48.6	-1.4	81	25	16	12	0	11	--	--	1.83	-.32	.95	11	3	4.2	3	----	---	--	---	--	--	--	--	---	--
Scottsbluff	3950	877.4	1015.1	53	30	41.7	-4.4	76	30	9	12	0	17	32	71	2.33	.34	.76	15	2	18.0	9	11.9	ESE	*35	NNW	4	3	9	18	7.5	--
Valentine (U)	2587	923.1	------	53	32	42.4	-4.1	76	22	9	12	0	16	--	--	2.12	.15	.91	10	3	9.0	7	11.6	---	42	SE	23	4	8	18	7.4	51
NEVADA																																
Elko	5075	842.5	1014.2	56	29	42.7	-1.9	69	30	19	16	0	23	26	58	.80	-.13	.27	5	3	.1	T	6.8	WNW	*23	N	2+	3	14	13	7.0	--
Ely	6257	805.6	1012.8	55	27	41.0	-2.7	68	13	20	16+	0	27	19	47	.53	-.67	.25	8	1	5.9	1	12.2	S	46	S	20	4	4	22	7.3	65
Las Vegas	2162	945.1	1010.1	76	51	63.5	-2.1	89	30	39	19	0	0	22	26	.55	.31	.53	2	0	.0	0	14.4	SW	*53	NNW	6	14	9	7	4.4	76
Reno	4397	860.8	1015.1	63	29	45.7	-2.0	76	29	17	7	0	25	25	46	.21	-.25	.14	2	0	.1	T	8.7	WNW	56	S	14	9	11	10	5.5	82

See footnotes at end of table.

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure: Station Ø	Pressure: Sea level	Temperature: Average maximum	Temperature: Average minimum	Temperature: Average	Temperature: Departure from normal	Temperature: Highest	Temperature: Date	Temperature: Lowest	Temperature: Date	No. of days: Max. 90° F or above	No. of days: Min 32° F or below	Average dew point	Average relative humidity	Precipitation: Total	Precipitation: Departure from normal	Precipitation: Greatest in 24 hours	No. of days: 01 inch or more	No. of days: With thunderstorms	Snow, Sleet: Total	Snow, Sleet: Max depth on ground	Wind: Average hourly speed	Wind: Prevailing direction	Fastest mile: Speed	Fastest mile: Direction	Fastest mile: Date	No. of days (sunrise to sunset): Clear	Partly cloudy	Cloudy	Sky cover tenths sunrise to sunset	Possible sunshine
	Ft	Mb	Mb	°F	°F	°F	°F	°F		°F				°F	%	In	In	In			In	In	M p. h.		M p. h.			0-3	4-7	8-10	0-10	%
NEVADA (Cont'd.)																																
Winnemucca	4299	866.6	1015.0	60	29	44.8	-2.0	75	29+	20	7	0	18	26	50	1.08	0.25	0.78	6	3	T	1	8.8	W	42	N	14	2	10	18	7.0	57
NEW HAMPSHIRE																																
Concord	339	1007.0	1017.8	60	35	47.6	4.6	84	21	15	1	0	12	30	56	1.56	-1.52	.65	7	1	2.8	2	9.3	NW	31	NW	21	7	11	12	6.0	60
Mt. Washington	6262	802.7	------	31	16	23.2	1.2	53	27	-8	3	0	26	--	87	4.44	-1.43	.98	17	0	25.6	8	39.7	W	%118	W	7	4	7	19	7.9	35
NEW JERSEY																																
Atlantic City(U)	8	1017.1	------	58	45	51.7	2.3	77	21+	30	13	0	1	--	--	2.28	-1.12	.64	16	8	1.0	1	15.9	---	50	NW	9	6	10	14	6.2	59
Newark	11	1018.2	1019.4	64	43	53.3	3.3	88	21	31	10+	0	3	39	66	5.45	2.18	1.61	16	2	1.1	4	10.0	WNW	*32	NNW	9	4	17	9	6.4	-
Trenton (U)	56	1011.9	1018.9	63	44	53.4	2.7	87	27	33	4+	0	0	--	--	4.93	1.93	1.29	15	3	1.4	1	10.3	---	43	N	9	4	13	13	6.5	49
NEW MEXICO																																
Albuquerque	5310	844.9	1009.5	68	40	54.2	-1.3	79	18	30	3+	0	3	23	35	.38	-.15	.28	3	0	T	0	9.7	S	50	W	7	10	8	12	5.5	73
Clayton	4969	842.9	1012.2	60	33	46.4	-4.6	79	18	16	8	0	12	--	--	1.50	.37	.88	10	3	.6	1	----	---	--	---	--	8	7	15	6.6	--
Raton	6379	802.6	1012.5	58	28	42.8	-4.1	75	18	4	8	0	22	--	--	2.45	1.37	1.02	11	7	2.7	2	----	---	--	---	--	4	12	14	6.6	--
Roswell	3612	889.9	1010.5	73	41	57.0	-2.7	88	18	27	8	0	3	28	40	.31	-.44	.16	3	3	T	T	12.0	- -	57	SW	22	11	8	11	5.1	--
NEW YORK																																
Albany	277	1014.7	1018.5	59	38	48.9	3.8	89	27	24	16	0	14	35	63	2.25	-.36	.85	10	0	8.4	4	10.0	WNW	47	N	2	3	13	14	6.9	55
Binghamton	1601	959.0	1018.9	55	36	45.4	2.8	79	24+	21	15	0	16	36	72	4.12	.88	1.38	18	4	16.4	8	12.6	NW	43	W	7	3	4	23	7.7	46
Buffalo	693	990.5	1019.1	57	40	48.8	5.0	87	24+	24	3	0	11	39	74	4.86	2.31	1.44	18	3	12.0	5	12.5	WSW	67	W	25	4	9	17	7.1	53
New York (U)	10	1017.5	------	61	45	52.8	3.0	82	21	33	4+	0	0	--	--	5.46	2.24	1.69	15	1	2.4	1	14.3	---	54	NW	9	4	16	10	6.3	58
New York	19	1017.5	1019.3	62	45	53.2	3.1	86	21	33	4	0	0	39	64	5.70	2.60	2.04	15	2	5.4	2	13.8	NNE	47	NW	9	4	15	11	6.3	--
Rochester	543	999.1	1018.7	57	39	48.4	3.9	84	20	23	3	0	12	39	74	2.77	.13	.83	16	4	6.2	3	13.5	WSW	47	SW	5	5	8	17	7.1	64
Schenectady	217	------	------	59	40	49.7	4.6	86	27	26	1	0	11	--	--	2.34	-.71	.95	10	0	5.0	4	----	---	--	---	--	14	9	7	4.3	--
Syracuse	424	997.2	1019.7	58	39	48.4	2.4	85	20	23	3	0	13	37	68	2.60	-.52	.75	21	2	7.0	4	9.9	WNW	52	NW	7	4	10	16	6.9	51
NORTH CAROLINA																																
Asheville (U)	2203	940.6	------	71	48	59.0	3.5	86	27+	30	9+	0	3	--	--	6.76	3.90	4.05	9	5	T	1	9.4	---	36	SE	14	10	11	9	5.3	55
Cape Hatteras(R)	9	1020.4	1020.8	72	55	63.3	3.7	82	27+	42	11+	0	0	53	71	.36	-2.72	.19	5	1	.0	0	11.3	SW	--	---	--	15	8	7	4.2	78
Charlotte	725	992.1	1020.3	77	52	64.1	4.4	91	22	34	10	1	0	50	66	3.33	.16	1.45	9	4	.0	0	9.3	S	38	S	22	13	7	10	5.0	73
Greensboro	891	988.5	1020.7	74	49	61.3	4.2	88	21+	30	14	0	2	47	64	3.79	.44	2.04	8	4	.0	0	9.0	SW	36	NW	9	12	8	10	5.1	76
Raleigh	433	1006.3	1020.2	76	50	63.0	4.5	90	28	31	15	1	2	50	66	1.66	-1.87	.76	7	5	.0	0	9.8	S	*33	SSW	8	12	10	8	5.0	62
Wilmington	30	1019.7	------	76	53	64.3	2.1	91	22	34	15	1	0	--	--	.33	-2.38	.17	4	2	.0	0	13.0	---	44	SW	5	18	4	8	4.2	80
Winston-Salem	967	984.7	1020.1	74	51	62.2	4.7	88	28	34	15	0	0	47	62	3.64	.24	1.77	8	4	.0	0	9.9	SW	*28	W	6	13	7	10	4.9	--
NORTH DAKOTA																																
Bismarck	1650	956.0	1017.4	54	30	41.7	-1.4	83	29	7	11	0	15	28	62	1.61	.22	.66	8	0	2.2	1	12.5	WNW	40	NW	8	5	10	15	6.9	59
Devils Lake (U)	1471	962.8	------	50	30	39.7	-.3	83	29+	6	11	0	17	--	62	.74	-.70	.28	8	0	.8	1	9.6	---	30	N	8	4	11	15	7.2	60
Fargo	895	982.7	1018.0	54	31	42.6	.5	85	29	10	11	0	15	30	65	1.90	.02	1.53	8	2	2.8	2	17.0	N	42	NW	10	6	9	15	6.7	72
Williston (U)	1877	948.2	1017.1	51	31	41.0	-1.9	81	29	5	11	0	16	28	62	1.69	.62	.65	14	1	2.0	1	7.6	---	31	W	24	4	8	18	7.3	53
OHIO																																
Akron	1210	981.1	1019.7	60	40	49.9	2.8	83	25+	21	3	0	13	42	79	5.23	2.03	1.98	19	4	7.0	4	12.2	S	--	---	--	5	7	18	7.4	-
Cincinnati Obs.	761	------	------	67	47	56.9	3.3	87	26	26	9	0	6	--	--	7.74	4.10	2.61	15	11	T	0	6.5	-	32	SW	5	--	--	--	---	58
Cincinnati	869	986.2	1018.4	66	46	56.1	4.0	85	26	24	9	0	7	44	69	5.62	2.03	2.28	18	7	.1	T	11.1	SSW	43	WSW	5	3	9	18	7.5	--
Cleveland (U)	663	------	------	58	42	50.0	2.0	87	25	27	12	0	10	--	--	----	----	----	--	--	----	--	----	---	--	---	--	--	--	--	---	--
Cleveland	787	990.5	1018.9	59	42	50.7	3.4	86	27	25	9	0	9	42	74	5.78	3.05	1.49	20	5	13.2	6	14.5	S	52	SW	5	4	7	19	7.5	32
Columbus (U)	724	------	------	63	46	54.6	3.2	85	24+	24	9	0	6	--	--	6.79	3.60	2.50	16	9	1.5	1	----	---	--	---	--	--	--	--	--	--
Columbus	815	988.8	1019.3	64	44	54.1	3.9	87	24+	23	9+	0	9	43	72	5.70	2.26	2.37	14	7	.8	1	9.5	SSE	45	SW	5	4	8	18	7.3	50
Dayton	1002	982.1	1018.8	62	44	53.2	2.7	83	27	20	9	0	8	42	70	5.81	2.74	2.61	13	5	.5	T	12.0	SSE	45	SW	5	2	10	18	7.8	46
Sandusky (U)	603	996.3	------	58	42	49.9	2.0	87	24	22	9	0	8	--	--	5.68	2.72	1.92	19	6	12.0	8	7.7	---	47	SW	5	7	7	16	6.7	44
Toledo	676	993.0	1018.9	58	40	48.7	2.2	85	24	15	9	0	11	41	77	4.24	.99	1.31	16	4	12.0	10	11.7	E	66	W	5	5	4	21	7.5	38
Youngstown	1178	976.4	1019.6	59	40	49.5	2.3	85	27	22	3	0	12	41	77	6.43	2.79	1.75	19	4	11.5	4	11.2	WSW	*49	WSW	5	4	5	21	7.7	--
OKLAHOMA																																
Oklahoma City	1280	970.9	1014.7	65	47	55.9	-4.4	80	18	20	13	0	3	49	82	7.32	4.15	1.98	14	12	.7	1	15.0	SSE	43	W	22+	2	5	23	8.3	38
Tulsa	672	990.5	1015.0	67	49	58.0	-2.7	81	25	22	13	0	3	49	76	8.74	4.49	1.78	21	15	1.7	2	10.6	SSE	40	SE	25	3	5	22	8.3	38
OREGON																																
Astoria	8	1018.0	1018.2	56	41	48.8	-.9	75	29	32	8	0	1	43	81	3.94	-1.21	1.34	16	1	.0	0	6.7	SE	*28	S	14	5	2	23	8.0	--
Burns (U)	4140	871.7	1014.9	58	33	45.2	-1.4	75	29	26	7+	0	17	29	56	.73	-.09	.38	7	2	T	T	---	---	--	---	--	5	12	13	6.2	--
Eugene	361	1004.7	1018.6	63	41	51.9	1.0	86	29	31	7	0	1	--	--	2.16	-.38	.87	11	2	.0	0	7.8	---	*35	SSW	14	5	7	18	7.0	--
Meacham	4050	------	------	50	33	41.6	.5	74	29	28	2+	0	18	--	--	2.57	-.35	1.46	13	2	5.0	3	----	---	--	---	--	2	6	22	8.2	--
Medford	1312	969.9	1017.7	66	39	52.1	-.2	90	29	28	15	1	3	39	66	.36	-.83	.18	5	1	.0	0	5.6	NNW	*30	WSW	12	5	9	16	6.9	--
Pendleton	1492	962.1	1015.9	64	42	52.7	.4	86	29	35	7+	0	0	37	57	.90	-.14	.50	8	2	.0	0	11.5	W	*55	W	24	5	8	17	6.9	--
Portland	21	1012.2	1017.6	61	42	51.8	.0	87	29	32	7	0	1	43	72	1.84	-.27	.55	15	0	.0	0	7.3	WNW	60	S	14	5	2	23	7.8	37
Roseburg	505	999.3	1018.3	65	40	52.3	.8	90	29	29	7	1	1	--	--	2.15	.02	.84	14	2	.0	0	4.9	---	27	S	11	5	7	18	7.1	49
Salem	195	1010.5	1018.0	64	40	51.8	.4	88	29	29	7	0	2	42	73	2.02	-.37	.80	15	2	.0	0	7.5	S	*31	S	14	5	3	22	7.5	--
Sexton Summit (R)	3836	------	------	55	36	45.1	.8	78	28+	26	6	0	11	--	--	1.12	-.96	.61	11	3	4.5	2	----	---	--	---	--	6	9	15	7.0	--
PENNSYLVANIA																																
Allentown	376	1005.7	1020.1	62	41	51.5	3.0	87	27+	26	11	0	10	40	71	6.49	3.10	1.93	14	4	3.1	3	12.5	E	--	- -	--	4	13	13	6.6	
Erie	732	------	------	56	40	48.1	3.8	85	25	24	15	0	11	--	--	6.33	2.83	1.50	18	5	17.2	9	12.3	---	*35	SSE	4	3	9	18	7.4	--
Harrisburg	335	1005.7	1019.9	64	45	54.3	3.4	92	27	27	11	2	4	39	62	3.89	.92	1.61	13	5	.7	T	9.3	WNW	34	NW	9	4	11	15	6.9	54
Philadelphia (U)	26	------	------	64	46	55.0	2.3	88	27	35	13+	0	0	--	--	4.40	1.02	.75	13	--	----	--	----	---	--	---	--	--	--	--	---	--
Philadelphia	10	1014.8	1019.3	64	44	54.2	2.6	89	27	31	11+	0	2	41	66	4.22	.84	1.15	14	3	T	T	11.1	SW	42	N	9	4	12	14	6.4	58
Pittsburgh (U)	749	------	------	64	46	55.1	3.3	89	27	29	14	0	7	--	--	4.94	1.86	1.69	16	--	.3	--	----	---	--	---	-	--	--	-	---	45
Pittsburgh	1151	988.5	1019.4	62	43	52.7	3.9	87	27	24	15	0	9	41	70	4.58	1.39	1.87	17	4	2.2	T	11.2	WSW	*40	WSW	5	3	9	18	7.5	50
Reading (U)	266	1007.3	1019.6	64	45	54.5	3.2	91	27	31	11	2	4	--	--	5.63	2.39	1.85	16	5	1.0	1	11.7	---	42	NW	9	6	11	13	6.5	54
Scranton	940	985.3	1020.1	59	39	49.1	2.1	84	27	25	3+	0	12	37	67	5.81	2.56	1.45	15	5	8.0	6	10.2	WSW	47	NW	5	4	9	17	7.0	55
Shippingport (U)	736	------	------	63	42	52.4	---	86	24	25	15	0	8	--	--	5.46	----	2.29	15	5	1.4	1	3.0	---	*37	WSW	25	--	--	--	---	--
Williamsport	527	1000.4	------	62	42	51.8	2.7	88	27	24	11	0	10	--	--	6.30	2.76	1.74	16	--	5.9	4	----	---	--	---	--	5	10	15	7.1	--
RHODE ISLAND																																
Block Island	110	1013.9	1018.2	53	40	46.5	1.6	68	21	30	14	0	4	--	--	3.70	.33	1.71	11	1	1.1	1	----	---	--	---	--	8	8	14	6.1	--
Providence	55	1012.5	1018.8	59	40	49.5	3.5	87	21	26	1	0	8	35	62	4.46	1.09	1.93	12	2	2.1	2	13.8	SW	*33	S	2+	7	10	13	6.0	62
SOUTH CAROLINA																																
Charleston (U)	9	------	------	73	60	66.8	1.2	84	2	46	15	0	0	--	--	1.49	-.96	1.00	5	--	.0	0	10.4	---	45	SE	1	--	--	--	---	79
Charleston	41	1018.7	1020.7	77	52	64.2	-.1	85	30	35	15	0	0	55	74	1.70	-1.12	1.25	4	2	.0	0	10.3	SE	--	---	--	14	4	12	5.3	--
Columbia	217	1011.5	1020.0	79	53	65.6	2.1	90	22	34	10	1	0	53	68	2.25	-1.29	1.10	7	3	.0	0	8.3	S	*32	WSW	8	15	4	11	5.1	68
Florence	146	1014.8	------	79	53	65.8	2.4	90	27	37	15	1	0	--	--	.53	-3.14	.37	5	1	.0	0	----	---	--	---	--	17	4	9	4.5	--
Greenville	1018	982.2	1019.5	75	53	63.8	3.6	88	22+	36	9	0	0	49	63	4.82	1.00	2.46	9	4	.0	0	9.4	SW	38	W	5+	12	5	13	5.6	67
Spartanburg	801	------	------	75	53	64.1	3.6	88	22+	35	10	0	0	--	--	2.77	-.78	1.67	7	3	.0	0	9.4	---	*35	WSW	6	--	--	--	---	--
SOUTH DAKOTA																																
Huron	1282	969.5	1016.0	56	33	44.4	-2.0	78	29+	15	6+	0	14	34	69	2.41	.49	.89	11	2	10.0	8	12.9	S	42	W	20	6	9	15	6.6	75
Rapid City	3165	900.8	1016.7	51	31	41.0	-3.5	75	29+	11	12	0	16	30	70	2.06	.05	.54	14	2	16.2	10	12.4	NNW	40	N	16	3	9	18	7.5	42
Sioux Falls	1420	964.8	1017.2	57	33	45.2	-1.2	79	29+	14	12	0	14	30	59	3.15	.80	1.63	7	2	10.7	9	11.8	SSE	*35	SW	20	8	5	17	6.5	--
TENNESSEE																																
Bristol	1519	964.8	------	73	47	60.2	4.2	88	28	28	15	0	5	--	--	4.38	1.13	1.94	6	2	T	0	----	---	--	---	--	9	11	10	5.7	--

See footnotes at end of table.

CLIMATOLOGICAL DATA

APRIL 1957

State and station	Elevation (ground)	Pressure: Station	Pressure: Sea level	Temperature: Average maximum	Temperature: Average minimum	Temperature: Average	Temperature: Departure from normal	Temperature: Highest	Date	Temperature: Lowest	Date	No. of days: Max. 90° F. or above	No. of days: Min 32° F. or below	Average dew point	Average relative humidity	Precipitation: Total	Precipitation: Departure from normal	Precipitation: Greatest in 24 hours	No. of days: .01 inch or more	No. of days: With thunderstorms	Snow, Sleet: Total	Snow, Sleet: Max. depth on ground	Wind: Average hourly speed	Wind: Prevailing direction	Fastest mile: Speed	Fastest mile: Direction	Fastest mile: Date	No of days (sunrise to sunset): Clear	No of days (sunrise to sunset): Partly cloudy	No of days (sunrise to sunset): Cloudy	Sky cover, tenths (sunrise to sunset)	Possible sunshine
	Ft.	Mb	Mb.	°F.	°F.	°F.	°F.	°F		°F.		#		°F.	%	In.	In.	In.			In.	In.	M. p. h.		M. p. h.			0–3	4–7	8–10	0–10	%
TENNESSEE (Cont'd.)																																
Chattanooga	670	991.4	1019.1	76	50	63.0	3.3	88	27+	33	9+	0	0	50	68	4.55	0.02	2.68	8	5	0.0	0	8.7	S	57	W	8	7	10	13	6.0	61
Knoxville	950	984.1	1019.5	75	51	62.8	3.8	90	28	33	9+	1	0	48	63	4.56	.92	2.32	8	5	T	0	9.4	WSW	50	W	5+	13	6	11	5.5	74
Memphis (U)	271	------	------	73	55	64.4	2.2	85	19+	31	12	0	2	--	--	9.37	4.67	2.94	15	--	.0	0	----	---	--	---	--	--	--	--	---	--
Memphis	263	1002.5	1017.2	75	54	64.4	2.6	88	29	32	9	0	1	51	68	9.31	4.51	3.03	14	9	.0	0	11.0	SSW	44	S	3	3	8	19	7.0	47
Nashville	577	998.6	1018.6	74	52	63.1	3.4	89	28	31	9	0	2	51	69	2.79	-.90	.74	12	10	T	0	9.3	S	39	NW	8	9	9	12	6.3	65
Oak Ridge (R)	905	985.2	------	74	49	61.6	4.0	88	24+	34	9+	0	0	--	--	4.55	.47	1.89	10	7	.0	0	6.5	---	41	---	5	12	7	11	5.7	--
TEXAS																																
Abilene	1759	951.6	1012.5	74	50	61.9	-2.6	93	17	28	13	1	2	49	68	6.52	4.05	3.75	10	10	.0	0	15.4	SSE	52	S	22+	6	6	18	7.0	40
Amarillo	3590	886.6	1012.2	64	41	52.4	-3.2	86	18	23	12	0	8	37	64	2.69	1.24	1.02	8	5	T	T	14.2	SW	38	W	22	6	6	18	7.0	55
Austin	615	992.6	1014.5	75	57	66.0	-1.9	86	18	37	13	0	0	58	80	9.93	5.97	3.04	14	8	.0	0	11.4	SSE	44	NE	26	2	5	23	8.0	41
Brownsville	16	1010.2	1012.5	82	67	74.4	.7	89	3	52	15	0	0	67	82	1.85	.26	.73	7	4	.0	0	16.9	SE	35	N	8	3	10	17	7.2	35
Corpus Christi	41	1011.9	1013.1	80	64	72.1	.4	89	3	48	13	0	0	64	80	2.53	.79	.94	7	5	.0	0	14.3	SE	35	S	20	4	7	19	7.8	57
Dallas	487	996.3	1014.8	71	55	63.0	-3.3	83	18	31	13	0	1	55	79	13.85	9.98	5.10	15	8	.0	0	12.9	SE	38	NW	8	3	3	24	8.3	33
Del Rio	1091	978.3	1012.4	78	57	67.9	-3.2	92	7	39	13	4	0	53	65	6.49	5.04	2.64	10	7	.0	0	12.8	---	40	SE	27	7	9	14	6.5	47
El Paso	3920	883.5	1010.0	75	49	62.4	-.7	85	18	36	3	0	0	24	27	.09	-.18	.09	1	0	.0	0	13.8	WSW	52	W	7	18	9	3	3.2	87
Fort Worth	544	993.9	1014.8	70	53	61.6	-4.3	81	18	30	13	0	2	55	81	12.19	8.34	4.55	17	10	.0	0	14.4	SE	*46	NW	20	4	1	25	8.2	--
Galveston (U)	7	------	------	73	64	68.4	-.5	79	23+	48	14	0	0	--	--	3.76	.67	1.34	9	--	.0	0	14.3	---	43	SW	28	--	--	--	---	47
Galveston	5	1012.9	1015.3	73	64	68.5	-.6	80	26	48	14	0	0	63	83	5.87	2.47	2.51	11	8	.0	0	14.1	ESE	--	---	--	5	7	18	7.3	--
Houston (U)	41	1009.8	------	76	62	69.2	-.3	84	4	46	9	0	0	--	--	9.46	6.06	3.76	13	8	.0	0	13.1	---	42	SE	25	2	4	24	8.5	47
Houston	50	1012.2	1015.1	75	62	68.6	.2	84	1	46	9	0	0	62	81	8.07	4.98	2.70	16	9	.0	0	16.7	SE	--	---	--	2	3	25	8.3	--
Laredo	500	996.3	1011.6	84	63	73.5	-2.4	101	2	45	14	9	0	58	65	2.79	1.18	1.49	7	5	.0	0	12.8	SSE	*36	NE	27	6	3	21	7.2	--
Lubbock	3243	900.1	1011.7	69	43	55.8	-3.7	88	18	26	13	0	5	41	65	3.48	2.37	1.39	10	6	.1	T	16.7	NE	*40	SSW	18+	7	7	16	6.4	--
Midland	2854	912.3	1011.6	74	48	61.0	-3.5	88	17	28	13	0	3	41	56	.44	-.97	.20	5	5	.0	T	12.3	S	*35	N	7	7	12	11	6.1	--
Port Arthur	16	1014.2	1015.8	76	61	68.9	1.0	83	21+	44	9	0	0	62	81	7.05	3.11	2.65	13	8	.0	0	14.8	SE	45	SE	3	3	7	20	7.6	33
San Angelo	1903	945.5	1012.5	74	51	62.8	-4.6	90	7+	30	13	2	2	48	65	4.00	1.81	2.35	7	9	.0	0	13.1	S	*69	WNW	26	9	6	15	6.4	--
San Antonio	792	988.5	1013.5	76	57	66.3	-2.5	84	18	40	13	0	0	57	76	9.32	6.30	2.39	13	8	.0	0	10.8	SE	40	NE	8+	3	6	21	7.8	44
Victoria	110	1009.1	1013.8	77	61	69.4	-1.2	86	3+	44	13	0	0	62	79	7.05	4.61	3.27	10	7	.0	0	13.4	---	%52	N	27	4	1	25	8.3	--
Waco	500	994.2	1014.2	73	55	64.2	-2.6	83	18	33	13	0	0	57	80	13.37	9.40	5.09	16	9	.0	0	14.5	SSE	*52	W	24	3	5	22	8.0	--
Wichita Falls	1020	977.7	1013.8	69	51	59.9	-2.7	85	17+	28	13+	0	3	52	77	8.50	6.15	1.94	12	9	T	T	11.6	SE	*30	SSW	6	3	6	21	7.9	--
UTAH																																
Milford	5028	840.8	1011.9	61	33	47.2	-.6	73	10+	23	8	0	14	--	--	1.43	.67	.82	8	1	7.4	2	----	---	--	---	--	3	9	18	7.2	--
Salt Lake City	4220	864.2	1012.6	60	37	48.4	-1.7	70	10+	30	7+	0	6	31	54	3.24	1.48	2.41	10	1	5.1	3	8.5	SE	29	SE	18	5	5	20	7.2	53
VERMONT																																
Burlington	331	1002.2	1018.0	56	35	45.4	3.1	79	27	17	4	0	14	29	54	2.11	-.52	.59	10	1	1.0	1	7.9	S	35	S	20	5	9	16	7.0	54
VIRGINIA																																
Lynchburg	947	985.3	------	71	49	59.8	4.3	91	21	32	13+	2	2	--	--	3.77	.64	1.55	10	7	2.8	1	9.2	---	35	W	8+	8	11	11	5.8	58
Norfolk	26	1018.6	1020.0	73	51	62.3	6.0	93	28	34	16	3	0	49	67	1.86	-1.30	1.10	7	5	T	0	10.7	SSW	56	W	8	11	10	9	5.2	78
Richmond	162	1013.9	1020.3	74	49	61.5	5.4	93	27+	31	14+	3	3	48	65	2.25	-.98	1.36	8	3	1.2	1	8.9	S	38	SW	6	6	14	10	5.7	65
Roanoke	1174	977.5	1019.9	72	48	59.8	4.3	95	27	29	15	4	2	44	62	4.55	1.60	1.60	12	5	.6	T	9.2	SE	--	---	—	8	9	13	5.8	--
WASHINGTON																																
Olympia	190	1010.2	1017.4	61	40	50.6	2.2	81	29	31	1+	0	5	39	69	1.72	-.62	.79	10	1	.0	0	7.4	SW	*37	S	14	3	7	20	7.9	--
Seattle (U)	14	------	------	59	45	52.3	.5	77	30	38	6	0	0	--	--	2.32	.38	.75	13	1	.0	0	8.8	---	42	S	14	3	6	21	7.8	51
Seattle	14	1016.7	1018.6	--	--	----	---	--	--	--	--	--	--	40	67	----	----	----	--	--	----	--	7.6	[illegible]	--	---	--	--	--	--	---	--
Seattle-Tacoma	386	1004.1	1018.2	58	42	50.1	1.0	75	29	35	7	0	0	42	75	2.23	.11	.44	15	0	T	0	12.3	SW	*40	S	14	4	2	24	7.9	--
Spokane	2357	946.2	1015.3	58	38	48.0	1.7	83	29	31	4	0	3	35	62	.81	-.18	.37	5	0	1.4	T	8.9	SW	40	SW	14	3	9	18	7.1	65
Stampede Pass(R)	3958	878.4	1018.2	43	32	37.5	.4	66	29	25	6	0	22	--	--	4.28	-1.22	1.21	17	1	16.2	108	----	---	--	---	--	3	2	25	8.2	--
Tatoosh	101	1014.2	1017.3	51	44	47.4	-.1	60	29	38	23	0	0	43	84	5.11	-.12	1.35	16	0	.0	0	12.8	WNW	70	S	14	4	2	24	8.2	41
Walla Walla (U)	949	979.7	1015.6	64	45	54.3	.4	86	29	37	24	0	0	--	--	.56	-.68	.24	9	2	.0	0	6.3	---	41	NW	12	7	5	18	6.8	78
Yakima	1061	976.3	1015.5	65	38	51.4	.0	87	29+	30	8+	0	5	34	53	.93	.50	.50	5	0	.0	0	7.1	WNW	*35	SSW	30	6	7	17	6.8	--
WEST VIRGINIA																																
Charleston	950	983.2	1018.8	70	47	58.5	3.5	90	26	25	15	1	5	43	60	2.60	-1.14	.97	10	6	T	0	7.2	W	*44	SE	4	7	9	14	6.4	--
Elkins	1970	-----	------	65	41	53.0	3.9	85	27	18	15	0	10	--	--	3.86	.50	1.16	14	7	T	T	6.1	---	34	SSE	4	4	7	19	7.1	--
Huntington (U)	565	------	------	72	47	59.2	1.9	92	26	27	15	4	4	--	--	2.79	-.63	.88	11	--	T	0	----	---	--	---	--	--	--	--	---	--
Parkersburg (U)	615	------	------	68	46	57.2	3.4	89	26+	26	15	0	4	--	--	3.26	.18	.88	14	6	T	T	6.0	---	25	NW	8	10	8	12	5.8	59
WISCONSIN																																
Green Bay	689	994.6	1017.8	54	35	44.5	2.5	81	29	20	11+	0	14	35	74	2.93	.42	1.13	11	2	6.9	3	12.2	SW	54	SW	20	5	8	17	7.0	56
La Crosse	652	992.6	1017.4	58	39	48.6	2.0	84	30	19	12	0	12	34	58	2.18	-.13	.64	8	3	.6	1	11.0	NW	*30	W	11	6	10	14	6.5	--
Madison	857	981.7	1017.8	58	38	47.9	2.2	87	30	20	12	0	11	36	68	2.40	-.09	.91	11	3	2.6	1	11.4	WNW	33	SW	20	5	8	17	7.1	54
Milwaukee	672	992.6	1018.2	53	37	45.0	.7	79	20	21	12	0	13	36	74	2.70	.31	.64	15	5	.3	T	14.1	NNE	40	SE	19+	3	7	20	7.7	43
WYOMING																																
Casper	5322	834.1	1013.3	50	28	38.7	-4.3	70	21+	9	12	0	22	27	70	2.45	.53	.68	15	2	21.2	5	12.7	WSW	*46	WSW	5	2	12	16	7.3	--
Cheyenne	6131	808.0	1014.2	47	27	36.9	-4.2	68	30	5	7+	0	20	27	71	2.82	.68	1.25	16	2	21.8	13	15.3	SSE	52	NW	4	3	7	20	7.7	44
Lander	5563	832.4	1014.2	49	27	38.0	-4.1	65	29	13	8	0	22	25	62	5.46	3.05	1.97	12	1	40.4	14	6.9	---	38	SW	21	3	9	18	7.3	58
Sheridan	3942	882.8	1015.9	51	29	40.0	-3.5	76	29	10	7	0	22	30	71	3.26	1.00	.66	16	0	19.2	5	10.0	WNW	56	NW	23	5	5	20	7.1	42
PACIFIC AREA																																
Canton Island	9	1008.5	1009.2	89	79	83.8	.1	93	22	75	3+	9	0	75	78	1.88	-1.90	1.03	12	0	.0	0	12.1	NNE	*26	NNE	24	0	10	20	8.2	--
Hilo	31	1015.6	1017.7	78	64	71.0	-.6	86	15	60	11	0	0	65	82	17.50	4.23	5.53	26	0	.0	0	9.8	WSW	*26	SSE	15	1	3	26	8.6	25
Honolulu	7	1017.3	1017.7	79	67	73.0	-1.3	85	2	60	9	0	0	62	69	1.56	-.08	.64	10	1	.0	0	11.2	ENE	33	NE	25	7	13	10	5.7	79
Koror (R)	94	1006.1	1009.8	87	76	81.4	-.1	90	5+	73	10+	4	0	76	86	16.42	7.64	4.36	23	3	.0	0	----	---	--	---	--	0	6	24	9.1	--
Lihue	115	1012.5	1018.0	79	65	72.1	.1	81	1+	59	9+	0	0	63	76	2.15	-.88	.86	21	1	.0	0	10.7	NE	28	NE	16	2	16	12	6.7	57
Majuro	10	1010.2	1010.5	86	77	81.4	---	88	4+	73	16	0	0	75	80	7.21	----	2.31	16	1	.0	0	----	---	--	---	--	2	6	22	8.3	--
Ponape (R)	120	1005.4	1010.6	87	76	81.5	.0	89	5+	71	13	0	0	75	81	6.53	-12.47	1.46	24	0	.0	0	----	---	--	---	--	0	6	24	8.6	--
Taguac, Guam(R)	361	------	------	86	72	79.0	---	88	10	66	4+	0	0	--	--	3.13	----	.57	19	0	.0	0	----	---	--	---	--	--	--	--	---	77
Truk (Moen Is.)	8	1010.5	1010.8	85	78	81.8	-.6	87	8+	72	23	0	0	76	80	11.15	-.37	2.89	22	1	.0	0	----	---	--	---	--	2	3	25	9.1	--
Wake Island	11	1015.9	1016.3	84	74	79.0	.7	85	5+	71	29+	0	0	70	75	1.80	-.14	.64	12	0	.0	0	13.8	E	*29	E	27	10	12	8	5.0	--
Yap (R)	53	1008.5	1010.4	87	77	81.9	-.4	89	2+	70	27	0	0	76	82	5.27	-.48	1.49	21	0	.0	0	----	---	--	---	--	0	0	30	9.9	--
WEST INDIES																																
San Juan, P.R.	15	1014.2	1016.3	84	69	76.3	---	87	13	65	11	0	0	68	74	1.14	----	.43	14	0	.0	0	9.1	---	29	NE	22	8	18	4	4.8	76
San Juan, P.R. (U)	47	------	------	82	73	77.0	.4	87	13	70	27	0	0	--	--	1.20	-2.60	.45	12	--	.0	0	----	---	--	---	--	--	--	--	----	--
ALASKA																																
Anchorage	92	1007.5	1012.5	46	29	37.1	1.7	53	23	22	4+	0	25	26	63	.01	-.39	.01	1	0	T	1	6.8	S	*22	S	23	4	9	17	7.2	63
Annette	110	1012.2	1016.1	49	37	42.9	.3	57	14	32	22	0	1	36	78	10.48	2.35	2.47	20	0	.1	T	10.3	SSE	*31	SSE	26	2	8	20	7.9	--
Barrow	22	1018.6	1019.2	14	-1	6.9	7.1	37	12	-30	3	0	30	2	77	.01	-.09	.01	1	0	.1	23	13.1	NE	35	E	11	8	6	16	6.3	--
Barter Island	39	1017.6	1019.8	15	-2	6.2	---	34	17	-28	2	0	30	1	74	.05	----	.03	3	0	.5	26	8.4	E	*30	E	21	8	7	15	5.9	--
Bethel	10	1007.8	1009.3	40	26	33.2	6.4	51	22	-4	3	0	26	29	82	.44	-.11	.28	8	0	2.9	2	10.6	S	*26	SSE	8+	3	7	20	7.8	--
Cold Bay	90	1005.8	1009.9	41	31	36.0	1.8	47	10	23	3+	0	20	32	85	2.47	1.13	.94	16	0	2.8	T	18.0	SSE	*51	SE	16	1	7	22	8.4	--
Cordova	40	1010.8	1012.7	46	29	37.4	1.0	53	30	23	10+	0	25	31	75	1.53	-3.54	.38	16	0	2.6	T	5.6	SE	*23	ESE	20	5	3	22	7.7	--
Fairbanks	436	996.6	1014.2	43	22	32.5	3.6	53	12+	2	4+	0	30	23	65	.08	-.21	.04	5	0	.9	11	4.4	N	*20	ENE	21	10	6	14	5.8	--
Juneau	15	1013.9	1014.8	46	31	38.6	-.9	53	30	25	11+	0	18	31	78	3.65	.67	.67	19	0	1.0	1	8.9	ESE	32	SE	27	5	4	21	7.7	37
King Salmon	44	1008.5	1010.6	46	29	37.2	4.1	56	22	19	4+	0	24	30	77	.64	-.20	.20	10	0	.1	T	10.2	E	*38	ENE	20	4	7	19	7.3	--
Kotzebue	10	1011.9	1012.6	30	14	21.7	7.9	39	20	-18	3	0	30	18	82	.06	-.30	.03	3	0	1.5	30	16.1	ESE	*46	ESE	10	10	6	14	5.7	--
McGrath	334	999.7	1012.6	42	21	31.6	5.6	50	18	-9	4	0	28	20	61	.19	-.30	.11	5	0	2.9	21	6.1	N	*23	S	6	10	8	12	5.8	--

See footnotes at end of table.

CLIMATOLOGICAL DATA

APRIL 1957

State and station	Elevation (ground)	Pressure		Temperature												Precipitation							Wind					No. of days (sunrise to sunset)				
												No. of days							No of days		Snow, Sleet				Fastest mile							
		Ø Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F or above	Min 32° F or below	Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max. depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy	Sky cover tenths (sunrise to sunset)	Possible sunshine
	Ft.	Mb	Mb.	°F.	°F.	°F.	°F.	°F		°F		#		°F	%	In.	In.	In.			In.	In.	M p. h.		M p. h.			0–3	4–7	8–10	0–10	%
ALASKA (Cont'd.)																																
Nome	13	1009.5	1010.0	32	22	27.1	6.1	41	21+	-11	2	0	30	23	84	0.82	0.04	0.28	11	0	6.5	20	13.4	ESE	53	S	12	10	3	17	6.5	36
Northway	1713	949.2	1013.5	39	12	25.4	-.4	46	24	-9	5	0	30	--	--	.43	.08	.23	5	0	4.6	28	----	---	--	---	--	11	9	10	5.3	--
St. Paul Island	22	1004.7	1005.8	35	29	32.3	2.2	40	23	16	2	0	24	30	89	.86	-.16	.25	13	0	1.1	8	----	---	--	---	--	3	2	25	8.6	--
Yakutat	28	1012.5	1013.7	46	29	37.2	.7	54	12+	22	11+	0	23	31	79	6.03	-1.95	1.45	15	0	7.6	1	7.1	E	*37	ESE	25	6	4	20	7.4	-

Data from airport unless otherwise specified. U indicates Urban, R indicates Rural, sites.
- * Data entered in column "Fastest Mile" is the fastest mile observed. This station is not equipped with automatic recording wind instrument.
- + And also on a later date or dates.
- % Peak gust.
- a maximum hourly average
- # Number of days maximum 70° or above for Alaskan stations.
- Ø Station pressures apply to elevation shown in Table 10b of the annual issue of this publication.

HEATING DEGREE DAYS

(Base 65°F.)

APRIL 1957

State and station	Current season		Normals July through this month
	This month	Period July through this month	
ALABAMA			
Birmingham	120	2155	2750
Mobile	64	1223	1612
Montgomery	82	1675	2137
ARIZONA			
Flagstaff	735	6323	6848
Phoenix (U)	42	1355	1492
Phoenix	48	1223	1698
Prescott	423	4032	4352
Tucson	50	1333	1776
Winslow	345	4274	4550
Yuma	13	706	951
ARKANSAS			
Ft. Smith	181	3041	3164
Little Rock	140	2705	2964
Texarkana	110	2217	2362
CALIFORNIA			
Bakersfield	98	2089	2094
Bishop	327	3919	4044
Blue Canyon	604	4968	5120
Burbank	151	1272	1701
Eureka (U)	426	4188	3975
Fresno	156	2586	2489
Los Angeles (U)	111	920	1364
Los Angeles	144	1104	1838
Mt. Shasta (R)	542	5467	5382
Oakland	213	2812	2832
Red Bluff	173	2526	2495
Sacramento (U)	152	2395	2510
Sacramento	158	2642	2712
Sandberg (R)	480	3884	3926
San Diego	122	954	1434
San Francisco (U)	222	2572	2641
San Francisco	242	2744	2993
San Jose	183	2144	2227
Santa Maria	327	2691	2553
COLORADO			
Alamosa	771	7614	8016
Colorado Springs	766	5900	5872
Denver	701	5470	5781
Grand Junction	478	5770	5628
Pueblo	601	5144	5479
CONNECTICUT			
Bridgeport	447	5195	5609
Hartford	457	5931	5907
New Haven	496	5504	5713
DELAWARE			
Wilmington	344	4618	4794
DIST. OF COLUMBIA			
Washington (U)	241	3813	4178
Washington	240	3947	4246
FLORIDA			
Apalachicola (U)	26	790	1307
Daytona Beach	8	665	868
Fort Myers	0	297	405
Jacksonville	21	848	1243
Key West (U)	0	21	77
Miami (U)	0	144	173
Miami	0	118	178
Miami Beach	0	66	123
Orlando	0	443	650
Pensacola (U)	47	1017	1435
Tallahassee	45	1097	1519
Tampa	0	392	674
West Palm Beach	0	176	248
GEORGIA			
Athens	118	2406	2785
Atlanta	109	2209	2806
Augusta	103	1926	2138
Columbus	83	1820	2396
Macon	68	1671	2049
Rome	138	2688	3111
Savannah	65	1465	1710
IDAHO			
Boise	483	5914	5549
Lewiston	430	5672	5193
Pocatello	616	6785	6523
ILLINOIS			
Cairo (U)	169	3388	3709
Chicago	473	5583	6023
Chicago University	519	5624	
Moline	448	5913	6120
Peoria	431	5518	5854
Springfield	386	5100	5490
INDIANA			
Evansville	258	4157	4264
Ft. Wayne	490	5698	6008
Indianapolis	396	4984	5405
South Bend	515	5836	6214
IOWA			
Burlington	431	5663	5888
Des Moines	457	5991	6200
Dubuque	500	6647	6928
Sioux City	498	6309	6730
KANSAS			
Concordia (U)	421	5048	5157
Dodge City	429	4814	4908
Goodland	626	5912	6068
Topeka (U)	370	4688	4794
Topeka	388	4930	5057
Wichita	359	4497	4463
KENTUCKY			
Lexington	288	4179	4824
Louisville	264	3988	4340
Pikeville (U)	171		
LOUISIANA			
Baton Rouge	54	1088	1595
Lake Charles	55	1049	1543
New Orleans (U)	31	763	1175
New Orleans	37	873	1317
Shreveport	91	1897	2117
MAINE			
Caribou	856	9344	9460
Greenville (U)	785	8740	
Portland	610	7131	7170
MARYLAND			
Baltimore (U)	240	3671	4130
Baltimore	300	4312	4667
Frederick	338	4747	4748
MASSACHUSETTS			
Blue Hill Obs. (R)	547	6190	
Boston	466	5368	5513
Nantucket	579	5314	5569
Pittsfield	570	6976	7253
MICHIGAN			
Alpena (U)	692	7366	7501
Detroit	497	5745	6093
Detroit (Willow Run)	499	5871	6170
East Lansing (U)	502	6008	
Escanaba (U)	737	7828	8020
Grand Rapids	539	6197	6695
Marquette (U)	692	7882	7863
Muskegon	574	6233	6623
S. St. Marie	793	8618	8752
MINNESOTA			
Duluth (U)	786	9311	8887
Duluth	769	9348	9285
Internat. Falls	811	10132	9992
Minneapolis	545	7240	7514
Rochester	572	7397	7705
St. Cloud	662	8305	8456
MISSISSIPPI			
Jackson	114	1869	2202
Meridian	107	1871	2324
Vicksburg (U)	93	1679	2000
MISSOURI			
Columbia	348	4625	4964
Kansas City	342	4493	4769
St. Joseph	389	5097	5195
St. Louis (U)	301	4167	4368
St. Louis	317	4360	4587
Springfield	310	4218	4559
MONTANA			
Billings	673	6814	6683
Glasgow	713	8451	8265
Great Falls	661	7331	7030
Havre (U)	628	7804	7775
Helena	679	7926	7654
Kalispell	648	7935	7449
Miles City	662	7381	7459
Missoula	599	7367	7332
NEBRASKA			
Grand Island	517	5918	6077
Lincoln (U)	438	5345	5661
Norfolk	550	6418	6754
North Platte	615	6361	6244
Omaha	431	5619	5953
Scottsbluff	690	6277	6455
Valentine (U)	1018	6253	6161
NEVADA			
Elko	661	7008	6774
Ely	712	7007	6825
Las Vegas	93	2371	2425
Reno	572	5808	5553
Tonopah	492	5244	5450
Winnemucca	601	6257	5959
NEW HAMPSHIRE			
Concord	517	7037	7214
Mt. Washington Obs.	1247	12414	
NEW JERSEY			
Atlantic City (U)	394	4221	4528
Newark	367	4711	5093
Trenton (U)	364	4641	4924
NEW MEXICO			
Albuquerque	317	4089	4319
Clayton	551	4795	4930
Roswell	240	3147	3396
NEW YORK			
Albany	491	6495	6666
Binghamton	586	6790	7131
Buffalo	508	5900	6451
New York (U)	376	4572	4879
New York	369	4450	4838
Rochester	520	6186	6520
Schenectady	466	6116	
Syracuse	507	6137	6236
NORTH CAROLINA			
Asheville (U)	235	3464	3962
Cape Hatteras (R)	126	2095	2367
Charlotte	123	2575	3176
Greensboro	193	3355	3760
Raleigh	162	3007	3328
Wilmington	121	2068	2316
Winston-Salem	179	3236	3672
NORTH DAKOTA			
Bismarck	692	8467	8562
Devils Lake (U)	756	9258	9409
Fargo	668	8494	8835
Grand Forks	713	9090	
Pembina	741	9301	
Williston (U)	711	8444	8570
OHIO			
Akron	479	5748	5918
Cincinnati (U)	288	3922	4424
Cincinnati	335	4723	5023
Cleveland	471	5349	5737
Columbus	379	4818	5404
Dayton	402	5045	5379
Sandusky (U)	491	5395	5601
Toledo	509	5824	6089
Youngstown	492	5761	5878
OKLAHOMA			
Oklahoma City	284	3680	3604
Tulsa	235	3449	3540
OREGON			
Astoria	476	4853	4416
Burns (U)	588	10831	6410
Eugene	392	4636	4384
Meacham	697	7107	7034
Medford	386	4682	4271
Pendleton	372	5462	4956
Portland (U)	332	4183	3874
Portland	390	4661	4297
Roseburg	378	4356	
Salem	393	4575	4234
Sexton Summit (R)	593	5423	5497
PENNSYLVANIA			
Allentown	420	5426	5691
Harrisburg	358	4877	5116
Philadelphia (U)	326	4109	4430
Philadelphia	346	4516	4762
Pittsburgh (U)	355	4523	4898
Pittsburgh	409	5185	5674
Reading (U)	353	4662	4926
Scranton	485	6025	5816
Williamsport	418	5499	5692
RHODE ISLAND			
Block Island	548	5149	5412
Providence	463	5566	5809
SOUTH CAROLINA			
Charleston (U)	48	1436	1769
Charleston	90	1764	1973
Columbia	102	1989	2435
Florence	91	1971	2507
Greenville	131	2641	3028
Spartanburg	124	2608	3018
SOUTH DAKOTA			
Huron	611	7413	7543
Pierre	645	7262	
Rapid City	714	6954	7030
Sioux Falls	591	7192	7492
TENNESSEE			
Bristol	221	3504	4053
Chattanooga	143	2745	3339
Knoxville	168	2862	3540
Memphis	145	2763	3113
Nashville	175	3063	3470
TEXAS			
Abilene	155	2384	2657
Amarillo	381	3862	4246
Austin	79	1421	1713
Brownsville	9	363	617
Corpus Christi	22	691	1011
Dallas	120	2208	2272
Del Rio	64	1196	1407
El Paso	102	2210	2641
Ft. Worth	142	2353	2356
Galveston (U)	32	747	1211
Galveston	34	795	1233
Houston (U)	37	890	1276
Houston	45	992	1388
Laredo	41	653	781
Lubbock	289	3281	3551
Midland	175	2415	
TEXAS (Cont'd.)			
Port Arthur	50	1025	1517
San Angelo	147	2124	2107
San Antonio	71	1202	1579
Victoria	44	927	1126
Waco	107	1890	2025
Wichita Falls	197	2880	3009
UTAH			
Milford	531	5931	6099
Salt Lake City	489	5504	5552
VERMONT			
Burlington	582	7246	7486
VIRGINIA			
Lynchburg	238	3724	4066
Norfolk	173	2925	3395
Richmond	201	3498	3889
Roanoke	246	3739	4071
WASHINGTON			
Olympia	425	5138	4980
Seattle (U)	376	4298	4085
Seattle-Tacoma	441	5035	4813
Spokane	506	6747	6376
Stampede Pass (R)	818	8358	8075
Tatoosh Island (R)	522	5225	4957
Walla Walla (U)	332	5149	4639
Yakima	402	6143	5587
WEST VIRGINIA			
Charleston	268	3991	4299
Elkins	376	5000	5496
Huntington (U)	261	3811	3983
Parkersburg (U)	305	4293	4618
WISCONSIN			
Green Bay	616	7646	7805
La Crosse	494	6845	7326
Madison (U)	497		6955
Madison	512	6712	7063
Milwaukee	598	6683	6745
WYOMING			
Casper	782	6980	7111
Cheyenne	839	6670	6927
Lander	802	7128	7744
Sheridan	742	7172	7355
ALASKA			
Anchorage	830	10487	9852
Annette	659	6604	6279
Barrow	1741	18045	17629
Barter Island	1757		
Bethel	947	12004	11733
Cold Bay	865	8333	
Cordova	821	8918	8459
Fairbanks	968	13845	13419
Juneau	785	8266	7988
King Salmon	827	10715	
Kotzebue	1292	14848	14403
McGrath	993	13873	13431
Nome	1130	12845	12540
Northway	1182	15616	14568
St. Paul	974	9586	9210
Yakutat	828	8381	8216

Data from airport unless otherwise specified.
U indicates Urban, R indicates Rural, sites.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
	Mar.31 -Apr 1									Minor storm reported at McMinnville, Tenn.
ALABAMA East-central portion	31-1	Midnight-7:30 a.m.					5	1	Wind, rain, and electrical	Appeared to have been squall line with wind blowing from east instead of from west, and on the back side of northeastward-moving line instead of on front side. High winds over all of east-central, east of line from Geneva County through Greene County and northeastward to northeast corner of State. Line of heavy rain with occasional thunder moved northeastward. High wind set in here at Montgomery immediately after it started receding to north-northeast and rain had nearly ended. During several hours of rain and thunder, wind was mostly from east to southeast. As this weather started receding, wind started picking up from east-northeast, and gust as high as 63 m.p.h., observed at slightly after 5:40 a.m. This pick-up of wind was accompanied by drop of barometer of 0.30 inch in about 10 minutes. Pressure rose 0.20 inch in about next 20 minutes and leveled off as wind subsided and shifted slightly to southeast. Nothing could be seen locally to indicate any reason for cyclonic circulation. Strongest winds apparently in Calhoun County section.
ALABAMA Dothan, Houston County	1	3 a.m.					4	1	Electrical	Lightning struck motor line's warehouse, with subsequent fire damage.
FLORIDA Escambia County	1	Early a.m.					4		Rain and wind	8 cars of freight train derailed as water-softened roadbed gave way. Moored boats on waterfront broke loose in winds; some sank, others damaged.
TENNESSEE Chattanooga, Hamilton County	1	7:30 a.m.				3		1	Wind	Strong winds blew down tree on top of car, injuring 3 persons. 2 plate-glass windows of pharmacy also damaged.
TENNESSEE Medon (near), Madison County	1	9:30 a.m.			0	0	3	1	Tornado	Parts of walls felled and roof blown off cement-block farmhouse.
GEORGIA Central and southern portions	1	Day					3	1	Wind	Wind damage extended across central and southern part of State, with total damage amounting to several thousand dollars. Wind gusts to 75 m.p.h., experienced in some areas. Damage mainly to roofs, utility lines, uprooted trees, windows, TV antennas, etc. Storm moved eastward.
ARIZONA Phoenix, Maricopa County	1	Afternoon				1			Wind	Plank hurled by gust of wind fractured workman's skull.
CALIFORNIA Southern portion	1					5	4		Wind and dust	Strong, northerly winds over State following March 31 storm reached gale force in much of south on 1st, causing widespread minor damage. Los Angeles police reported 150 trees and many powerlines blown down and about 20 homes and 15 automobiles damaged by falling trees and limbs. At El Segundo, church steeple under construction downed and dwelling roof torn off. Slate torn from roof of building in North Hollywood. Many avocados blown from trees in Vista area. Windows broken at Lancaster. Yacht off San Pedro disabled by wind. 2 trailers blown over at Mojave. 5 persons injured by winds, 1 in Los Angeles, 1 in Hollywood, and 3 in Glendora. One of worst duststorms in 10 years reported in Mojave Desert, closing Highway 99 near Indio several hours. Gusts reached 59 m.p.h., at Los Angeles Airport, 71 m.p.h., at Sandberg, 44 m.p.h., at Burbank, and reported to 50 m.p.h., at Van Nuys Airport, 60 m.p.h., in Antelope Valley, 40 m.p.h., at Santa Monica Pier, 60 m.p.h., at Del Rosa, and 40 m.p.h., at Camp Del Mar.
TENNESSEE Blount County	1							1	Wind	High winds blew off section of high school roof in Lanier community, damaged several farm buildings in Rush Strong, Mint, Chotah, and Townsend communities, and damaged powerlines in Walland-Kinzel Springs area.
	1									Minor storms also reported at Samson, Ala.; at Mesa, Ariz.; near Ripley, Miss.; at Claremore, Okla.; in eastern South Carolina; and at Cookeville and near Gatlinburg, Tenn.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
COLORADO Eastern and south-central portions	1-2	Night of 1st -p.m. 2d			5	1	5		Snow and rain	Storm beginning as rain, changed to snow during night of 1st and continued for about 30 hours, covering eastern plains and south-central and San Luis Valley areas. Snow heaviest directly east of Divide, becoming lighter in southeast. Snowfall from 10 to 50 inches fell, closing roads, damaging powerlines, roofs, and trees. 5 deaths attributed at least partially to storm; 2 from automobile accidents resulting from storm conditions (1 in automobile collision with snowplow near Georgetown, and 1 pedestrian accident in Denver), 2 from heart attacks from shoveling snow in Larimer County, and 1 from exposure at Ft. Carson. Many communities isolated, schools closed, and many places without communication facilities. Longmont estimated damage to phone lines in excess of $100,000. Cannon City, Pueblo, and Colorado Springs suffered similar heavy damage to power- and telephone lines. At Longmont, line repairman suffered broken foot when pole on which he was working collapsed from weight of snow on lines. North of Longmont, greenhouse packing shed collapsed under heavy snow weight. Damage estimated to be several thousand dollars.
	1-2									Minor storm also reported at Carthage, Mo.
MISSOURI Perryville, Perry County	1-7								Rain	5 to 8 inches of rain in 7-day period. Apple Creek at Old Appleton reached highest stage since 1949. Indian Creek out of banks from Uniontown to Frohna, damaging cropland. Brazeau Creek out of banks.
TEXAS Van Alstyne (3 miles north of), Grayson County	2	Midafternoon			0	2	4		Tornado	Tornado moving northwestward blew down 2 houses, destroyed 2 barns, and damaged garages.
TEXAS Hines City (9 miles north of Nocona), Montague County	2	3:25 p.m.	2	30	0	1	4		Tornado	1 house and 1 business establishment blown away, church destroyed, and 3 houses, warehouse, and garage of oil company damaged. Tornado moved northeastward.
OKLAHOMA Ringling area, Jefferson County	2	3:30 p.m.	2		0	0	3	1	Tornado (suspected) and wind	Several homesteads 2-1/2 miles north of Ringling destroyed or damaged. Reports indicate twister in area. Storm moved northward.
TEXAS Grapevine (3 miles northeast of), Tarrant County	2	3:50 p.m.	1/4	50-65	0	0	3		Tornado, rain, hail, and electrical	Damage caused by tornado. Storm moved northward.
TEXAS Denison (8 miles west of), Grayson County	2	4 p.m.			0	0	4		Tornado	2 homes destroyed, 1 damaged, and several barns damaged. Tornado moved north-northeastward.
TEXAS Melissa, Anna, Howe, and McKinney, Collin and Grayson Counties	2	4:20 p.m.	15	35	0	4	5		Tornado and wind	Barn shattered, contents scattered over 3-mile area. At Melissa, 1 home demolished, about 12 homes and 1 church damaged, porch of public building and warehouse blown away. At Anna, several homes and buildings damaged and hundreds of chickens killed. At Howe, 1 house damaged and several cars blown off highway. In Woodlawn community, 1 home destroyed. Trees all through the area mowed down. Believed to be same tornado which dipped down at 2 spots east of McKinney where no damage occurred. High winds caused some damage in Altoza community 10 miles east of McKinney. Storm moved northeastward.
TEXAS Dallas, Dallas County	2	4:30-5:10 p.m.	21	100	10	200	6		Tornado and rain	Struck western portion of city. At approximately 25 m.p.h., moved northward from southwestern outskirts of city to just west of Love Field Airport, northwest of Dallas, accompanied by heavy obscuring rain and loud roaring noise. Structures exploded when struck and debris carried aloft several hundred feet before falling. Serious traffic jams. Estimated some 574 buildings damaged or destroyed, electricity knocked out in 75,000 homes, and 4,000 phones out of commission.
OKLAHOMA Murray, Garvin, Pontotoc, and Seminole Counties	2	4:50 p.m.	60	400	0	1	4	2	Tornado, wind, rain, and hail	Tornado formed southeast of Davis and moved on ground about 12 miles, from 4 miles northeast of Sulphur to 5 miles south of Stratford. What was believed to be same tornado sighted aloft between Asher and Konawa by utility man. Insurance policy picked up in main destruction area south of Stratford and was dropped 40-airline miles away in Seminole. At least 18 houses and 10 barns damaged or destroyed in 12-mile path while funnel was on ground. At least 7 homes and many outbuildings received wind damage just west of Stratford. Only 1 injury resulted from flying

See reference notes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
OKLAHOMA (Contd)										debris south of Stratford. Some 1-1/2-inch hail fell in Pauls Valley area. Storm moved north-northeastward.
OKLAHOMA Springer (5 miles north of), Murray County	2	4:55 p.m.	2	600	1	2	5	1	Tornado	Tornado struck on Highway 77, 15 miles north of Ardmore, overturning cars and trucks; destroyed 340-foot TV tower, unroofed transmitter building, and broke off several utility poles. 1 man killed when his pickup truck blown from highway and destroyed. Transport truck driver reported his truck picked up, whirled around, and then dragged 100 feet through field. Storm moved north-northeastward.
OKLAHOMA Marshall County	2	5:29 p.m.	5	200	2	6	6	1	Tornadoes, rain and hail	Tornado believed first sighted over Lake Texhoma, first destroyed fishing camp near Cumberland and then moved through 2 refinery camps near Little City. 15 homes destroyed and both refineries severely damaged. Automobiles picked up and tossed around, 1 of which resulted in death to 1 occupant and injury to the other. They were thrown from automobile and only small parts of it found. Unverified report indicated second funnel moved along parallel to main tornado, but remained above ground. Storm moved northward.
TEXAS Denison area, Grayson County	2	5:40 p.m.			0	0			Funnel aloft	Funnel aloft sighted moving northwestward.
OKLAHOMA Bryan County	2	5:58 p.m.	7	200	3	3	5	1	Tornadoes	Tornado may have moved from near Denison, Tex., to northeast of Calera before evidence of path on ground where drive-in theater and large stock barn completely destroyed. In southern Durant, 9 blocks received near total destruction and 20 blocks received damage. 135 homes and 25 businesses either destroyed or damaged. 2 persons killed and 3 injured when service station collapsed. Southeastern State College received damage to nearly all buildings and 3 of them will need complete new roofs. Damage at college alone estimated at $100,000. Storm moved north-northeastward out of north edge of town where third person killed when her home lifted into air and exploded. 2 ambulance drivers, driving north out of Durant, sighted main tornado move off and 2 smaller funnels form and dip to ground behind it. Last funnel hurled tree 1 foot in diameter at 1 driver, but fortunately it missed him.
TEXAS Wheeler (1-1/2 miles north of), Wheeler County	2	6:05 p.m.	1/4	50-65	0	0	4		Tornado	1 farmhouse demolished. Farm buildings destroyed and livestock killed. Tornado moved southeastward.
TEXAS Newark, Dido community, and Boyd, Wise County	2	6:15-6:40 p.m.			0	2	5		Tornado	Tornado moving north-northeastward damaged 11 houses, business establishments, National Guard canteen, and school. House lifted from foundation and slammed down on school. Roof of masonry building torn off. Tornadic activity at Boyd, northwest of Newark.
OKLAHOMA Allen, Pontotoc County	2	6:22 p.m.			0	0			Funnel aloft	Funnel aloft reported.
TEXAS Stony-Plainview area, Denton County	2	6:30 p.m.	10-15	75	0	0	4		Tornado	Dipped 3 times, damaging 2 barns and outhouses and removed portions of roof of house. Tornado moved northward.
TEXAS K-Bar Ranch area, Lamar County	2	6:30 p.m.			0	0	4		Tornado	K-Bar Ranch area bore brunt of storm. 1 house destroyed, 1 home and garage damaged, ranch buildings and arena badly damaged. Store in same area damaged. Farming equipment damaged.
TEXAS Ambia (10 miles southwest of Paris), Lamar County	2	6:30 p.m.			0	0	4		Tornado	2 houses shattered.
OKLAHOMA Jackson, Kiowa, and Caddo Counties	2	6:30-8 p.m.	45	150	0	1	5	4	Tornado and hail	Tornado touched down 2-1/2 miles east of Altus, destroyed or damaged numerous farms as it moved 1 mile west of Friendship where heaviest damage resulted, traveled northeastward to near Roosevelt and last reported just west of Mountain View. Only injury resulted when tornado demolished truck. Hailstorm near Roosevelt covered 4x6-mile area, causing over $5,000 damage to property. Effect on crops probably light, due to early stage of growth. Hailstorm also hit in Gotebo and Mountain View areas, but damage spotty. Hailstones ranged in size from hens' eggs to tennis balls. Another area 5x6 miles near Alfalfa, Caddo County, hit by damaging

See reference notes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
OKLAHOMA (Cont'd)										hailstorm, resulting in $3,000 loss each to property and crops.
OKLAHOMA Asher (3 miles west of), Pottawatomie County	2	6:40 p.m.			0	0			Tornado	Tornado reported on ground.
OKLAHOMA Roger Mills County	2	7 p.m.					3	2	Wind, rain, and hail	Area around Reydon accumulated 1 to 2 inches of hail on ground. Size of hailstones ranged up to 1 inch in diameter. Windstorm at Cheyenne damaged courthouse and church. Storm moved east-northeastward.
OKLAHOMA Altus, Jackson County	2	7:05 p.m.	8	100	0	0	4	2	Tornado	Tornado formed southwest of Altus Air Force Base, moved over the east portion of base and north-northeastward over mostly open and uninhabited area.
OKLAHOMA Choctaw County	2	7:15 p.m.	16		0	0		2	Tornado	Tornado traveled north-northeastward from near Grant to 4 miles east of Hugo to 10 miles northeast of Hugo. Many homes, outbuildings, and utilities either damaged or destroyed.
OKLAHOMA Taloga and Canton, Dewey and Blaine Counties	2	7:30 p.m.	15	*10			2	2	Hail, rain, and wind	Hailstorm over northeastern Dewey and northwestern Blaine Counties filled bar ditches with stones up to 1 inch in diameter. Storm moved northeastward.
ARKANSAS Miller County	2	8 p.m.	30	1,760			3	1	Hail and rain	Storm moved for about 30 miles northeastward across Miller County from point 5 miles south of Texarkana. Hailstones averaged 1 inch in diameter. Hail accompanied by heavy rain.
OKLAHOMA Thackerville, Love County	2	8:37 p.m.			0	0			Funnel aloft	Ground Observer Corps reported funnel moving northward.
OKLAHOMA Bartlesville, Washington County	2	8:45 p.m.			0	0			Funnel aloft	Observer reported sighting funnel aloft.
OKLAHOMA Hinton and El Reno, Caddo and Canadian Counties	2	9 p.m.	15	*3			3	4	Hail, wind, rain, and electrical	Hailstorm hit northern Caddo to west-central Canadian Counties and accumulated up to 5 inches deep. Hailstones small. Crop loss ranged up to 80 percent. Hail and wind damaged roofs and windows, and 5 grain-storage tanks under construction caved in by storm. Storm moved northeastward.
OKLAHOMA Latimer and Haskell Counties	2	9 p.m.	25	880	0	2	4	4	Tornado, hail, rain, and electrical	Tornado moved from near Bengal to 1/2 mile east of Red Oak to McCurtain. Many homes and outbuildings destroyed or damaged in Bengal, Salonia, and Red Oak communities. 2 injuries resulted at McCurtain where 26 houses and at least 6 barns destroyed or damaged. Tornado hit McCurtain at 9:40 p.m. Considerable hail reported along area of tornado. Hailstones up to 1-1/4 inches in diameter fell over area of 2 sections near Keota, Haskell County and destroyed ready to harvest spinach crop at estimated loss of $20,000. Unusual phenomenon of this storm was continuous and brilliant lightning all along path of tornado. Storm moved northward.
OKLAHOMA Haileyville, Pittsburg County	2	9:05 p.m.	10	440	0	0	4	3	Tornado, hail, and rain	Tornado demolished 2 homes and damaged businesses, homes, and outbuildings. At least 100 TV antennas bent double and many trees blown over. Hailstones up to 2-1/2 inches in diameter reported. Storm moved northeastward.
OKLAHOMA Poteau, Le Flore County	2	9:50 p.m.			0	0			Tornado (suspected)	Railroad dispatcher reported tornado. Evidently no damage occurred.
OKLAHOMA McAlester (5 miles northwest of), Pittsburg County	2	10:15 p.m.			0	0			Funnel aloft	Ground Observer Corps reported funnel aloft.
OKLAHOMA Wheatland to Oklahoma City, Oklahoma County	2	10:30 p.m.			0	0			Tornado	Highway Patrol sighted funnel aloft near Wheatland. Funnel next noted on north edge of Oklahoma City and apparently touched ground momentarily in wheat field as grain flattened in several 30-foot wide paths over short distance. Storm moved northeastward.
OKLAHOMA Sallisaw area, Sequoyah County	2	11:45 p.m.			0	0			Funnels aloft	2 funnels reported over western and southern edges of Sallisaw.

See reference notes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
OKLAHOMA Tonkawa area, Kay County	2	11:45 p.m.			0	0	3	1	Tornado (suspected), wind, rain, and electrical	Oil-field workers reported funnel-like cloud southwest of Tonkawa. Rural residents in vicinity and north-northeastward reported deafening roar and strong winds. Damage light, except lightning struck 4 rural homes resulting in over $2,000 loss.
OKLAHOMA Heavener (10 miles south of), Le Flore County	2	11:55 p.m.			0	0			Funnel aloft and rain	Highway Patrol reported funnel moving northward.
OKLAHOMA Lane area, Atoka County	2	P.m.			0	0	2	1	Funnel aloft and wind	Funnel aloft reported. Only slight wind damage.
OKLAHOMA Courtney, Love County	2	P.m.			0	0		1	Tornado (suspected)	House reported swept away. No verification obtained. Numerous tornadoes reported in general area.
OKLAHOMA Carnasaw Tower, McCurtain County	2	Night	9	880	0	0		1	Tornado	Tornado cut path through the forest, blowing down estimated 3,000,000 feet of timber.
OKLAHOMA Okmulgee (east of), Okmulgee County	2	Night			0	0			Funnel aloft	Funnel aloft sighted by observer.
TEXAS Cooke and Denton Counties	2				0	0			Tornadoes	Tornadoes observed; no reports of serious damage.
TEXAS Ben Franklin, Delta County	2				1	2	4		Tornado	Leveled 6 houses and damaged many.
	2									Minor storms also reported in Ellinwood, Frederick, and Topeka areas, Kans.; at Charleston, Mo.; at Coweta, Ponca City, and Supply, Okla.; and in Bountiful, Brigham City, Farmington, and Kaysville areas, Utah.
	2-3									Minor storm reported at Crane, Mo.
OKLAHOMA Davenport, Lincoln County	3	12:15 a.m.			0	0			Funnel aloft	Ground Observer Corps reported funnel moving north-northeastward.
OKLAHOMA Tillman and Comanche Counties	3	1:20 a.m.							Wind	Strong winds which lasted over an hour and described as strongest ever witnessed by old timers caused widespread destruction over most of Tillman and Comanche Counties. Damage resulted to windows, roofs, TV antennas, buildings, trees, and utilities. Storm moved northeastward.
TEXAS Breckenridge, Stephens County	3	3:45 a.m.			0	0			Funnel aloft	Funnel aloft sighted.
TEXAS Ft. Worth, Tarrant County	3	5 a.m.			0	0			Funnel aloft	Funnel aloft sighted.
TEXAS Between Waxahachie and Midlothian, Ellis County	3	9:30-10:30 a.m.			0	0			Funnel aloft	Funnel aloft sighted.
TEXAS Marshall (4 miles north of), Harrison County	3	10:28 a.m.			0	0			Tornado, rain, and wind	Tornado touched briefly 1 mile east Lone Star Steel Plant; accompanied by heavy rains and high winds.
TEXAS Denton (10 to 12 miles east of), Denton County	3	10:30 a.m.			0	0			Tornado	Tornado moving northward struck in open field, no damage.
TEXAS Marshall (4 miles north of), Harrison County	3	11:30 a.m.			0	0	3		Tornado	Ripped part of roof off house, wrecked shed, uprooted trees, and damaged 2 outbuildings. Roof blown from garage.
TEXAS Dallas (25 to 30 miles southwest of), Dallas County	3	A.m.			0	0			Funnels aloft	3 funnels aloft sighted.
TEXAS Daingerfield (6 miles south of), Morris County	3	Late a.m.			0	0	2		Tornado	6 small farm buildings damaged, 1 building destroyed.

See reference notes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
ILLINOIS Cairo-Mound City-Tansil, Alexander and Pulaski Counties	3	2 p.m.			0	2	5	1	Tornado	Heavy damage in Mound City where 3 substantial buildings unroofed in 2-block wide path. Lighter damage in Cairo where fastest mile of wind 59 m.p.h. Several farms near Tansil received light to moderate damage. Tornado moved northeastward.
ILLINOIS North-central area	3	Late afternoon							Glaze	Scattered damage to utility lines in wide area extending approximately from Champaign to Danville and west-northwestward to beyond Illinois River. Little or no ice formed on pavements and most utility outages not prolonged.
TEXAS Avinger, Cass County	3				0	0			Funnel aloft	Funnel aloft sighted.
TEXAS Henly (8 miles southwest of), Hays County	3				0	0			Funnel aloft	Funnel aloft sighted.
MISSOURI Caruth, Dunklin County	3	12-12:10 p.m.	1	100	0	0	3		Tornado, wind, and rain	Cotton gin and several other buildings damaged. Storm moved northeastward.
ARKANSAS Alexander community, Greene County	3	12:05 p.m.			0	0	1	1	Tornado	Tornado moving northeastward touched ground briefly, destroying garage.
ARKANSAS Cash, Craighead County	3	12:05 p.m.	20	100	0	0	4	1	Tornado and rain	Funnel observed by several persons. Several buildings destroyed and rice dryer extensively damaged. Storm moved northeastward.
ARKANSAS Manila, Mississippi County	3	12:30 p.m.			0	0	2	1	Tornado	2 houses damaged. Funnel cloud observed.
TEXAS Orange (6 miles north of), Orange County	3	12:45 p.m.			0	0	2		Tornado	In Little Cypress community, ripped 50x40-foot section of roof off school.
MISSOURI Kennett, Dunklin County	3	12:45-12:47 p.m.			0	0	3		Funnel aloft, rain, wind, and hail	Estimated 3.96 inches of rain with storm. Funnel cloud seen, which apparently did not touch ground. Damage to roofs, plate glass, TV antennas, powerlines, and farm buildings apparently from accompanying strong, surface winds. Very small hail accompanied storm. Storm moved east-northeastward.
TEXAS Hurston (13 miles southeast of Center), Shelby County	3	1:30 p.m.	2	1,200	0	0	3		Tornado	1 house and 2 barns destroyed, many outbuildings damaged.
MISSOURI East Prairie (3 miles north of), Mississippi County	3	1:30-1:35 p.m.		Narrow	0	0	3		Tornado , wind, and rain	Farm buildings damaged. Storm moved eastward.
ARKANSAS Star City, Lincoln County	3	3:30 p.m.	3				4	1	Wind and rain	Wind damage to store buildings, roofs, and TV antennas. Some water damage from accompanying heavy rain. Storm moved eastward.
TENNESSEE Henderson County	3	4 p.m.				1	1	1	Electrical	Man struck by lightning in home suffered third degree burns on left foot and lesser injury to right leg.
MISSOURI Osceola, St. Clair County	3	5:30-6 p.m.							Wind	Wind estimated at 75 m.p.h. Trees, TV antennas, and neon signs blown down.
INDIANA Dubois County	3	Afternoon			1	1	4	1	Wind, electrical and rain	At Celestine, 1 person killed and 1 injured at 4:40 p.m., when lightning struck chimney and bricks fell on persons working in factory. Near Dubois, high winds lifted hog houses over several fences and moved 2 barns; rain killed 250 turkeys. Near Jasper, several roofs damaged and windows broken by strong winds.
INDIANA Northern and central portions	3	Afternoon-evening					6	4	Freezing rain and wind	Freezing rain along with strong winds paralyzed power and communication networks. Ice accumulations up to an inch thick on exposed objects. Many trees felled which damaged utility lines, buildings, and cars. Many TV antennas fell as result of weight and wind. Roads slippery in central. Fruit trees damaged by excessive weight on limbs. Hatchery at Geneva lost incubating eggs because of no electricity. Heat and light off for hours in many sections and sometimes 1 and 2 days in rural areas where farmers had to improvise to save young stock, chickens, milk cows, and

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
INDIANA (Cont'd)										pump water. Many schools closed. Several days before communications and power networks returned to normal. Cost of repair by Indiana Bell Telephone Comany alone estimated at $500,000. Damage to utilities in Whitley County estimated at $100,000.
LOUISIANA Hodge, Jackson Parish	3	6 p.m.			0	0	2	1	Tornado	Small, short-lived tornado caused minor damage; reported by State Police.
TENNESSEE Nashville and vicinity, Davidson County	3	6-6:35 p.m.	12	200		4	4	1	Wind	Storm moved northeastward from Belle Meade area of west Nashville through downtown area to Inglewood suburb. Trees uprooted, windows broken, and 20 to 25 houses damaged in Inglewood area. 3 persons injured in west Nashville and 1 in Inglewood. Damage in Inglewood estimated at $15,000. Damage over 1-1/2-mile stretch in Inglewood was 200 yards in width.
MISSOURI Chillicothe, Livingston County	3	7 p.m.							Wind and rain	Wind estimated at 50 m.p.h., for brief time. Power- and phone lines downed, tree limbs downed, and minor damage to roofs.
MISSISSIPPI Washington, Sharkey, Sunflower, Humphreys, Leflore, Holmes, Grenada, Carroll, Yalobusha, and Montgomery Counties	3	7-11 p.m.	120	*50			4	2	Wind, rain, and electrical	Severe thunderstorms with heavy rains and high winds developed about 25 miles either side of line extending from Glen Allan to Duck Hill, with severe electrical storms reported by most stations in area. Trees uprooted, powerlines downed, and roofs and homes damaged. Storm moved northeastward.
MISSISSIPPI Glen Allan, Arcola, and Darlove, Washington County	3	7:15 p.m.	10	*1	0	4	5	2	Tornado	Moved on town of Glen Allan from Lake Washington and northeastward leaving path of 20 homes, church, and cotton gin wrecked. Since much of area to northeastward sparsely settled, length of path uncertain.
KENTUCKY Ballard County	3	P.m.			0	0	5		Tornado (suspected), rain, electrical, wind, and hail	Winds unroofed several houses and either destroyed or damaged numerous farm buildings. Drive-in theater screen demolished. Telephone communications disrupted. Trees uprooted, branches blown off, and TV antennas toppled. Heavy rain, lightning, and hail accompanied wind. Funnel cloud not seen, but wind described as having "thundering roar."
KENTUCKY Bowling Green (south of), Warren County	3	P.m.			0	0	2		Tornado	Funnel cloud sighted.
MISSOURI Bethany, Harrison County	3	Early evening					4		Wind and electrical	East wind reached gale proportions. Lasted 20 to 30 minutes; ceased abruptly. Many power- and phone lines downed, and about 50 barns, houses, and other buildings burned.
IOWA Southeastern half	3	Evening					4	1	Wind	Tree limbs blown down damaging buildings, cars, and power- and phone lines.
MISSOURI Unionville, Putnam County	3	Evening							Wind and rain	Wind estimated at 75 m.p.h. Trees, TV antennas, and small buildings damaged.
TEXAS Between Forney and Terrell, Kaufman County	3				0	0			Tornado	
TEXAS Duncanville (south of), Dallas County	3				0	0	2		Tornado	Home damaged.
	3									Minor storms also reported in Polk County, Ark.; at Benton and in Jefferson and Simpson Counties, Ky.; at Brookline, Cassville, Clinton, Dexter, Fayette, Malden, St. Joseph, and near Sarcoxie and Sweet Springs, Mo.; at Blanchard, Okla.; in Lake, Lauderdale, Obion, and Weakley Counties, Tenn.; and at Waskom, Tex.
LOUISIANA Entire State	3-4	All night						2	Wind	High winds over most of State during night and severe thunderstorms reported at numerous stations including Clinton, Franklinton, Buras, and Lake Providence, with hail reported west of Lake Charles; 2 barges washed ashore at Grand Isle and it was necessary to suspend operations on oil rigs on coast due to high waves; 1 rig developed 25° list with damage reported heavy.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

APRIL 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
OHIO West-central portion	3-4	During night					5	2	Glaze	Icestorm covered large part of western Ohio, but was most severe in 15 to 18 counties in west-central. Damage greatest to telephone and power-lines, but included many trees, some of which fell on cars and houses causing indirect damage. Many newspaper accounts stated that this was worst icestorm in about 12 years.
	3-4									Minor storm also reported in Ashwood, Columbia, Mt. Pleasant, Parsons Bend and Spring Hill areas, Tenn.
SOUTH DAKOTA Statewide	3-5	A.m.3d-a.m. 5th			2		3		Snow	Deep snow with high moisture content; over 1 foot in west. Precipitation fell continuously at Rapid City for 45 hours. Sioux Falls had deepest April snowfall on record. Fatalities resulted from heart attacks while shoveling snow.
PENNSYLVANIA Statewide	3-6					10	5	1	Rain, snow, sleet, wind, and electrical	Effects of intense slow-moving storm west of State felt during 3-day period. Heavy precipitation fell as snow, sleet, and freezing rain in north and mountainous sections, with snow accumulating to depths of 20 inches and ice to 5 inches, resulting in broken tree limbs and utility lines. Winds which in some instances reached 75 m.p.h., accompanied severe thunderstorms on 5th and 6th, blew down several barns and numerous small buildings, and rolled over several house trailers in addition to trees, TV antennas, and powerlines. Lightning fired 5 homes in southeast; Storm moved northeastward.
MISSISSIPPI Winston, Noxubee, and Lowndes Counties	4	12:45-2 a.m.	20	200	0	0	4	2	Tornado, wind, and rain.	Tornado struck first 10 miles southeast of Louisville, then 10 miles west of Macon and 10 miles southeast of Columbus, moving northeastward over thinly settled farmland; thunderstorms severe over another 30 miles of path.
MISSISSIPPI Simpson, Smith, Jasper, Newton, and Lauderdale Counties	4	1-3 a.m.	40	175	1	75	5	2	Tornado, electrical, and wind	Path of tornado began near Sanatorium and extended 40 miles to communities of Ted and Warren Hill, but attending severe electrical storms and high winds extended over path 80 miles long (through Meridian) and about 50 miles wide. Heaviest damage and casualties occurred at Sanatorium when tornado destroyed or badly damaged buildings at TB Sanitarium; lone death and other injuries occurred at Ted when persons took refuge in school bus which was lifted and smashed. 1 house set afire by lightning and telephone lines snapped by falling limbs in Meridian. Storm moved northeastward.
TENNESSEE Middle Fork community, Henderson County	4	1:10 a.m.			0	0		1	Tornado (suspected)	2 houses demolished; 4 houses, several barns, and outbuildings damaged.
TENNESSEE East View community (6 miles south of Selmer), McNairy County	4	1:15-2 a.m.	8	50	0	11	5	1	Tornado	9 houses, 9 farm buildings, and 4 other buildings including cotton gin, service station, and grocery store destroyed; 13 houses and 5 farm buildings damaged. Tornado moved northeastward.
ALABAMA Northern portion	4	3:30-5 a.m.					5	1	Wind, rain, and electrical	Thundersqualls super-imposed on general high wind did widespread minor damage north of line from southern Greene County through Calhoun County. About 6 houses wrecked or damaged, practically beyond repair, and many other lesser buildings, not too well constructed; timber wrecked or damaged in varying degrees. Localities with heavier damage were Hanceville, Cullman County; near Vernon, Lamar County; Jena, Clinton, and other areas of north Greene County; Lake Arneda section of Tuscaloosa County just north of Tuscaloosa, and Searles in extreme eastern Tuscaloosa County. At Gadsden, lightning at 4 a.m., hit house, with damage about $1,500. Storm moved northeastward.
TENNESSEE Chattanooga, Hamilton County	4	8:30 a.m.					4	1	Wind, rain, and electrical	Strong winds, reaching 44 m.p.h., ripped roof from motor freight company, blew down large drive-in movie screen, uprooted several trees, and blew down numerous power- and phone lines. Lightning ignited church and adjoining parsonage, causing extensive damage. Lightning striking house blew hole in its side, knocked out window, ripped screens, knocked plaster from walls, and ruined sockets throughout.
MISSISSIPPI Newhebron, Lawrence County	4	Early a.m.			1				Rain	Man drowned when his car plunged into rain-swollen creek after bridge was washed out.

See references at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MISSISSIPPI Perkinston (2 miles south of), Stone County	4	Early a.m.			1				Rain	Man killed when his car skidded out of control during heavy rainstorm.
MISSOURI Caruthersville and vicinity, Pemiscot County	4	1:30-4 p.m.	20	100			3		Rain and wind	3.33 inches of rain. Wind gusts to 50 m.p.h. Buildings damaged. Storm moved northeastward.
TEXAS Bryan (5 to 7 miles north of), Brazos County	4	4:37 p.m.			0	0			Funnel aloft	Funnel aloft sighted.
ARKANSAS Carlisle (10 miles south of), Lonoke County	4	5:30 p.m.	** 400	20	0	0	3	1	Tornado	Damage limited to about 20 acres. Grain bin destroyed. Fences and light poles torn down. Storm moved northeastward.
LOUISIANA Westlake (10 miles northwest of), Calcasieu Parish	4	9:45 p.m.			0	0		1	Tornado	Unable to obtain any information concerning this reported tornado; could have moved through uninhabited timberland.
LOUISIANA Tallulah, Madison Parish	4	10 p.m.			0	0	2	1	Tornado	A few TV antennas blown down. Roar heard by entire town, and 1 man in Vicksburg, Miss., to east reported hearing roar at same time. May have touched ground to east of Tallulah.
TEXAS Ratibor community (east of Temple), Bell County	4				1				Electrical	Man killed by lightning.
TEXAS Cranfills Gap, Bosque County	4				0	0			Funnel aloft	Funnel aloft sighted.
TEXAS Between Clifton and Valley Mills, Bosque County	4				0	0			Funnel aloft	Funnel aloft sighted.
	4									Minor storms also reported at Fairhope, Ala.; in Wolfe County, Ky.; at Buras, La.; at Bradley Creek and near Clarksville and Sango, Tenn.; at Henderson, Tex.; and in Canaan Valley, W. Va.
MINNESOTA Southern half	4-5	A.m.4th-p.m.5th.							Snow and wind	Heaviest April snowstorm since 1949. Snowfall generally 2 to 7 inches. Greatest accumulation 13 inches in Canby area. Hundreds of schools closed. Hazardous driving conditions, with traffic badly snarled in metropolitan areas. Winds up to 55 m.p.h., in Duluth area caused pile-up of pack ice in Lake Superior, delaying opening of ore-shipping season. Storm moved eastward.
TENNESSEE Poga community and Valley Forge, Carter County	4-5	Noon 4th-4 a.m. 5th						1	Rain	Heavy rains falling from noon on 4th until 4 a.m., on 5th caused rising of Elk River which isolated about 90 families of Poga community and Doe River at Valley Forge where 12 families evacuated. 10 bridges in county under water.
CONNECTICUT Entire State	4-6	Early p.m. 4th-early p.m. 6th			1	12			Snow and rain	Storm began on 4th as snow, with 2 to 6 inches falling. Slippery highways during evening rush hours caused a great number of skidding accidents, especially in Fairfield County. 2 persons injured by falls on icy sidewalks; remainder of injuries resulted from automobile collisions. Precipitation changed to rain in early a.m., of 5th, with 1.50 to 2.00 inches by early p.m., of 6th. Flooding of cellars reported in Hartford and Middletown areas, but major streams remained within banks. 1 death resulted from automobile collision in Windham County during rainstorm of 5th.
MASSACHUSETTS	4-6	Evening 4th-night 6th			3	Many	4	1	Glaze, wind, rain, electrical, and hail	Glaze in north-central and northwest combined with wind to break many trees, limbs, and powerlines on 5th. Heavy rains caused minor flooding of streets and lowlands in some communities. Thunderstorms active during night of 5th and 6th, with $10,000 lightning damage to Oyster Harbor summer home. Few reports of hail. High, storm-surge tides threat to coastal areas. 3 deaths and many injuries from highway accidents blamed on glaze and rains.
RHODE ISLAND Entire State	4-6	Early p.m. 4th-early p.m. 6th			1				Snow, rain, and thunderstorm	1 highway fatality resulted from skid on slush-covered road on 4th. Thunderstorm accompanying rain on 5th knocked out power to 500 street lights in Pawtucket area.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
GEORGIA Lamar County	5	3 a.m.		Narrow	0	0	3	1	Tornado (suspected)	Some damage to utility lines and trees in Barnesville, but greatest damage in Antioch community where several barns destroyed and many porches and roofs blown away. Storm moved eastward.
GEORGIA Schley to Wilkinson Counties	5	4-5:30 a.m.	80	200-800	2	3	5	2	Tornado	Storm first touched surface about 4 miles southwest of Ellaville, Schley County, at 4 a.m. Greatest destruction along 15-mile path through Schley and Macon Counties. 2 children killed, 3 persons injured, and 85 buildings destroyed. Storm apparently lifted to strike again near Marshallville, and in southern Peach County where several buildings and drive-in theater destroyed about 4:30 a.m. Next damage noted at Warner Robins, Houston County, where funnel apparently barely touched ground, damaging roofs, uprooting trees, and pulling plate-glass windows out. Storm next reached surface in Twiggs County Where several houses demolished and again in Wilkinson County where roofs damaged and trees uprooted. Tornado moved northeastward.
GEORGIA Warren to Columbia Counties	5	6:15-7:15 a.m.	30	200-800	0	2	4	1	Tornadoes	Likely a different tornado from same storm condition as above hit Warren County 8 miles southwest, 3 miles south, and 2 miles east of Warrenton and moved northeastward to Thomson, McDuffie County. Many houses damaged, utility lines downed, and trees uprooted. Indication of 2 separate storms east of Thomson, 1 moving northeastward and next reaching surface in Leah community, destroying 7 houses and a church. Second storm moving eastward from Thomson hit between Appling and Harlem and again 9 miles west of Augusta where house destroyed and 2 persons injured. These tornadoes moved into South Carolina.
SOUTH CAROLINA McCormick, Saluda, Newberry, Lexington, Richland, Fairfield, Kershaw Counties	5	7:45-9:30 a.m.	70	*30		1	4	3	Wind	Series of local severe thunderstorms moved into central. Local windstorms noted; near Newberry and Prosperity, damage of $1,000 by wind; near McCormick, $500 by wind; Near Pontiac and Camden, $2,000 by wind; Ridgeway, $100 by wind; northeastern Lexington County, windstorm destroyed poultry house with lesser damage to several homes and other buildings of $9,000. Storm moved north-northeastward.
SOUTH CAROLINA Lexington County	5	7:45-8:30 a.m.	25	40	0	1	4	1	Tornado	Tornado skipped north-northeastward from 5 miles south of Batesburg to near Gilbert to northeastern edge of Lake Murray. Destroyed home and damaged several others, with significant damage to large recreation hall on northeast shore of Lake Murray.
SOUTH CAROLINA Prosperity, Newberry County	5	8:14 a.m.	3	100	0	0	3	3	Tornado	Small tornado skipped northeastward over narrow path.
GEORGIA Colquitt and Cook Counties	5	8:30 a.m.	10	200	0	0	3	1	Tornado	First hit 5 miles east of Moultrie, Colquitt County, destroying 2 barns and uprooting trees. Apparently lifted to strike again south of Lenox, Cook County, where it moved along ground for distance of 5 miles. Several barns and houses destroyed or damaged. Witnesses reported "roaring sound" and what was identified as funnel cloud. Storm moved east-northeastward.
GEORGIA Jamestown community, Ware County	5	11 a.m.	Short	Narrow	0	1	3	1	Tornado (suspected)	1 house destroyed and minor damage to other buildings and trees. Storm moved eastward.
GEORGIA Savannah (near), Chatham County	5	11:34 a.m.	** 500	Narrow	0	0	3	1	Tornado	Damage to roofs and small buildings and several trees uprooted.
INDIANA Bartholomew County	5	Morning					4	1	Wind	Wind damaged buildings on 2 farms near Walesboro and collapsed end of main hangar at Columbus Airport.
INDIANA Muncie, Delaware County	5	12:05 p.m.			0	0	4	1	Tornado	House trailer overturned, metal-garage roof hurled 50 feet, powerlines torn down, and front of house damaged.
INDIANA Fairmount, Grant County	5	12:30 p.m.			0	0	2	1	Tornado	Small tornado dipped down, destroying small shed and tore down utility line.
INDIANA Winchester, Randolph County	5	1 p.m.			0	0	3	1	Tornado	Small tornado tore door off hangar at Winchester Airport.
VIRGINIA Wise County	5	1:40 p.m.			0	3	4		Tornado and wind	Tornado struck Wildcat section of Big Stone Gap, and Ramsey section of Norton. Buildings unroofed

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path miles	Width of path yards	Number of persons Killed	Number of persons Injured	Estimated damage by categories † Property (exclusive of crops)	Estimated damage by categories † Crops	Character of storm	Remarks
VIRGINIA (Cont'd)										and walls demolished. Windows of residences and stores blown out, trees uprooted, and utility poles snapped. Damage at Norton probably from high winds associated with severe thunderstorm. Storm moved northeastward.
INDIANA Bartlettsville, Lawrence County	5	Early afternoon			0	0	3	1	Tornado	Roof of house destroyed by observed small tornado.
INDIANA Needmore, Lawrence County	5	Early afternoon			0	0	3	1	Tornado	2 buildings damaged by observed small tornado.
INDIANA Henry County (northwestern portion)	5	Afternoon			0	1	4	1	Tornado	Television antennas, powerlines, and trees blown down. One-third of gymnasium roof and roofs of small buildings ripped off.
INDIANA Parker City area, Randolph County	5	Afternoon					4	1	Wind	3 farm buildings damaged 2 miles southwest of Parker City.
INDIANA Red Key and Poling, Jay County	5	Afternoon			0	0	3	1	Tornado	"Baby twister" demolished shed, tore roof off home, and damaged many street lights.
INDIANA Adams County	5	Afternoon					4	1	Wind	Minor damage occurred in scattered areas.
MICHIGAN (Lower) Southern portion	5	Midafternoon				2	5	1	Wind and electrical	Damage mostly light, except in some counties along Indiana and Ohio borders, where gusts up to 90 m.p.h., reported. Several buildings damaged in Branch, Hillsdale, Lenawee, and Monroe Counties, and fertilizer plant at Riga nearly wrecked by winds. Trees and powerlines also hit and many windows broken. Storm moved eastward.
OHIO Northern portion	5	Afternoon			5	Many	6	1	Wind and rain	Strong winds general, but most severe thunderstorms visited northern areas. 90-m.p.h., wind at Toledo WBAS, 75 m.p.h., at Cleveland, and 80 m.p.h., at Columbus are representative. Damage to roofs, trees, signs, windows, and utility lines extensive. Walls in unfinished buildings reported blown down in Columbus and New Philadelphia. Most spectacular was Great Lakes freighter blown against highway bridge at Toledo and twin radio towers toppled at Bowling Green. Storm accompanied by torrential rains which further swelled overflowing streams throughout area.
NORTH CAROLINA Pasquotank and Camden Counties	5	4:30 p.m.	6	35	0	0	4	1	Tornado	Tornado moving east-northeastward crossed lower Pasquotank and Camden Counties, including Pasquotank River lying between the two. 1 farmhouse unroofed and several outbuildings demolished.
NORTH CAROLINA Yadkin County	5	6:10 p.m.	5	50	0	0	4	1	Tornado	Traveled eastward on skipping path from western Yadkin County to western edge of Yadkinville, blowing down trees, breaking power- and telephone lines, and demolishing a number of outbuildings.
SOUTH CAROLINA Lancaster, Lancaster County	5	8:10 p.m.	1	30	0	0	5	1	Tornado	Small tornado struck elementary school and bounced along for about 10 blocks, damaging school severely and causing minor to moderate damage to several homes. Storm moved northeastward.
NORTH CAROLINA High Point area, Guilford County	5	8:35 p.m.	5	50	0	1	5	1	Tornado	Cut skipping path east-northeastward from about 5 miles west of High Point across northern edge of town. Destroyed or damaged about 12 homes, mostly rural, and numerous outbuildings, as well as large numbers of trees, antennas, roofs, and chimneys. 1 automobile demolished and several plate-glass windows broken.
NORTH CAROLINA Hertford County	5				0	0	3	1	Tornado (suspected)	From County Agent's report, no details.
	5									Minor storms also reported at Greenfield, Ind.; in Mahaska County, Iowa; and in Boone and Boyd Counties, Ky.
NEW JERSEY Ewingville and Lawrenceville areas, Mercer County	6	Early a.m.					4		Wind, hail, and electrical	Early morning cold front passage caused general statewide thunderstorms. Most violent of these appeared to be in Ewingville and Lawrenceville areas. 1 barn and corncrib demolished. House trailer and car damaged. A few trees and wires downed. Storm moved eastward.
ARIZONA Williams, Coconino County	6	Afternoon				1		1	Wind	Woman tossed to pavement by wind. Wind also damaged roofs and toppled drive-in movie screen.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path miles	Width of path yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
UTAH Salt Lake Valley and Cedar City area, Salt Lake and Iron Counties	6								Rain, hail, wind, and dust	Rain caused minor flooding of some Salt Lake City streets and basements; local hail in Salt Lake Valley; winds reported to 44 m.p.h., reduced visibility to 1 mile in blowing dust at Cedar City.
NEW YORK Brockport, Monroe County	6				1				Wind	Strong winds plus current from tributary stream flowing into Lake Ontario, swept rowboat out into lake. Man in boat lost, with no trace. Stream was flowing well above average due to recent rises.
	6									Minor storms also reported at Tombstone, Ariz.; and at Tulsa, Okla.
INDIANA North-central portion	7	All day					4	1	Snow	Heavy, wet snow of several inches clogged roads and tore down trees and utility lines. Some schools closed because of roads and no electric power for heating.
MICHIGAN (Lower) Extreme southern portion	7	Day-evening						1	Snow	Heavy snow, 6 to 12 inches in depth, covered most counties bordering Indiana and Ohio. Highways blocked and schools closed.
TEXAS Midland-Odessa areas, Ector and Midland Counties	7	8:20 p.m.					4		Wind	Turbulent winds 60 to 70 m.p.h., tore down utility poles, blew down trees and TV antennas, damaged roofs, and raised dust. Storm moved southward.
ARKANSAS Elm Park area (4 miles north of Waldron), Scott County	7	11:05 p.m.	4	300	0	0	3	1	Tornado, wind, hail, and rain	3 barns and several roofs damaged. Only small hail reported. Storm moved northeastward.
ALABAMA Red Bay, Franklin County	7	11:45 p.m.			0	0	4	1	Tornado (suspected)	Storm moved across Mississippi line into Red Bay and caused $12,000 damage in Red Bay, with remainder of damage between Red Bay and Mississippi.
	7									Minor storm also reported at Pawnee, Okla.
OHIO Northern portion	7-8	Early afternoon 7th-8th		*50					Snow	Unusual snowstorm. Snow started early afternoon along lake shore on 7th and spread southward to include band some 50 miles in width. Depths ranged upward from 3 inches at Youngstown and 4 inches at Ashland to 10 to 16 inches in Cleveland-Painesville area, 15 inches in Conneaut. Band widest in west where Lima had 7 inches and it ranged up to 12 inches in Montpelier. Heaviest amounts reported in western Lake County, but specific measurements not now available.
MISSISSIPPI Old Union to Verona, Lee County	8	3:10 a.m.	10	200	0	0	5	2	Tornado	Moved through Old Union community through experiment station near Verona, unroofing and damaging homes and other buildings; at least 1 home destroyed. Storm moved northeastward.
TENNESSEE Eagle Bend, Anderson County	8	5:30 a.m.-4 p.m.						1	Wind, rain, and electrical	Torrential rains caused loss of between 1 and 2 million seedling trees at TVA nursery at Eagle Bend. Accompanying strong wind gusts twisted off irrigation pipes up to 1-1/2 inches in diameter.
TENNESSEE Isoline (near), Cumberland County	8	6 a.m.	3		0	0	3	1	Tornado (suspected)	3 barns, 5 houses, and numerous outbuildings damaged and many trees uprooted. Tornado moved eastward.
MISSISSIPPI Bruce (6 miles north of), Calhoun County	8	8 a.m.	Short	100	0	0	3	1	Tornado	2 homes destroyed or badly damaged; funnel observed. Storm moved northeastward.
ALABAMA Marion and Lawrence Counties	8	9:46 a.m.	55	100	0	5	5	1	Tornado	Path skipping east-northeastward, however, 2 long continuous stretches reported. 8-mile path beginning just south of Hamilton, lifted and hit in Bankhead Forest for 14-mile long path ending at Pine Grove, Lawrence County. Scattered fallen timber in forest occasionally up to 1/4 mile from center of path. Of total damage, $150,000 was to timber. 2 observers reported that no thunder or lightning occurred with this tornado.
ALABAMA Morgan and Marshall Counties	8	10:15 a.m.	35	40-200	2	90	6	1	Tornado	Tornado began 6 miles southwest of Falkville and ended about 10 miles north of Arab in Marshall County. Funnel said to have lashed from side to side, making somewhat of a zig-zag path and varying the width. Some skipping over east-northeastward path.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
ALABAMA Cullman, Marshall, and Morgan Counties	8	10:30 a.m.	15		0	0	5	1	Tornado	Storm from northeastern Cullman County, across southeastern corner of Morgan County at Hulaco, into Marshall County and ending after hitting at Union Chapel, southeast of Union Grove. Path east-northeastward, skipping.
MISSISSIPPI Summit, Pike County	8	Early afternoon			0	0			Tornado	Few treetops broken off. Funnel aloft observed by personnel at McComb Airport, moving northeastward.
TENNESSEE McMinn County	8	1 p.m.				2	2	1	Wind, rain, and electrical	In Tranquility community, school building struck by lightning, starting minor fire and injuring 2 pupils. Elsewhere in the county, wind tore away part of screen from a drive-in theater and toppled several trees. Heavy rains resulted in flash floods in Athens area which caused minor water damage to several stores.
GEORGIA Calhoun (near), Gordon County	8	2 p.m.	10	200	0	20	5	1	Tornado	Tornado first struck southwest of Calhoun, moved northeastward for about 10 miles, passing 2 miles south of city. 70 buildings damaged or destroyed and 10 house trailers demolished. Chenille mill heavily damaged. Many of injured suffered only minor hurts, but several seriously injured. Funnel seen by large number of persons. Many miraculous escapes related.
ALABAMA Talladega County	8	2-2:30 p.m.					4	1	Wind	High winds with passage of cold front did scattered damage over county, mostly at Talladega. Frontal squall superimposed on already rather high, general, surface wind.
ALABAMA DeKalb and Jackson Counties	8	2:30 p.m.					4	1	Wind and hail	High winds over DeKalb County and extended into Jackson County. Storm accompanied by light hail size of marbles. Frontal squall superimposed on already rather high general surface wind.
TENNESSEE Chattanooga, Hamilton County	8	3-5:35 p.m.						1	Wind	Winds reaching 57 m.p.h., felled trees and powerlines and broke large plate-glass window.
SOUTH CAROLINA Oconee, Anderson, Greenville, Laurens, Spartanburg, Union, Chester, Chesterfield, and Marlboro Counties	8	3-7:30 p.m.	100	*3-10		2	3	4	Wind, hail, and electrical	Area of very active thunderstorms moved through southern Oconee County, then through Townville, Centerville, Cross Anchor, Cross Keys, Santuc, south of Chester between Great Falls and Fort Lawn, Flat Creek school, Jefferson, Wallace, into North Carolina. Damage in Anderson County, wind $1,000, hail $1,000 to crops; Greenville County, wind $500, hail $1,000 to crops; Spartanburg County, wind $2,000, hail $25,000 to crops; Chester County, wind $1,000. 2 persons injured by lightning. Storm moved eastward.
TENNESSEE Leesburg (near) Washington County	8	3:30-3:40 p.m.	3	440	0	0	3	1	Tornado	Between Bowmantown and Leesburg, roof torn from grain-storage house, tobacco and machinery barn moved about 3 feet from foundation. Roof and sides of house damaged by flying debris, and about 20 large trees blown down. Storm moved eastward.
SOUTH CAROLINA Cross Keys to Santuc, Union County	8	4-4:30 p.m.	20	1000	0	2	4	3	Tornado	Tornadic action eastward from Cross Keys to Santuc, destroyed 3 homes, damaged 57, and damaged or destroyed 67 other buildings.
GEORGIA Tift, Irwin, and Coffee Counties	8	4-5 p.m.	50	150-800	0	0	5	5	Tornado, rain, hail, and wind	Tornado first hit near Chula, Tift County and moved southeastward approximately 50 miles alternately on ground and in air across southern Irwin and Coffee Counties. Damage to houses, tobacco barns, and trees near Harding, Tift County and near River Bend, Gladys, and Lax communities, Irwin County. Planing mill destroyed near Douglas, Coffee County, and several houses damaged or destroyed in southeastern Coffee County. School bus driver in Irwin County stopped bus and watched funnel cross road ahead. $2,000 property damage due to hail. Crop damage as follows: wind $15,000, hail $5,000, heavy rains $50,000.
GEORGIA Telfair County	8	4:30 p.m.	15	400	1	5	3	2	Tornado	Storm first struck in China Hill section, Telfair County moved almost east hitting again between Jacksonville and Lumber City in southern part of county. 2 men seriously hurt (1 later died) when they tried to out-run funnel cloud in truck. Truck picked up and whirled through air for distance of 100 yards. Several houses damaged or destroyed. Loss in timber estimated in thousands of dollars. Large refrigerator carried 250 yards. TV blown into well and when recovered, glass on picture tube not broken.

See reference notes at end of table

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
VIRGINIA Norfolk, Norfolk County	8	5:20 p.m.	1		0	2	5		Tornado	Funnel cloud observed to dip down in broad open field between Norfolk Naval Base and Forrest Lawn Cemetery in Norfolk, thence along Granby Street alongside cemetery. Damage resulted from snapped utility poles, unroofed buildings, broken windows, structural damage to warehouse under construction, and destroyed signs and billboards. Tornado moved northeastward.
SOUTH CAROLINA Lancaster, Chesterfield, and Marlboro Counties	8	5:50-7:30 p.m.	50	1,000	0	16	6	3	Tornado	Tornado struck near Flat Creek School in Lancaster County with more or less continuous path, through towns of Jefferson, north of Cheraw, and Wallace, then into North Carolina near Johns. 33 homes destroyed, 108 damaged and 156 other buildings destroyed or damaged. Storm moved eastward.
GEORGIA Randolph County	8	6:30 p.m.	4	200	0	1	4	1	Tornado	Hit in Friendship community destroying or damaging 3 houses, 2 barns, church, and school. Funnel observed by 3 persons. Tornado moved eastward.
VIRGINIA Scattered areas of State	8	Afternoon-evening					5		Wind and rain	In Bristol area, high winds with gusts to 75 m.p.h., and rain caused some damage to 3 aircraft at Tri-City Airport, to roofs, and signboards estimated at $5,000; in Charlottesville area, high winds to 70 m.p.h., uprooted trees and knocked out some utility lines with damage estimated at $1,000; in Patrick County, scattered areas of wind damage to buildings, trees, signs, etc., estimated at $5,000; in Lynchburg area, wind damage to trees and powerlines estimated at $5,000; in Newport News and Norfolk areas, wind damage to trees, utility poles, unroofed buildings, downed TV antennas, and damage from blown or falling objects estimated at $50,000. Italian Liberty Ship blown aground in Hampton Roads area.
NORTH CAROLINA Bladen, Cumberland, Duplin, Hoke, Robeson, Sampson, and Scotland Counties	8	7:30-9 p.m.	100	25-300	4	114	6	4	Tornadoes	Group of tornadoes, probably at least 3 in number, skipped along on more or less parallel paths over area 100 miles long and 20 miles wide. Individual paths of destruction mostly 1/2 to 5 miles long, and 50 to 75 yards wide. 1 or 2 places where path was a few hundred yards wide apparently made by cluster of smaller funnels, 50 yards or less. First tornado crossed line from Marlboro County, South Carolina, entering Scotland County, North Carolina, near Johns about 7:30 p.m. Shortly thereafter it did considerable damage northeast of Maxton. Probably same storm touched ground near St. Pauls, and thence moved on to 2 communities near Roseboro, Sampson County, where it killed 4 persons, injured about 40, destroyed 20 dwellings and 70 other buildings, and damaged several hundred structures. Path of second storm seen only in vicinity of Pembroke, where 21 persons injured and 20 homes and other buildings destroyed. Third tornado struck with great intensity in rural community west of Rosehill, Duplin County, about 9 p.m., 9 homes destroyed and their splintered remains strewn over many acres. 39 persons injured. 12 other homes badly damaged and outbuildings demolished. Concrete foundation crumbled as if by heavy sledge hammer. Storms moved east-northeastward. Red Cross lists for 5 of the 7 counties: 4 dead, 114 injured; 63 homes destroyed, 238 damaged; 175 other buildings destroyed, 525 damaged; 359 families affected. Hoke and Bladen Counties only lightly touched.
TENNESSEE Bristol, Sullivan County	8	P.m.						1	Wind and rain	Winds, gusting to 75 m.p.h., damaged 3 DC-3 aircraft at Tri-City Airport, blew down several trees, and damaged some roofs. See Bristol storm in Virginia same date.
TENNESSEE Knox County	8						4	1	Wind	Wind gusts to 58 m.p.h., felled trees and damaged powerlines throughout county. In Knoxville, winds ripped portion of sheet-metal roof from school gymnasium, blew out windows from a bank, and damaged TV antenna.
	8									Minor storms also reported at Opelika, Ala.; in Harlan County, Ky.; at Ashland, Byhalia, and near Crawford and Starkville, Miss.; and at Bullsgap, Bradley Creek, Cherokee, Concord, Cross Anchor, Hornbeak, Indian Ridge, Jasper, Kingsport, Kingston, Madisonville, Memphis, Mt. Carmel, Mt. Pleasant, Ottway, and Piney Flats, Tenn.
WEST VIRGINIA Lost River district, Hardy County	8-9	10 p.m. 8th -6 p.m. 9th						4	Wind	Extensive damage to timber and fruit trees. Storm moved southeastward.
MAINE, NEW HAMPSHIRE, VERMONT, and MASSACHUSETTS	8-9					Some	4	1	Snow	1 to 8 inches of snowfall over entire area, except Cape section, Massachusetts, caused extremely hazardous road conditions morning of 9th and all day in northern section. Many schools closed in northern Massachusetts and some in other areas,

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MAINE, NEW HAMPSHIRE, VERMONT, and MASSACHUSETTS (Cont'd)										due to transportation hazards. Many minor accidents and some injuries. Heavy, wet snow broke tree limbs in many communities. Falling limbs cut powerlines to numerous homes.
MARYLAND Anne Arundel County	9	Morning							Wind	Strong winds snapped off road gate and overturned 1 aircraft at Ft. Meade. At Annapolis U. S. Naval Academy peak gust of 80 m.p.h., from northwest recorded at 4:30 a.m.
	9									Minor storm also reported at Knoxville, Md.
	10									Minor storm reported in Mahaska County, Iowa.
FLORIDA Boca Raton, Palm Beach County	11	10 a.m.			0	0			Tornado, rain, wind, and hail	Cloud dissipated before affecting any inhabited area. Heavy rains following caused local short-duration flooding and associated high winds unroofed several buildings. Hail also reported at several isolated points in area.
KANSAS Most of State	11	Early a.m.-evening				6			Glaze and snow	Freezing drizzle, light snow, and some sleet beginning in northwest early in morning and ending late in afternoon in south. Roads became slippery and driving dangerous, with numerous accidents reported. Storm moved southeastward.
TEXAS Stamford, Jones County	11	Evening					5		Hail	Marble to golf-ball size hailstones; entire city hit, southeast portion hardest hit. Roofs and cars battered, paint peeled, branches torn from trees and shrubbery, flowers and gardens damaged, windshields and car windows broken, and church, school, greenhouse, and public building windows broken. Storm moved southeastward.
OREGON Sandy (near), Clackamas County	12	Noon	2-3	50	0	0	3	2	Tornado and hail	Small, but apparently definite, tornado moved northwestward across fairly rugged terrain north and east of Sandy. Fir trees 18 to 36 inches in diameter twisted off 30 to 40 feet above ground. Large barn carried considerable distance, then shattered. Number of farm outbuildings blown away. Accompanying hail 1/4 to 1/2 inch in diameter broke several windows in 2 or 3 farm homes. Most shingles on 2 or 3 homes ripped off, but little or no structural damage. Hail damage $300; remainder tornado.
OREGON Gilliam and Morrow Counties	12	12:30-12:45 p.m.	15-20	100-400	0	0	2	2	Tornado and hail	Apparently definite tornado moved eastward from southeastern Gilliam County to south-central Morrow County over mostly range land and large large wheat farms. No buildings in path of storm. 1 telephone pole lifted out of ground. Hail up to 1 inch in diameter reported, but most stones 1/4 to 1/2 inch in diameter with loss negligible.
OKLAHOMA Most of State	12-14				3	Many			Snow, sleet, hail, and freezing rain	Snow depths of 4 to 7 inches reported from northern counties of northeastern quarter of State. Mostly sleet, some small hail, and freezing rain elsewhere, except in extreme south-central and southeast. Iced-over highways caused dozens of traffic accidents which resulted in 3 deaths and numerous injuries. Severe freeze wiped out most of peach and pear crop, damaged apples, strawberries, pecans, shrubs, and gardens. Loss to wheat crop estimated from 0 to 100 percent and expected to average over 25 percent. Main loss area includes counties west of the 97° longitude, except northern, western, and southern rows of counties, but also includes Jackson County.
CALIFORNIA Northern coast	13-15						4	1	Wind and rain	Strong storm front moved rapidly eastward across California 13th to 15th causing rain (1.93 inches at Ukiah in 6-hour period 4:30 to 10:30 p.m., on 13th) and gusty winds along north coast. Severe local wind reported near Crescent City night of 13th which caused considerable damage to motel, mainly to carports under construction with damages estimated at $11,000. No other damage reported in Del Norte County. Minor damage in San Francisco Bay area, with winds reaching gusts of 46 m.p.h., at San Francisco Airport night of 13th.
OREGON Northwestern and north-central portion	14	9 a.m.-3 p.m.	200-250	*100-150		1	5	3	Wind	Strong winds throughout northwest and north-central from coast to center of State felled large number of trees across power- and telephone lines, and on to some homes and other buildings. Also, blew down several farm buildings, some power and communication poles and lines, a number of outdoor signs, blew roofs off a number of buildings, and damaged other property. 2 large ships broke loose from dock in Portland harbor and smashed into Hawthorne Bridge. Gusts of 50 to 60 m.p.h., recorded in middle Willamette Valley and in central Oregon, 60 to 75 m.p.h., along coast and Columbia River inland as far as Portland. Storm moved eastward

See reference notes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
GEORGIA Toccoa, Stephens County	14	4:30 p.m.	**400-500	17			2		Wind	Small, but apparently quite severe windstorm hit southwestern part of town. Greatest damage to roof of factory; welded, corregated-tin roofing torn and twisted from building in 2 distinct areas of roof about 75 feet apart; several pieces of roofing carried 300 to 400 yards and 1 piece wrapped almost around brick column of porch. Damage beyond factory mostly minor and confined to blown off shingles and blown in screens. Corner of roof of 1 house raised about a foot. Storm moved east-northeastward.
ILLINOIS Antioch, Lake County	14	6 p.m.			0	0			Funnel aloft	Pilot reported funnel cloud moving northeastward.
WASHINGTON Entire State	14				2	4	5		Wind, rain, and dust	Low pressure system off coast of Oregon and Washington intensified and moved eastward across State on 14th. Strong wind and rather heavy rainfall accompanied storm. Wind speeds ranging from 50 to 70 m.p.h., observed. Hundreds of fishermen out on lakes in small boats when first "squall" struck, only a few hours after 1957 fishing season opened. 1 person drowned when small boat sank, several other boats capsized, and many were forced to beach their boats in protected areas. Visibility reduced to nearly zero in some localities east of Cascades. Several persons injured in automobile accidents which occurred during duststorm. Power and communication outages occurred over State and 1 person killed by falling tree. Several commercial fishing boats along coast damaged.
	14									Minor storm also reported at White City, Fla.
TEXAS Gilmer (near), Upshur County	15	2:30 p.m.			1		2		Electrical	On Circle M&R Ranch, man killed by lightning. 1 yearling also electrocuted.
COLORADO Denver, Denver County	15	Afternoon					4		Wind	First thunderstorm of season on 15th caused $1,500 damage to fiber-glass window in dairy. Gust of wind accompanying storm ripped fiber glass from building and blew it away. $25,000 damage to church under construction.
	15									Minor storms also reported at Anadarko and Olustee, Okla.
NEW HAMPSHIRE Dover, Strafford County	16	2:05 p.m.	**100	2	0	0	2	1	Dust Devil	Small rowboat lifted 100 feet into air and demolished. Lumber also lifted and a fence damaged. Funnel black, darkening momentarily clear sky as it passed, and violently shook house. Storm moved northeastward.
COLORADO Fort Carson, El Paso County	16	Afternoon			1	5			Electrical	Army trainee killed and 5 others injured when struck by lightning.
	16									Minor storms also reported at Fortescue, Poplar Bluff, and Salem, Mo.; and at Miami, Okla.
CALIFORNIA San Francisco Bay area	17	12:57-1:04 p.m.	15	4,000	1		4	1	Wind, rain, electrical, and hail	Damage occurred mainly along southwest-northeast path from Hunter's Point across San Francisco Bay to community of El Sobrante, north of El Cerrito. At Hunter's Point, generator shed blown apart, and on east shore where most damage occurred, 2 radio towers felled, hole blown in roof of industrial building, causing $5,000 damage. Several warehouse building roofs blown off, windows broken, dwelling roofs and TV antennas dammaged, some streets and basements flooded as storm drains temporarily clogged, and automobiles damaged by falling tree branches. Lightning struck power pole and transformer in Alameda, temporarily blacking out homes and businesses. 1 fatality occurred at Redwood City when construction worker picked up downed powerline and was electrocuted. Hailstones reportedly size of marbles fell in San Francisco and Berkeley.
LOUISIANA Urania, La Salle Parish	17	Early a.m.					2	1	Hail and rain	Hailstones reported as large as 2 inches in diameter; must have been only few stones as no serious damage reported. Rainfall only 0.04 inch.
OKLAHOMA Quinlan, Woodward County	17	5 p.m.	13	*3			2	4	Hail	Hailstorm with stones up to 2 inches in diameter covered 85 percent of ground in area north of Quinlan. Main damage to wheat crop. Storm moved north-northeastward.
MISSOURI Vichy, Maries County	17	9:08-10:25 p.m.	11	*2-1/2					Wind, rain, hail, and electrical	Hail 3/4 inch in diameter at Vichy Airport. Continous severe lightning. 2.86 inches of rain from 9:08-11:05 p.m., at Vichy Airport; estimated 5 inches nearby. Wind hit gust of 60 m.p.h., at 10:08 p.m., at Vichy Airport. Considerable flooding of low-lying crop land.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MISSOURI Laclede County	17	Evening							Electrical and wind	House struck by lightning, burned to ground 8 miles west of Lebanon.
	17									Minor storm also reported at Knob Noster, Mo.
MISSOURI Springfield, Greene County	18	Noon-1:30 p.m.							Electrical, wind, rain, and hail	Hail 1/2 inch. Wind gusted to about 55 m.p.h., at 12:07 p.m. Lightning knocked out powerlines for 1-1/2 hours.
ARKANSAS Conway County	18	1:30 p.m.	10	*5			5	1	Hail and rain	Over 500 roofs damaged by hail, which also damaged windows and automobiles. Hailstones averaged 1/2 inch in diameter, with some stones as large as 2 inches in diameter reported. Storm moved eastward.
MASSACHUSETTS Dracut, Middlesex County	18	1:30 p.m.	**200		0	0	1	1	Dust devil	Small child lifted into air 3 feet and 2 other children rolled on ground by funnel, but none injured. Lumber and chair also picked up. Funnel accompanied by loud, whistling sound. Storm moved westward.
ILLINOIS Warnock, Monroe County	18	2 p.m.			0	0			Tornado	Tornado observed from across Mississippi River to west. Contact with ground shown by raising of dust. No damage reported. Tornado moved northeastward.
SOUTH DAKOTA Lyman, Buffalo, Hand, Beadle, Spink, Kingsbury, Clark, and Hamlin Counties	18	2-9 p.m.			0	0	4		Tornado, wind, hail, and electrical	Hail spread in band 130 miles long from Lyman to Hamlin Counties, stones varying from small, piling up to 6 inches deep, to isolated stones baseball size. Roofs battered and windows shattered. Hundreds of geese and ducks killed in midair had to be hauled off in trucks. High winds started near Wessington Hills and spread over wide swath, toppling weaker sheds and unroofing barn. Core of high winds passed just south of Wolsey at 4:20 p.m., destroying 11 grain bins, overturning 2 house trailers and razing telephone poles; no distinct funnel, but debris lifted spirally, indicating incipient tornado. Lower Brule, Lyman County, isolated temporarily when estimated 5-inch rain sent water 2 feet deep over roads. Lightning fired 30 tons of hay near Reliance.
WASHINGTON Seattle area, King County	18	3:30-5 p.m.	10	*3					Rain, hail, and electrical	Severe thunderstorm developed west of Seattle and moved eastward across city in vicinity of Magnolia Bluff, Queen Anne Hill, University district, and eastward across Lake Washington. Rainfall amounts ranged from 1/4 to 1/2 inch and hail occurred. Storm sewers overflowed in some localities. Lightning damaged a few residences and caused numerous power outages.
ARKANSAS Woodruff and Prairie Counties	18	3:40 p.m.	16	*8			4	1	Wind, hail, rain, and electrical	Principal damage along White River from Augusta to De Valls Bluff. Several buildings damaged in Augusta, Des Arc, and De Valls Bluff. Trees damaged by wind. Wind damage estimated at $7,500; hail at $500; rain at $500; and lightning at $1,000. Storm moved northeastward.
KANSAS Protection (5 miles south of), to Wilmore (3 miles northeast of), Comanche County	18	4:15-6 p.m.	14	*1			3	3	Hail	25 percent of ground covered by hailstones up to 2 inches in diameter. Storm moved northeastward.
TEXAS Sherman vicinity, Grayson County	18	4:20 p.m.	10	20	0	0	3		Tornadoes	Hit at Southmayd, lifted, returned to ground near Pottsboro. Moved house from foundation, demolished or damaged chickenhouses, barns, TV antennas, windmill, another house, garage, and roofs. Knocked out powerlines and hit boat docks on Lake Texoma. Residents in area said several funnels dipped to ground, cavorted about area for about 10 minutes. Storm moved northeastward.
NEBRASKA Clinton (28 miles south of), Sheridan County	18	4:45 p.m.	8-10	880	0	0	5	1	Tornado and hail	Hail damage, $9,000; tornado, $60,000. Funnel observed.
KANSAS Comanche County	18	5:55-6:12 p.m.	1-1/4	100	0	0			Tornadoes	2 small tornadoes observed. One 9 miles east of Coldwater traversed path of 1-1/4 miles. The other 7 miles east and 1 mile north of Coldwater about same time. Neither caused damage. Tremendous roar heard. Storm moved northeastward very slowly.
KANSAS Southwestern portion	18	Afternoon-evening							Wind and dust	High, southerly winds blew over most of western half much of day. In southwest, visibility ranged from 4 to 6 miles and wind speeds from 40 to 45 m.p.h. About 5 p.m., winds shifted to northwest and for an hour or so dust restricted vision to less than 100 yards locally in that area.

See reference notes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
OKLAHOMA Waynoka to Alva, Woods County	18	7:45 p.m.			0	0			Tornado	Observer reported funnel on ground south of Waynoka. Ground Observer Corps reported funnel aloft 15 miles south of Alva moving north-northeastward.
MISSOURI Vienna (3 miles northwest of), Maries County	18	8:37-9:30 p.m.	8	*2					Rain, hail, and wind	2.70 inches of rain in 53 minutes. Small hail. Cars washed 75 yards into field. Many basements and crop land flooded. Fences damaged. Storm moved eastward.
OKLAHOMA Hollis, Harmon County	18	9:30 p.m.	1-1/2	200	0	0	4	2	Tornado (suspected), wind, rain, and hail	Strong winds or possible tornado blew down brick front of business building, sucked out plate-glass windows, leveled brick fence at residence, and damaged roofs, TV antennas, and outbuildings. Storm moved northeastward.
MISSOURI Laclede County	18	9:30-10:30 p.m.					3		Hail, electrical and wind	Hail 1/2 inch in diameter at several places in county. Roofs and electrical equipment damaged.
OKLAHOMA Crescent, Logan County	18	11 p.m.			0	0			Funnel aloft	Ground Observer Corps reported funnel aloft.
OKLAHOMA Chickasha (2 miles southwest of), Grady County	18	11:11 p.m.			0	0			Funnel aloft.	Ground Observer Corps reported funnel aloft.
NEBRASKA Alliance (20 miles northeast of), Box Butte County	18	Late evening	Short	Narrow	0	0	3	1	Tornado	Demolished 1/2 mile of powerlines and poles over sparsely settled terrain.
OKLAHOMA Helena area, Alfalfa County	18	Night						1	Wind and rain	Strong winds damaged Helena and surrounding area. Barn unroofed and utility pole snapped at State Training School. Outbuildings destroyed or damaged and TV antennas blown down. 50 baby chickens killed when chickenhouse destroyed.
OKLAHOMA Ralston area, Pawnee County	18	Midnight						1	Wind, rain, and electrical	Severe rainstorm 2 miles south of Ralston destroyed or damaged outbuildings, roofs, trees, and utilities on several farms. 1 farm had many chickens killed when roofs blown off 2 chickenhouses.
MASSACHUSETTS Sherborn, Middlesex County	18	P.m.		2	0	0	1	1	Dust devil	Man spun around and child bowled over by funnel which made humming and buzzing sound, it extended 200 feet high. Storm moved northeastward.
OKLAHOMA West-central portion	18	P.m.							Wind, rain, and hail	Squall line with strong winds, heavy rain, and scattered heavy hail caused spotted damage over western sections of State. Hail up to 2 inches in diameter damaged crops around Gage and Shattuck, Ellis County. Winds blew down sign and broke plate-glass window in Elk City. Several farmsteads damaged by strong winds near Lone Wolf and Hobart, Kiowa County, and near Sentinel, Washita County. Windows blown out, roofs blown off, and barns blown over. Many TV antennas and trees blown down.
	18									Minor storms also reported at Kosciusko, Miss.; at Cape Girardeau and Galloway, Mo.; and at Memphis, Tenn.
MISSOURI La Due, Henry County	18-19								Rain	Major damage to several homes when heavy rains caused hillside to slide away from backs of homes. Mass of dirt 150 feet long and 15 to 30 feet deep slid down hill.
SOUTH DAKOTA Tripp and Lyman Counties	18-19	10 p.m.-2 a.m.			0	0	4		Tornado and electrical	Between 10:30 and 10:45 p.m., 2 farms 10 miles southeast and 7 miles east-southeast of Winner hit by tornado. Considerable damage to smaller buildings. Livestock and poultry killed. In Oacoma, lightning destroyed garage and contents.
TEXAS San Antonio (16 miles northwest of), Somerset, and Hondo areas, Medina and Bexar Counties	19	1:15 a.m.					4		Wind	Destroyed or damaged 15 barns. MIC at San Antonio reported debris did not support report of twisters. Storm moved northeastward.
OKLAHOMA Creek and Tulsa Counties	19	1:40 a.m.			0	0	3	1	Tornado and funnels aloft	Tornado sighted aloft near Kiefer, east of Sapulpa and touched ground on north edge of Tulsa where home damaged and 20-foot diving tower built of 4x6 lumber, TV antenna, and wooden fence destroyed. Other funnels reported in area and large trees blown down in Sand Springs. Storm moved northeastward.

See reference notes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
OKLAHOMA Ramona (south of), Washington County	19	1:45 a.m.	8	400	0	0	4	1	Tornado, rain, and electrical	Tornado struck rural area 4 miles south of Ramona. Several farmsteads destroyed or damaged. Chickens lost feathers and trees uprooted. Storm moved northeastward.
KANSAS Girard (2 miles east of), Crawford County	19	3:30 a.m.			0	0			Funnel aloft and wind	Well-defined funnel observed high in air moving rapidly northeastward, accompanied by strong, surface winds.
TEXAS Rio Vista (2 miles east of), Johnson County	19	4 a.m.	1/8	25	0	0	2		Tornado	Carport and chicken coop destroyed, fence posts and fencing torn down. Tornado moved eastward.
TEXAS Eastland, Eastland County	19	5:30 a.m.	1/4	300	0	0	3		Tornado	Unroofed business buildings and homes, demolished or damaged small barns and garages, and smashed windows and TV antennas. Tornado moved eastward.
OKLAHOMA Wewoka, Seminole County	19	A.m.						1	Wind and rain	Winds up to 60 m.p.h., caused minor damage to 2 houses, several barns, and outbuildings. Roof of furniture store damaged by wind. $40,000 stock of furniture heavily damaged when heavy rain leaked through roof. Storm moved northeastward.
NEBRASKA Plattsmouth (near), Cass County	19	Noon				1			Wind	6-year-old boy blown down on concrete sidewalk, face gashed.
FLORIDA Sebring, Highlands County	19	Noon			0	0			Waterspout and funnel aloft	Waterspout and funnel cloud aloft seen over Lake Jackson, but both dissipated before inflicting damage.
IOWA Burroak (4 miles northwest of), Winneshiek County	19	1:30 p.m.	1	300	0	0	2	1	Tornado (suspected)	Farm buildings and equipment damaged and trees uprooted. Storm moved northward.
WISCONSIN Onalaska, La Crosse County	19	2 p.m.			2		3	1	Wind	Squally conditions. Airplane crashed in which 2 persons killed.
WISCONSIN Holmen, La Crosse County	19	2:30 p.m.	2-3	150	0	0	4	1	Tornado	Skipping path north-northwestward.
WISCONSIN Beaver Dam, Dodge County	19	3 p.m.			2				Wind	Strong winds caused high waves on lakes and drowned 2 persons.
WISCONSIN Oconomowoc, area Jefferson County	19	3 p.m.			1				Electrical	1 person killed by lightning that struck tree.
WISCONSIN Juneau County	19	4 p.m.	20	300	1	0	4	1	Tornado	Tornado path north-northeastward from near New Lisbon through Necedah Refuge to north of Necedah snapped and uprooted trees and wrecked buildings on 1 farm where 1 person killed.
WISCONSIN Burlington area, Walworth and Racine Counties	19	4 p.m.			0	2	5	1	Tornado and hail	About 40-square miles received hail, with about $325,000 damage; $75,000 from tornado. Storm moved northeastward. Tornado path 6 miles long and 200 yards wide.
WISCONSIN Coddington and Bancroft, Portage County	19	4:05 p.m.	5	30	0	0	4	1	Tornado	Tornado moved northeastward.
WISCONSIN Wautoma and Saxeville, Waushara County	19	4:15 p.m.	12	150	0	1	4	1	Tornado	Tornado moved northeastward.
TEXAS Belton, Bell County	19	Afternoon			0	0			Funnel aloft	Funnel aloft sighted.
NEBRASKA Culbertson (6 miles southwest of), Hitchcock County	19	4:30-5:30 p.m.	Short	50	0	0	3	1	Tornado	Set of farm buildings damaged. Tornado moved northeastward.
NEBRASKA Crofton (near), Knox County	19	5:45-5:55 p.m.		10	1		4	1	Hail	Many windows broken and roofs damaged. Largest hailstones size of baseballs.
NEBRASKA Lexington (south of), Dawson County	19	5:50 p.m.	Short		0	0			Funnel aloft	Funnel sighted aloft, moving northward.

See reference notes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
KANSAS Western third	19	Afternoon-evening							Wind and dust	Strong, southerly winds developed in west in afternoon, with much soil blowing. As wind shifted to northwest about 4 p.m., along Colorado border, speeds reached 50 to 70 m.p.h., and visibility reduced from 3 to 5 miles to less than 300 feet and in some cases to zero. Worst storm from 4:30 to about 6 p.m.
SOUTH DAKOTA Minnehaha County	19	6:30-7p.m.			0	0	3		Hail and funnel aloft	Hail reaching baseball size fell 5 miles southwest of Sioux Falls Airport. At Renner, 1-1/2-inch hailstones broke windows and damaged paint on south and west sides of buildings. Funnel-shaped cloud reported south of Hartford.
NEBRASKA Tilden (6 miles southwest of) to Meadow Grove (north of), Madison County	19	7-7:30 p.m.	8	65	0	0	3	1	Tornado	Tornado moved northeastward.
NEBRASKA Doniphan, Hall County	19	7:30 p.m.	Short	Narrow	0	0	2	1	Tornado (suspected)	
KANSAS Brookville, Saline County	19	7:30-9 p.m.			0	0	2	1	Funnel aloft and electrical	Severe thunderstorm. Lightning damaged some appliances. 1 funnel cloud observed aloft, passing northeastward over Brookville about 7:30 p.m., no damage. Distinct roar heard.
NEBRASKA Elgin (3 to 5 miles south of), Antelope County	19	7:46 p.m.	Short	Narrow	0	0			Funnel aloft	Funnel aloft sighted.
NEBRASKA Norfolk (2 to 4 miles southwest of), Madison County	19	8:30 p.m.	2	17	0	0	3	1	Tornado	Funnel observed moving northeastward.
TEXAS Covington, Hill County	19	8:30 p.m.			0	0			Tornado	Tornado touched ground.
WISCONSIN Kendall, Monroe County	19	8:30 p.m.	8	400	0	0	5	1	Tornado	Tornado moved northeastward.
TEXAS Athens area, Henderson County	19	11:15 p.m.		200	0	0	3		Tornado	Through Stockard community, 4 miles northwest of Athens, damaged home, church, orchards, and outbuildings, and uprooted trees. Tornado moved northeastward.
TEXAS Mineola (3 miles south of), Wood County	19	Midnight			0	0	3		Tornado	Damaged home, store, and trees.
OKLAHOMA Sallisaw (near), Sequoyah County	19	P.m.			0	0			Tornado (suspected)	2 farmsteads destroyed. Storm moved northeastward.
NEBRASKA Pierce (near), Pierce County	19	Evening	Short	Narrow	0	0	3	1	Tornado (suspected)	Barn and corncrib moved from foundations.
NEBRASKA McLean (north of), Pierce County	19	Evening	Short	Narrow		1	3	1	Wind	
TEXAS Waco (6 miles west of), McLennan County	19				0	0			Funnel aloft	Funnel aloft sighted.
TEXAS Waco (1 mile north of), McLennan County	19				0	0			Funnel aloft	Funnel aloft sighted.
TEXAS Dallas and Ft. Worth areas, Tarrant and Dallas Counties	19				0	0			Funnel aloft	Funnel aloft sighted.
TEXAS Killeen, Bell County	19				0	0			Funnel aloft	Funnel aloft sighted.
	19									Minor storms also reported at Carthage, Mo.; at Dewey, Duncan, Henryetta, Lenapah, Nowata, and Redrock, Okla.; near Canova, Miller, and St. Lawrence, S. Dak.; and at Mount Morris and Oregon, Wis.
MINNESOTA Otter Tail County	19-20	A.m.19th-a.m.20th					3	1	Rain and electrical	Heaviest rain centered in New York Mills and vicinity. Here unofficial rainfall of 5 inches. Greatest official nearby report 3.06 inches at Fergus Falls. Because of early date, no crop damage;

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MINNESOTA (Cont'd)										however, fields flooded and will delay spring work. Lightning bolts struck several locations; no fires started. Storm moved eastward.
	19-20									Minor storms also reported at Aberdeen and in Hartford Beach area, S. Dak.
TEXAS Dallas area, Dallas County	20	12:20 a.m.			0	0			Tornado	Touched ground northwest of Dallas, having been sighted near Midlothian and veered to northwest of Irving; moved northwestward.
OKLAHOMA Arnett (3 miles northwest of), Ellis County	20	1:40 a.m.	Short	Narrow	0	0	2	1	Tornado	Tornado moving southeastward dipped down momentarily on 1 farm.
MINNESOTA Minneapolis-St. Paul area, Hennepin and Ramsey Counties	20	4-7 a.m.					3	1	Wind	Strong winds, officially recorded with gusts to 55 m.p.h., at International Airport, blew out several plate-glass, store windows in St. Paul-Minneapolis business sections. Some trees blown over. Secondary powerlines also downed. Storm moved eastward.
TEXAS Hawkins, Wood County	20	9 a.m.							Electrical	Lightning struck and set afire 5 oil tanks and service station. Between 7,000 and 8,000 barrels of oil destroyed. Flames roared unchecked through pumping-station building.
TEXAS Brownfield (2 miles southwest of), Terry County	20	10:30 a.m.	15	300	0	0	3		Tornado	Damage to phone lines and poles torn up. Tornado moved northeastward.
TEXAS Shallowater, Lubbock County	20	10:45 a.m.			0	0			Funnel aloft	Funnel aloft sighted moving northeastward.
TEXAS Delwin (4 miles south of), Cottle County	20	12:15 p.m.	**500	100	0	0	3		Tornado, rain, and hail	Destroyed farm residence and outbuildings. Downpour of 3.20 inches of rain and hail. Storm moved north-northeastward.
WISCONSIN Madison, Dane County	20	1:30 p.m.			1				Winds	Winds caused high waves and drowned 1 person.
TEXAS Ralls and Crosbyton, Crosby County	20	4 p.m.					3		Hail and rain	Roofs damaged by golf-ball-sized hail. 2 inches of rain flooded streets at Ralls.
KANSAS Wichita (18 miles west-northwest of), Sedgwick County	20	6:15 p.m.			0	0			Funnel aloft	Funnel remained aloft and was visible only a short time.
KANSAS Wichita (16 miles southwest of), Sedgwick County	20	6:15 p.m.			0	0			Funnel aloft	Funnel appeared out of base of cloud; remained aloft and was visible only a few minutes.
OKLAHOMA Duncan area, Stephens County	20	6:30 p.m.			0	1	3	1	Tornado (suspected), rain, and electrical	Funnel aloft sighted at Empire City, southwest of Duncan. Strong winds blew over house trailer, injuring 1 person and caused severe damage to farmstead 6 miles west of Duncan. Lightning and wind caused considerable damage to utilities in and around Duncan. Storm moved southeastward.
OKLAHOMA Wynne Wood (6 miles west of), Garvin County	20	9:20 p.m.			0	0			Funnel aloft	Funnel aloft sighted.
OKLAHOMA Jackson, Kiowa, Comanche, and Tillman Counties	20	P.m.							Hail, rain, and wind	Hailstorm near Duke, Jackson County, with stones up to 2 inches in diameter smashed windshields, TV antennas, and beat holes in sheet-iron roofs and plastic irrigation pipe. Only light damage noted in other portions of 4-county area. Storm moved eastward.
TEXAS Between Friona and Dimmitt, Parmer County	20				0	0			Funnel aloft	Funnel aloft sighted.
TEXAS Burleson (7 miles southeast of), Johnson County	20				0	0			Funnel aloft	Funnel aloft sighted.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TEXAS Arlington (7 miles southwest of), Tarrant County	20				0	0			Funnel aloft	Funnel aloft sighted.
CALIFORNIA Southern portion	20-21						3	1	Rain, electrical hail, and snow	Storm moving southeastward to San Francisco Bay area and splitting into Nevada on 20th caused heavy downpours in Los Angeles-San Bernardino areas and nearby mountains on 20th, followed by thunderstorms, lightning, and some hail on 21st. Rains on 20th flooded several streets and intersections in Los Angeles. Snow fell in mountains, requiring chains on higher roads. Hail reported covering lawns and sidewalks in El Sereno on 21st. Lightning on 21st caused power outages and damaged powerlines of California Edison and California Electric Companies.
ILLINOIS Ashley, Washington County	21	11:50 a.m.			0	0			Funnel aloft	Funnel cloud reported by pilot. Separate report by meteorologist 3 miles west of Mt. Vernon at 11:55 a.m., probably of same cloud. St. Louis radar reported cloud tops at 38,000 feet.
NEW MEXICO Causey, Roosevelt County	21	3 p.m.	1/4	40	0	0	4	2	Tornadoes	Dairy barn and several other outbuildings destroyed on 2 farms. At least 4 separate funnels reported. Several observers reported that while the general storm moved eastward, tornado that caused damage moved in almost complete circle north to west to south to east.
NEW MEXICO Jal (3 miles west of), Lea County	21	3:30 p.m.			0	0			Funnels aloft	2 funnels observed aloft.
KANSAS Chanute (5 to 8 miles northwest of), Neosho County	21	5-5:05 p.m.			0	0			Funnel aloft	Small funnel 50 to 100 feet long observed; visible about 5 minutes; moved northeastward.
KANSAS Chanute (5 to 8 miles southeast of), Neosho County	21	5:10-5:25 p.m.			0	0			Funnel aloft	Funnel aloft observed suspended from cloud base about 1,500 feet above ground; reached about half way from cloud to ground; moved northward.
TEXAS Levelland, Amherst, and Littlefield areas, Hockley and Lamb Counties	21	5:44-7:25 p.m.	26	500-1,000	0	7	6		Tornadoes, hail, and rain	3 funnels, remained on ground, converged into one, twice, causing savage destruction between Levelland and Amherst. Total path of the 2 tornadoes from point 5-1/2 miles east of Levelland to point 1-1/2 miles east of Amherst, Lamb County, including Littlefield area. Ground covered by large hail. Excessive rainfall following passage of tornado. Property destroyed mostly farm dwellings and equipment; 1 cage layer house with 2,400 hens destroyed; 1 cotton gin destroyed. Damage to automobiles high. Property damage estimated at $680,000, livestock losses $4,000. Storm moved north-northwestward.
TEXAS Seminole (15 miles west of), Gaines County	21	6-6:30 p.m.	1	300	0	0	3		Tornado	Smashed car shed and tractor shed. Storm moved northeastward.
MISSOURI St. Genevieve, St. Genevieve County	21	7-7:30 p.m.					5		Rain	North and South Gabouri Creeks rose very fast. This was most destructive disaster in this community since flash flood on Easter Sunday of 1922 Most damage on South Gabouri Creek. Estimated 5 inches of rain in headwaters. Cars and homes damaged.
OKLAHOMA Guymon (5 miles west of), Texas County	21	7:46 p.m.			0	0			Funnel aloft	Funnel sighted aloft moving northwestward.
COLORADO Akron (11 miles northeast of), Washington County	21	Night			0	0			Tornado	Cattle shed 16x60 feet upset and several large trees uprooted.
	21									Minor storm also reported at Beach, N. Dak.
TEXAS Lubbock and Lamb Counties	21-22	6 p.m. 21th -3 a.m. 22 d	75	*30	0	29			Tornadoes, wind, hail, rain, and electrical	Highway Patrol reported 4 funnels touched ground. Approached Lubbock from Slaton on ground; lifted and dipped down again at Shallowater, moved to 5 miles southeast of Olton. Storm moved northwestward.
TEXAS Lake Travis (Volente community), Travis County	22	2:25 a.m.			0	0	2		Tornado, rain, and electrical	Parts of roofs ripped off 3 houses and furnishings damaged by rain. Windows broken. Torrential rains and violent electrical activity. Storm moved eastward.

See reference notes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
COLORADO Aurora (east of), Adams County	22	Early morning					4		Electrical	House destroyed by fire after being struck by lightning during severe thunderstorm.
INDIANA Greencastle (south of), Putnam County	22	7:12 a.m.			0	0			Funnel aloft	Pilot observed funnel cloud.
TEXAS Jacksonville, Cherokee County	22	7:25 a.m.	1/2	25	0	0	3		Tornado	Hit downtown; much broken glass, showroom and 1 new-car demonstrator exploded, and roof damaged. Storm moved northeastward.
NEW MEXICO Hobbs, Lea County	22	10:54 a.m.			0	0			Funnels aloft and hail	2 funnels observed, but neither reached ground. Some light hail, but no damage. Storm moved northeastward.
COLORADO Burlington (near), Kit Carson County	22	11 a.m.			0	0			Tornado, funnel aloft, hail and rain	Small tornado went through farmyard near Burlington causing miscellaneous minor damage, ripped up plot of ground 1/4 mile long, upended 2-bottom plow, carried away 10-foot tank, wire, and barrels, blew 14-foot aluminum gate over barn, leaving load of hay near gate untouched. Hail and rain accompanied storm. Several small funnel clouds observed in area. Storm moved northeastward.
NEBRASKA Grant, Perkins County	22	11:30-11:45 a.m.	Short	Narrow	0	0	4	1	Tornado	
TEXAS Between Seminole and Higginbotham, Gaines and Dawson Counties	22	12:15 p.m.			0	0			Tornado	
NEBRASKA Palisade (near), Hitchcock County	22	1:30 p.m.	Short	Narrow	0	0	2	1	Tornado	Funnel observed. Small granary upset.
ARKANSAS Wickes and Hatton, Polk County	22	2 p.m.							Wind and rain	Several abandoned buildings destroyed near Wicks. Considerable timber blown down. Storm moved northward.
KANSAS Girard area, Crawford County	22	2:15 p.m.	4		0	0			Funnel aloft	Funnel aloft observed 7 miles southwest of Girard to 3 miles southeast of Girard; moved northeastward.
TEXAS Lesley (near), Hall County	22	2:40-3 p.m.	8	200	0	0	4		Tornado	4 houses demolished. Storm moved northeastward.
SOUTH DAKOTA Draper (east of), Jones County	22	Afternoon			0	0			Funnel aloft	Funnel cloud sighted moving northeastward.
TEXAS Odessa, Ector County	22	3:30 p.m.		Narrow	0	0			Tornado	Dipped to ground, pulled right up again; moved northeastward.
KENTUCKY Mercer County	22	4 p.m.			0	0	4		Wind, tornado (suspected), and rain	Tobacco warehouse damaged by wind. Residents of area reported seeing what appeared to be giant whirlwind during rainstorm.
TEXAS Quitaque (7-1/2 miles southeast of), Briscoe County	22	4:20 p.m.	1/2	50	0	0	3		Tornado	Destroyed chickenhouses, damaged garage roof, and scattered several feed stacks; moved northeastward.
KANSAS Clay Center area, Clay County	22	4:45-5 p.m.	4	300	0	0	4	3	Tornadoes and hail	2 funnels sighted at times from 6 miles south to 2 miles south of Clay Center. A number of barns and sheds destroyed. Hail 1/2 inch in diameter covered 8-square-mile area, damaging young alfalfa and wheat south of Clay Center. Crop damage from hail. Storm moved northwestward.
KANSAS Sawyer (5 miles east of), Pratt County	22	5 p.m.			0	0		1	Tornado	Funnel observed to come to ground and hit farmhouse. A little damage done to shed and house was plastered with mud. Storm moved northward.
NORTH DAKOTA Belfield (10 miles south of), Stark County	22	5:20 p.m.	1/2	800	0	0	3	1	Tornado	Garage, granary, and barn completely demolished. Tornado moved northwestward.

See reference notes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
KANSAS Pratt (8 miles southeast of), Pratt County	22	5:30 p.m.	6-8	100	0	0	3	1	Tornado	Main damage was to farmhouse, large, tin haybarn, and tin silo. Tornado moved almost due north, with damage occurring about midway of path.
SOUTH DAKOTA Burke (southwest of), Gregory County	22	5:30 p.m.			0	0			Funnels aloft	2 funnels sighted. Dust raised.
OKLAHOMA Jackson and Greer Counties	22	6 p.m.			0	0			Tornado (suspected), wind, rain, and hail	Suspected tornado damaged farmsteads 6 miles south of Duke. Outbuildings destroyed and houses twisted on their foundations. At Fairview, Greer County, homes and property damaged. 9 miles east of Mangum, house lifted and carried 1,000 feet in air and exploded. Hail damaged crops up to 50 percent in southwestern Greer County and only slight damage elsewhere in area of tornado path. Hail damage to roofs noted in Granite. Storm moved northeastward.
VIRGINIA Coeburn, Wise County	22	6-7 p.m.					4		Rain	Flash flooding did damage to streets, washed away 7 cars, and took out creek retaining wall.
SOUTH DAKOTA Platte (10 miles south of), Charles Mix County	22	6:30 p.m.			0	0			Funnel aloft	Funnel aloft sighted.
NEBRASKA Kearney (4 miles southwest of), Buffalo County	22	6:30 p.m.			1				Electrical	Girl killed by lightning.
KANSAS Barton County (southeastern corner)	22	6:35 p.m.	1/2		0	0			Tornado	Funnel cloud observed to hit ground and followed northeastward path for short distance across open field, doing no damage.
OKLAHOMA Sentinel (southwest of), Washita County	22	7:01 p.m.			0	0		1	Tornado	Barn and shed destroyed as tornado dipped down momentarily.
OKLAHOMA Carnegie, Caddo County	22	8 p.m.	1	200	0	1	5	1	Tornado	Tornado moved northeastward across Carnegie, causing extensive damage to several business buildings and other property. Pickup truck lifted in air and smashed to ground on its top, injuring driver.
OKLAHOMA Aline, Alfalfa County	22	8 p.m.	Short	50	0	0	3	1	Tornado (suspected)	2 farmsteads damaged. Porch torn apart and scattered in different directions and trees blown over. Storm moved northeastward.
KANSAS Cloud and Republic Counties	22	8-8:30 p.m.	40		0	1	4		Wind and funnel aloft	In connection with squall line passage across these 2 counties, several areas suffered damage from severe winds. Buildings damaged from 10 miles south of Concordia, in the city, and north of city, and as far northwest as Courtland and Scandia areas. Main damage occurred in southwestern part of Concordia. 1 man severely burned by broken high-voltage wire. Vortex cloud that did not fully come to ground observed about 8 or 10 miles southwest of Concordia at 8:30 p.m. Storm moved southwestward.
OKLAHOMA Blaine, Canadian, Kingfisher, Logan, and Caddo Counties	22	8-10 p.m.	80	*18	0	0	5	5	Tornado (suspected), hail, wind, rain, and electrical	Widespread areas of northern Caddo and southwestern Canadian Counties received considerable damage resulting from high winds or possible tornado. Substation observer at Anadarko believed he sighted funnel just west of his station. Over a dozen farmsteads destroyed or damaged between Binger and Eakly. 1/2 mile of powerline blown away 3 miles west of Binger. Several homes destroyed, damaged, or twisted on their foundations in or near Lookeba. Several farmsteads damaged north and west of Calumet, Canadian County. Severe hailstorm with stones 3/4 to 2 inches in diameter caused extensive damage from around Geary, Blaine County, to northern Logan County or an area 18 miles wide and 60 miles long. Damage to crops ranged from 0 to 100 percent. Area 3 miles wide and 30 miles long in Kingfisher County had nearly 100 percent crop loss. Many buildings damaged by hail. Storm moved northeastward.
OKLAHOMA Braman (northeast of) Kay County	22	8:30 p.m.			0	0			Funnel aloft	Funnel sighted aloft moving northeastward.
OKLAHOMA Kingfisher area, Kingfisher County	22	9 p.m.	4	200	0	0	5	1	Tornado	Tornado believed to have passed over Kingfisher just above ground. Destruction spotty along path. At least 6 homes in Kingfisher and 1 farm home just northeast of Kingfisher heavily damaged, 2 homes unroofed, and many outbuildings destroyed or damaged. Many persons complained of ears popping as storm moved over. Storm moved northeastward.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons: Killed	Number of persons: Injured	Estimated damage by categories †: Property (exclusive of crops)	Estimated damage by categories †: Crops	Character of storm	Remarks
OKLAHOMA Perry (3 miles west of), Noble County	22	9:40 p.m.			0	0			Funnel aloft	Funnel sighted aloft moving northeastward.
OKLAHOMA Pawnee (2 miles southwest of), Pawnee County	22	9:55 p.m.			0	0			Funnel aloft	Funnel sighted aloft.
OKLAHOMA Kay and Osage Counties	22	10 p.m.			0	0	4	1	Tornado (suspected), wind, and electrical	Funnel aloft sighted 2 miles north of Tonkawa and again northwest of Ponca City. 3 miles northeast of Ponca City, 3 large trailer homes damaged at estimated loss of $10,000, barn lifted over corral and smashed, and tool shed destroyed. Additional scattered damage reported. Wind damage noted at Kaw City and lightning struck and burned home and contents near Webb City, Osage County. Storm moved east-northeastward.
TENNESSEE Trousdale County	22	10 p.m.-midnight						1	Rain	Torrential downpours heavily damaged rural roads, culverts, and bridges. At Hartsville, Goose Creek tore away section of city water line and water flooded Hartsville General Hospital to depth of several inches.
OKLAHOMA Cushing, Payne County	22	10:20 p.m.			0	0	2	1	Tornado	Tornado moved from southwest over south edge of Cushing, damaging shed.
OKLAHOMA Beggs, Okmulgee County	22	10:45 p.m.			0	0			Funnels aloft	Ground Observer Corps reported 2 funnels aloft moving eastward.
OKLAHOMA Drumright, Creek County	22	11:04 p.m.			0	0			Tornado	Ground Observer Corps reported tornado on ground at Drumright. Evidently caused no damage.
OKLAHOMA Bartlesville and Oglesby, Washington County	22	11:15 p.m.						1	Wind and rain	Windstorm caused considerable damage to farmsteads southwest, southeast, and east of Bartlesville.
OKLAHOMA Mounds area, Creek County	22	11:30 p.m.			0	0			Funnel aloft	Funnel sighted aloft.
OKLAHOMA Tulsa (15 miles south-southwest of), Tulsa County	22	11:30 p.m.			0	0			Funnel aloft	Funnel sighted aloft.
OKLAHOMA Bixby (near), Tulsa County	22	11:30 p.m.			0	0			Tornado	Tornado reported; evidently caused no damage.
OKLAHOMA Lake Murray, Carter County	22	11:40 p.m.			0	0		1	Tornado	Tornado destroyed boathouse.
OKLAHOMA Stroud (12 miles southwest of), Lincoln County	22	P.m.		800	0	0		1	Tornado and rain	Tornado moving northeastward damaged trees and farmstead.
RHODE ISLAND Woonsocket, Providence County	22				0	0	1		Dust devil	Small dust devil moved 100-pound tub about 10 feet and then faded as it crossed fields to northwest.
TEXAS Lockney (west of), Floyd County	22		5-8	10	0	0			Tornado	Moved northeastward across pastures and fields.
TEXAS Groom, Carson County	22				0	0			Funnel aloft	Funnel aloft sighted.
TEXAS Idalou, Lubbock County	22				0	0			Funnel aloft	Funnel aloft sighted.
TEXAS Plainview (5 miles south of), Hale County	22				0	0			Funnel aloft	Funnel aloft sighted.
TEXAS Floydada, Floyd County	22				0	0			Funnel aloft	Funnel aloft sighted.
TEXAS Waco, McLennan County	22				0	0			Funnels aloft	2 funnels aloft sighted.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

APRIL 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons: Killed	Number of persons: Injured	Estimated damage by categories †: Property (exclusive of crops)	Estimated damage by categories †: Crops	Character of storm	Remarks
TEXAS Carthage (4 miles south of), Panola County	22				0	0	2		Tornado	Moved northeastward, destroying barn and damaging another building.
	22									Minor storms also reported near De Witt, Max, and Stapleton, Nebr.; at Clovis, N. Mex.; at Okeene, Okla.; and at Artesia Wells, Tex.
UTAH Most of State	22-23								Rain and snow	Snow downed numerous telephone and powerlines, and broke many tree limbs; minor damage to fruit trees. Rain and melting snow caused minor flooding of some Salt Lake City streets and basements. A few losses of lambs and young turkeys reported.
OKLAHOMA Delaware area, Nowata County	23	12:30 a.m.			0	0		1	Funnel aloft, wind, rain, hail, and electrical	Funnel aloft sighted between Delaware and Lenapah. At least 6 farmsteads north of Delaware damaged by strong winds. Storm moved northeastward.
OKLAHOMA Sequoyah County	23	1:05 a.m.	18		0	0		1	Tornado (suspected) and rain	Plate-glass window blown out in Gore. Ranch 8 miles north of Vian had barn, fences, and trees blown down with damage estimated at about $700. 3 more buildings at Rocky Point, near Marble City, damaged heavily. Storm moved northeastward.
ARKANSAS Russellville, Pope County	23	4 a.m.	**440	100	0	0	2	1	Tornado	Damage limited to 1-block area. 1 roof damaged and trees and TV antennas blown down. Funnel cloud observed aloft for 10 minutes after lifting. Storm moved northeastward.
PENNSYLVANIA Williamsport (near), Lycoming County	23	6 a.m.					4		Electrical	Bolt of lightning fired barn and contents. 6 dairy cattle destroyed.
TENNESSEE Carson Spring community, Cocke County	23	A.m.						1	Rain	Extensive damage to walls and lawns by cloudburst and flash flood.
TEXAS Bryan area, Brazos County	23	12:30-1:30 p.m.			0	0			Funnel aloft	Funnel aloft sighted moving northwestward.
TEXAS Huntsville (southeast of), Walker County	23	4 p.m.			0	0			Funnel aloft, hail, rain, and electrical	Funnel aloft sighted moving northeastward.
TEXAS Bryan area, Brazos County	23	4:12 p.m.			0	0			Tornadoes and funnels aloft	5 tornadoes and several funnels observed in 25-mile radius of Bryan.
MASSACHUSETTS North Adams, Berkshire County	23				0	0	1	1	Dust devil	Funnel rattled house and frightened occupant.
	23									Minor storms also reported near Hurley, Mo.; and near Maynardville, Tenn.
TEXAS Killeen, Bell County	24	11:35 a.m.			0	0			Funnel aloft	Funnel aloft sighted.
TEXAS Douglass, Cushing, Trawick, and Caro, Nacogdoches County	24	Morning					4		Wind	School unroofed, homes damaged, trees uprooted, and phone lines downed.
INDIANA Columbus (northwest of), Bartholomew County	24	Noon			0	0	3	1	Tornado	Small tornado unroofed house.
TEXAS McKinney, Collin County	24	12:05 p.m.					4		Electrical and rain	Lightning struck commercial building, causing fire, also struck 2 homes causing minor damage. Heavy rain accompanied storm.
MAINE Pittsfield, Somerset County	24	12:30 p.m.		1	0	0	1	1	Dust devil	Strong rumbling noise as black funnel damaged clothes reel and bush, and tore storm window from house. Storm moved eastward.
TEXAS Dallas (southwestern portion), Dallas County	24	12:35 p.m.			0	0			Funnel aloft and rain	Funnel aloft sighted moving northwestward; followed by heavy rain.
TEXAS Webberville and Elgin, Bastrop and Travis Counties	24	2-2:20 p.m.	13	800	0	2	5		Tornado	Hit ground near Webberville and observed northeast of Webberville by Continental Airlines pilot. Moved toward Elgin, then from 5 miles south to 8 miles northeast of Elgin. 4 houses destroyed, 3 others badly damaged. 2 barns, 2 brooder houses,

† See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons: Killed	Number of persons: Injured	Estimated damage by categories †: Property (exclusive of crops)	Estimated damage by categories †: Crops	Character of storm	Remarks
TEXAS (Cont'd)										and 1 trailer house destroyed, 2 cars damaged. Tornado moved northeastward.
TEXAS Dawson (5 miles southeast of), Navarro County	24	3:45 p.m.	5	100	0	0	3		Tornado and rain	Razed 2 houses, barn, and outbuilding, and unroofed homes in Shiloh community. Storm moved northeastward.
TEXAS Fort Worth (southwest of), Tarrant County	24	4 p.m.			0	0			Funnels aloft	2 funnel clouds reported.
TEXAS Bryan (northwest of), Brazos County	24	4:20 p.m.			0	0			Funnel aloft	Funnel aloft sighted moving northeastward.
OKLAHOMA Jay (6 miles south of), Delaware County	24	5 p.m.			0	0			Funnel aloft	Funnel just brushing tree tops reported.
LOUISIANA Logansport, De Soto Parish	24	7-11 p.m.							Electrical	Observer reported "worst electrical storm ever witnessed."
WISCONSIN Oconto County	24	8:30 p.m.			0	0			Funnel aloft	Funnel aloft reported.
PENNSYLVANIA Western portion	24	Evening			1		5	1	Wind, electrical and rain	Violent thunderstorms accompanied by 60-m.p.h., winds toppled trees and billboards and unroofed several homes. In Pulaski, church steeple damaged. 15-year-old girl killed near Apollo when struck by lightning. Several barns also burned. Cloudbursts in Beaver and Crawford Counties caused flash flooding with $50,000 damage to stores, homes, and other property.
TEXAS Hughes Springs, Cass County	24	Evening				2	3		Electrical	Lightning set fire to main office and salesroom of lumber company.
TEXAS Pottsboro, Grayson County	24				0	0			Tornado	Touched ground, no report of damage.
TEXAS Dallas, Dallas County	24				1				Electrical	Man killed by lightning.
TEXAS Mexia, Limestone County	24					1	4	C	Wind and electrical	Tornadic winds blew down TV antennas, damaged roofs, destroyed outbuildings, unroofed buildings on 2 farms, blew down property at drive-in theater, uprooted trees, almost completely destroyed home, and damaged orchards. Lightning injured man at work.
TEXAS Oscar, Seaton, Zabcikville, Rosebud, and New Salem communities, Bell and Falls Counties	24				0	0	3		Tornado	Tore up barns and outhouses, moved houses from foundations, and damaged commercial building.
TEXAS Fairfield (7 miles northwest of), Freestone County	24				0	0	2		Tornado	Uprooted trees, damaged property on 1 farm, and damaged barn on another.
TEXAS Fairfield (8 miles east of), Freestone County	24				0	0			Tornado	Hit ground, no reported damage.
TEXAS Corsicana (south of), Navarro County	24						4		Electrical	55,000-barrel tank of Magnolia Pipeline Company farm struck by lightning and burned. Oil fire sent forth boiling, black clouds of smoke resembling tornado.
TEXAS Teague (northwest of), Freestone County	24				0	0	3		Tornado	Dipped several times, damaged powerlines, tore down barn, blew over trees, blew off roof and damaged another home.
TEXAS Rockdale (2 miles south of), Milam County	24				0	0	5		Tornado	Hanger and 2 airplanes damaged.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

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					Killed	Injured	Property (exclusive of crops)	Crops		
TEXAS Liberty Hill (5 miles northwest of), Williamson County	24				0	0	3		Tornado	Unroofed 2 homes and destroyed 2 barns.
	24									Minor storms also reported at New Haven and West Plains, Mo.
MICHIGAN (Lower) Southern and central portions	24-25				1	4	5	1	Winds, electrical, and hail	Winds caused scattered damage and lightning destroyed several barns. Washtenaw County farmer burned to death when his barn struck. Hail reported in several counties.
ARKANSAS Jonesboro, Craighead County	25	Midnight	** 880	200-300	0	0	4	1	Tornado, rain, and electrical	Tornado moving northeastward touched ground in 2 places; building lifted 40 feet into air. Considerable damage to roofs, signs, and utility poles.
OKLAHOMA Tulsa, Tulsa County	25	12:05 a.m.			0	0		1	Funnels aloft and wind	2 funnels aloft sighted on eastern edge of Tulsa. Small plane at auxiliary airport lifted vertically, pulling out stakes, overturned, and smashed down on other planes. Heavy marker also turned over on field.
MISSOURI Fredricktown, Madison County	25	1:25-1:30 a.m.	1/2	500	0	0	4		Tornado, wind, and rain	Observer heard loud roar and "screeching" sound. Buildings in residential area damaged. Storm moved northeastward
ILLINOIS Monroe and Saint Clair Counties	25	2:30 a.m.		200-300	0	0	4	1	Tornado	2 farmsteads damaged 3 miles northwest of Freeburg. 1 roof removed with explosive action. Loud roaring sound. Possibly same tornado which struck Fredericktown, Mo., 1 hour earlier. Minor damage near Waterloo, Ill. Tornado moved northeastward.
ILLINOIS Urbana, Champaign County	25	5:20 a.m.				2	4	1	Wind	Unanchored housetrailer overturned. 12-car garage collapsed. Other damage minor. Apparently same squall line that caused tornado at Freeburg at 2:30 a.m. Storm moved north-northeastward.
MICHIGAN Jackson (north of), Jackson County	25	9:40 a.m.			0	0			Funnel aloft	Funnel observed by CAA personnel near airport north of Jackson. Funnel lasted only a few minutes and did not touch ground.
IOWA Montgomery and Adams Counties	25	11:30 a.m.			0	0	4	1	Tornado (suspected) and hail	Buildings damaged by tornado, chickens killed by hail.
MICHIGAN Huron and Sanilac Counties	25	Afternoon			0	0	3	1	Tornadoes	Several funnels aloft, reported. Some evidence that 1 or more of funnels may have dipped briefly to surface in rural areas.
WEST VIRGINIA Weirton, Hancock County	25	3-4 p.m.					4	1	Electrical, wind and rain	Winds estimated 60-70 m.p.h., damaged plate glass, roofs, and trees. Some flooding of basements by runoff water. Storm moved northeastward.
TEXAS Buffalo Gap area, Taylor County	25	3:30 p.m.			0	0			Tornado	Hit on hilltop between Buffalo Gap and View. Uprooted some shrubs.
TEXAS Wichita Falls (10 miles south of) Wichita County	25	4:05 p.m.			0	0			Tornado	Dipped for instant, kicking up dust.
TEXAS Big Spring (22 miles east-northeast of) Howard County	25	4:22 p.m.			0	0			Funnel cloud, hail and rain	Funnel aloft sighted moving northeastward.
WISCONSIN Lone Rock, Richland County	25	4:40 p.m.							Hail	1 to 1-1/4 inches of hail covered ground.
NEBRASKA York and Seward Counties	25	6-8:30 p.m.	26	*4-12			3	4	Hail	Damage area spotted. Hailstones up to 2 inches in diameter. Storm moved northeastward.
NEBRASKA Beaver Crossing (near) to Omaha (south of), Seward to Douglass County	25	6-8:45 p.m.	80	200-400	1	18	6	3	Tornado	Most damage at Milford. Tornado moving east-northeastward touched ground at spots after passing to east at Milford.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

APRIL 1957

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					Killed	Injured	Property (exclusive of crops)	Crops		
NEW YORK Cheektowaga and South Newstead, Erie County	25	6:15 p.m.	1/2	15	0	0	5	1	Tornado, funnel cloud, wind, rain, and electrical	Heavy roll cloud preceding thundersqualls moved into Buffalo area. 2 funnel clouds moving northeastward, reported 1 remained aloft. Damage by tornado $5,000, by wind $80,000, by rain $10,000, and by lightning $5,000.
TEXAS Ringgold (1 mile south of), Montague County	25	6:30 p.m.	3		0	0	3		Tornado	Barn and car damaged. Tornado moved southeastward.
NEBRASKA Edgar (near) to Exeter (east of), Clay and Fillmore Counties	25	6:40-7:35 p.m.	35	100-220	0	0	5	2	Tornado and hail	Several sets of farm buildings destroyed. Tornado damage to property $275,000, hail $4,000. Storm moved east-northeastward.
OKLAHOMA Tishomingo, Johnston County	25	8:30 p.m.			0	0	3	1	Funnel aloft, wind, rain, hail, and electrical	Funnel aloft sighted moving northward over Tishomingo. Strong winds twisted 30 TV antennas, blew down trees, and lifted roof from apartment building. Lightning struck home, causing estimated $900 damage.
OKLAHOMA McAlester (20 to 40 miles west of), Pittsburg County	25	8:30 p.m.			0	0			Funnels aloft	Pilot reported 4 funnels coming out of 1 cloud.
OKLAHOMA Kiowa (near), Pittsburg County	25	9:35 p.m.			0	0			Funnel aloft	Ground Observer Corps reported funnel moving northeastward.
OKLAHOMA Kiefer, Creek County	25	10 p.m.			0	0			Tornado	Tornado sighted on ground at Kiefer moving north-northeastward toward Tulsa. Evidently just touched ground momentarily as no damage reported.
OKLAHOMA Holdenville area, Hughes County	25	10:05 p.m.	2	200	0	0	5	1	Tornado, rain, and electrical	Tornado first sighted 25 miles southwest of Holdenville by Ada Fire Chief. Tornado evidently moved northeastward across open country or went aloft until it moved over Holdenville just above ground. Over 40 homes damaged and two-thirds of business district hit hard with 7 business buildings destroyed and 8 damaged. Many outbuildings destroyed or damaged.
OKLAHOMA Okemah area, Okfuskee County	25	10:35 p.m.	9	100	0	0	4	1	Tornado, rain, and electrical	Tornado evidently skipped along just above ground 2 miles east of Okemah. 2 utility poles snapped off 5 feet above ground and barn and outbuilding damage extensive. Newly constructed drive-in theater screen blown away. Storm moved north-northeastward.
TEXAS Mineral Wells, Palo Pinto County	25	10:36 p.m.			0	0			Funnel aloft	Funnel aloft sighted.
OKLAHOMA Claremore, Rogers County	25	11:12 p.m.	short	50	0	0	3	1	Tornado (suspected), wind, rain, hail, and electrical	What was believed to have been small tornado hit 2 farmsteads, smashing barns, outbuildings, and trees. Storm moved northeastward.
OKLAHOMA Tulsa, Tulsa County	25	11:47 p.m.			0	0	2	1	Funnel aloft, wind, and electrical	Police reported funnel aloft west of Tulsa over Arkansas River moving northeastward toward Tulsa. Wind and lightning caused minor damage to utilities.
	25									Minor storms also reported at Coldwater, Patterson, and St. Louis, Mo.; near Rockville, Nebr.; and at Anadarko, Blanchard, El Reno, Guthrie, Hugo, near Lawton, and at Rattan and Stroud, Okla.
TEXAS Big Lake, Reagan County	26	12:30 a.m.	3/4	150	0	0			Tornado	Tore up some brush. Storm moved northwestward.
OKLAHOMA Frederick, Tillman County	26	1:30 a.m.			0	0			Funnels aloft	Frederick police reported sighting several funnels aloft.
TEXAS Luling (near), Smithville, and Kovar, Caldwell and Bastrop Counties	26	2 a.m.	35-40		0	0	3		Tornado	Near Luling, barns, garages, and powerlines damaged, and furniture scattered for 50 feet. At Smithville and Kovar, large trees uprooted, barns, old oil mill, windows broken, highway signs smashed, sheds, outbuildings, and garages unroofed, and drive-in theater damaged. Storm moved northeastward.
OKLAHOMA McAlester (8 miles northeast of), Pittsburg County	26	7:54 a.m.			0	0			Funnel aloft	Funnel aloft sighted.
TEXAS Tyler, Smith County	26	8 a.m.	5	100	0	6	6		Tornado, wind, and rain	In residential area, estimated 400 homes damaged together with 3 schools and 1 church. Storm moved northeastward.

See reference notes at end of table.

Place	Date	Time	Length of path miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TEXAS Kilgore area, Gregg and Rusk Counties	26	9:15 a.m.			0	0	4		Tornado and funnels aloft	At Laird Hill, funnel slammed 4 derricks to ground, overturned other derricks and 1 oil tank, damaged 5 houses, 1 barn, and roofs; uprooted trees; demolished 2 barns, poultry houses, church, and 1 home, and wrecked lake property. 5 funnels reported.
TEXAS Longview area, Gregg County	26	9:30 a.m.	1	50-60			4		Tornado	1-1/2 miles east of Longview, 2 houses unroofed, another moved off foundations. 2 miles south of Longview, only minor damage, except 1 garage destroyed.
TEXAS Gilmer (east of), Upshur County	26	Morning			0	0	4		Tornado	Demolished church, damaged school, and destroyed garage and 2 homes.
ARKANSAS Arkadelphia (5 miles north of), Clark County	26	Noon				1		1	Wind	House damaged in Caddo Valley community.
ILLINOIS East-central portion	26	Noon-4 p.m.					4	1	Wind	Damage to a dozen farmsteads at Vermilion at 2 p.m. From shortly after noon to 4 p.m., scattered wind damage also reported from Gilman, Onarga, Wellington, Paris, Decatur, Neoga, and Mattoon. Storm moved northeastward.
INDIANA Kniman (1 mile east of), Jasper County	26	Noon			0	0	3	1	Tornado	Small tornado damaged several buildings of farm and felled large tree. Barn roof carried several hundred feet into field.
TEXAS Midkiff area, Upton County	26	1:30 p.m.			0	0			Funnel aloft	Funnel aloft sighted moving northeastward over open country.
ARKANSAS Conway and Faulkner Counties	26	2 p.m.				1	4	1	Wind	Extensive wind damage in eastern Conway County and western Faulkner County. Several buildings destroyed or damaged. Principal damage in vicinity of Gleason, Faulkner County. Reports of funnel clouds having been observed, but damage was apparently caused by straightline winds.
ILLINOIS Le Roy-Gibson City, McLean and Ford Counties	26	2 p.m.	25	30	0	0	4	1	Tornado and rain	Path intermittent and indistinct, with mostly light damage to 8 or 10 farms from 4 miles south of Le Roy to 2 miles east of Gibson City. No funnel observed, but heavy rain with storm. Typical roaring sound and debris scatter indicated tornado. Storm moved northeastward.
TEXAS Ranger (3 to 5 miles north of), Eastland County	26	2:10 p.m.			0	0			Tornado	Reported by Ground Observer Corps. Storm moved northeastward.
TEXAS Dallas (near), Dallas County	26	2:21 p.m.			0	0			Funnel aloft	Funnel aloft sighted at Hensley Air Force Base; moved north-northeastward.
INDIANA North Manchester, Wabash County	26	2:30 p.m.			0	0			Tornado	35 miles west-northwest of North Manchester, pilot reported funnel cloud moving northeastward and touching ground at times.
INDIANA Wabash area, Wabash County	26	Afternoon			0	0	3	1	Wind, hail, and funnel aloft	Hail fell at Wabash in windstorm that blew down some trees. Funnel-shaped cloud formed southwest of Wabash, but did not dip to ground.
INDIANA Culver, Marshall County	26	Afternoon			0	0			Funnel aloft	Funnel cloud observed aloft, moving northeastward.
INDIANA Kendallville, Noble County	26	Afternoon			0	0			Funnel aloft	Funnel cloud observed aloft.
INDIANA Denver, Miami County	26	4 p.m.			0	0	3	1	Tornado	Small tornado swept across southern edge of Denver, with sound of train; twisted television antenna, lifted roof from elevator, and did other minor damage.
TEXAS San Saba (20 miles northwest of), San Saba County	26	4 p.m.			0	0			Funnel aloft	Funnel aloft sighted.
TEXAS Granbury, Hood County	26	4:02 p.m.			0	0			Funnel aloft	Funnel aloft sighted moving northeastward at about 25 m.p.h.
IOWA Benton County	26	4:20 p.m.			0	0			Funnel aloft	Funnel aloft reported by persons in Belle Plaine area.
TEXAS Granbury, Hood County	26	4:45 p.m.			0	0			Funnel aloft	Funnel aloft sighted moving northeastward.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path miles	Width of path, yards	Number of persons Killed	Number of persons Injured	Estimated damage by categories † Property (exclusive of crops)	Estimated damage by categories † Crops	Character of storm	Remarks
TEXAS Between Copperas Cove and Gatesville, Coryell County	26	4:45 p.m.			0	0			Funnel aloft	Funnel aloft sighted moving northward.
INDIANA North Webster, Kosciusko County	26	5:20 p.m.			0	0			Funnel aloft	State police reported funnel cloud aloft.
INDIANA Churubusco, Whitley County	26	5:20 p.m.			0	0			Funnel aloft	State police reported funnel cloud aloft.
MISSOURI Between Lamar and Sneldon, Barton County	26	5:30-5:40 p.m.			0	0			Tornado	Funnel cloud moving northeastward dipped briefly.
OKLAHOMA Okmulgee (20 miles northwest of), Okmulgee County	26	5:50 p.m.			0	0			Funnel aloft	Observer at Okmulgee reported funnel aloft.
INDIANA Chesterfield, Madison County	26	6:15 p.m.			0	0			Funnel aloft	State police reported funnel cloud aloft.
TEXAS Granbury (10 miles southwest of), Hood County	26	11:35 p.m.			0	0			Funnel aloft	Funnel aloft sighted.
INDIANA Greenfield, Hancock County	26	Evening			0	0	3	1	Tornado and rain	Small tornado dipped into area 2 miles north of U.S. Highway 40 and along Sugar Creek, following creek valley northeastward for a distance. 2 houses and barn damaged and corncrib blown down. It was accompanied by heavy rain for about 3 minutes.
	26									Minor storms also reported at Aly, Hope, and Malvern, Ark.; at Marion, Ind.; at scattered points in Iowa; and at Potosi, Mo.
	26-27									Minor storm reported near Juneau, Alaska.
MICHIGAN Pontiac, Oakland County	27	10:30 a.m.			0	0	3	1	Funnels aloft and tornado	3 funnels aloft reported near Pontiac. 1 dipped briefly to surface in north end of Pontiac, damaging lumber yard slightly and hurling 2 big planks through window of nearby grocery.
TEXAS Corpus Christi and Robstown, Nueces County	27	A.m.					2		Wind	About 50-m.p.h., winds. Southwest of Corpus Christi, city carport destroyed. At Robstown, phone poles broken off near ground, signs damaged or destroyed, and small shed blown down. No evidence of tornado or tornadic wind. Storm moved south-southwestward.
PENNSYLVANIA Pen Argyl, Northampton County	27	2:45 p.m.			1	1			Electrical	Lightning struck tree under which 2 boys were sitting, killing 1 and injuring the other.
OKLAHOMA Muskogee County	27	3 p.m.			0	0			Funnel aloft	Highway Patrol sighted funnel aloft near Keefeton which later passed over Davis Field at Muskogee.
MISSOURI Malden, Dunklin County	27	3:46-4:25 p.m.			0	0			Funnel aloft and rain	Funnel aloft; appeared in leading edge of cloud. Funnel about 400 feet above ground; did not touch ground, but lifted dust near funnel tip. 0.59 inch of rain in 34 minutes. Very little lightning or thunder. Storm moved north-northeastward.
OKLAHOMA Tenkiller Lake, Cherokee County	27	4 p.m.			0	0			Funnel aloft	Pilot reported funnel aloft.
OKLAHOMA McAlester (35 miles northeast of), Pittsburg County	27	4:09 p.m.			0	0			Funnel aloft	Funnel aloft reported moving northeastward.
NEW MEXICO Hillsboro, Sierra County	27	4:50 p.m.	1-1/2	880			3	3	Hail and rain	Hailstones 1/2 to 1 inch in diameter. Some damage to roofs and gardens. Heavy rain washed rocks and sand across highway.
TEXAS Mildred area, Navarro County	27	5:55 p.m.			0	0			Funnel aloft	Funnel aloft sighted.
LOUISIANA Carlyss (south of Sulphur), Calcasieu Parish	27	5:40 p.m.	1	200	0	0	4	1	Tornado	Moved toward northeast across village of Carlyss, destroying 1 home, damaging several homes, barns, and fences; 1 automobile turned completely around; family saved when refrigerator held debris off as they crouched beside it.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TEXAS Fairfield (north of) Freestone County	27	6:50 p.m.			0	0			Funnel aloft	Funnel aloft moving south-southwestward.
TEXAS Alvin, Brazoria County	28	6:20 a.m.			0	0			Funnel aloft	Funnel aloft sighted.
TEXAS Waco (32 miles north of), Hill County	28	3:25 p.m.			0	0			Funnel aloft and rain	Funnel aloft sighted moving north-northeastward at about 10 to 15 m.p.h., with heavy rain.
PENNSYLVANIA Lancaster (near), Lancaster County	28	8 p.m.			0	0	4	1	Tornado and electrical	Twister dipped to earth only momentarily, but leveled large cinder-block farm building. On nearby farm, lightning struck barn which burned to ground resulting in $40,000 loss.
WEST VIRGINIA Berkeley Springs, Morgan County	28								Hail	Hailstones size of golf balls damaged roofs, automobiles, and gardens.
	28									Minor storms also reported in Christian and Madison Counties, Kentucky; at Anniston, East Prairie and Lilbourn, Mo.; in Camden area, N.J.; and at Amityville, Pa.
TEXAS Raymondville, Willacy County	29	2:15 a.m.			0	0			Tornado	Powerlines damaged.
TEXAS Palacios (south-southwest of), Matagorda County	29	12:08 p.m.			0	0			Funnels aloft	2 funnels sighted aloft.
TEXAS Deweyville, Newton County	29	12:32 p.m.			0	0			Funnel aloft	Funnel aloft sighted.
TEXAS Waco (29 miles southwest of), McLennan County	29	12:45 p.m.			0	0			Funnels aloft	2 funnels sighted aloft.
OKLAHOMA McAlester (30 miles southwest of), Pittsburg County	29	1 p.m.			0	0			Funnel aloft	Pilot reported high-level funnel.
TEXAS San Angelo (28 miles east-northeast of), Tom Green County	29	1:32 p.m.			0	0			Funnel aloft	Funnel sighted aloft.
TEXAS Cheek, Jefferson County	29	1:55-2:08 p.m.			0	0			Funnels aloft	3 funnels sighted aloft.
ARIZONA Dinnehotso (4 miles northeast of), Navajo County	29	2:15 p.m.	2-1/2	105	0	0			Tornado	Cedar trees on Navajo Indian Reservation uprooted, no other damage reported. Tornado moved northeastward.
VIRGINIA Fairfield, Brownsburg, and Mountain View areas, Rockbridge County	29	2-4 p.m.	4	*4				3	Hail, wind, and rain	Hail 1/4 to 1/2 inch caused principal damage. Drains clogged by hail backed up water from heavy rain over U. S. Highway 11, causing temporary block of traffic. Storm moved eastward.
NEW HAMPSHIRE Salem, Rockingham County	29	2:30 p.m.	1		0	0	1	1	Dust devil	Funnel ripped away canvas roof and blew clothes from line.
OKLAHOMA Kingston (6 miles south of), Marshall County	29	2:40 p.m.			0	0			Funnel aloft	Train crew reported funnel almost touching ground.
TEXAS Waco (east-southeast of), McLennan County	29	3:02 p.m.			0	0			Funnel aloft	Funnel sighted aloft.
TEXAS Mexia (southwest of), Limestone County	29	3:05 p.m.			0	0			Funnel aloft	Funnel sighted aloft.

See reference notes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TEXAS San Angelo (38 miles northwest of), Runnels County	29	3:38 p.m.			0	0			Funnel aloft	Funnel sighted aloft moving southwestward.
TEXAS Waco (30 miles east of), Limestone County	29	3:38 p.m.			0	0			Funnel aloft	Funnel sighted aloft.
TEXAS Grandview (north-northeast of), Johnson County	29	4:05 p.m.			0	0			Funnel aloft	Funnel sighted aloft moving north-northeastward.
TEXAS San Angelo (15 miles east of), Tom Green County	29	4:45 p.m.			0	0			Funnel aloft	Funnel sighted aloft.
TEXAS San Angelo (10 miles south of), Tom Green County	29	4:50 p.m.			0	0			Funnel aloft	Funnel sighted aloft.
TEXAS Waco (45 miles west of), Coryell County	29	5:10 p.m.			0	0			Funnel aloft	Funnel sighted aloft.
TEXAS Between Wharton and El Campo, Wharton County	29	5:10 p.m.			0	0			Funnels aloft	2 funnels sighted aloft.
TEXAS Copperas Cove (25 miles south of), Burnet County	29	5:15 p.m.			0	0			Funnel aloft	Funnel sighted aloft.
RHODE ISLAND Greenville, Providence County	29	Afternoon			0	0	1		Dust devil	Dust devil ripped shingles off house, tossed porch chair 50 feet, and blew clothes off line. No other property struck.
TEXAS Raymondville (south of), Willacy County	29	6:25 p.m.	5		0	0			Funnel aloft	Funnel aloft sighted moving southeastward.
TEXAS Between Lyford and Sebastian, Willacy County	29	6:25 p.m.			0	0			Funnel aloft	Funnel sighted aloft.
MASSACHUSETTS Westboro, Worcester County	29	P.m.		5	0	0	2	1	Dust devil	Funnel extended 200 feet in air, moving 2 10x10-foot chicken shelters, tossing 1 over 3-foot fence. Carried smaller shelter away. Sky clear and wind otherwise calm.
	29									Minor storms also reported at Byhalia, Miss.; at Plainfield, N. J.; and at scattered points in Oregon.
TEXAS San Marcos (12 miles southeast of), Hays County	30	12:32 p.m.			0	0			Funnel aloft	Funnel sighted aloft.
TEXAS Vidor (northwest of), Orange County	30	2:25 p.m.	2-1/2	100	0	0	3		Tornado	Timber twisted and broken off. Minor damage to 3 houses. Storm moved southwestward.
SOUTH CAROLINA Fort Jackson, Richland County	30	2:30 p.m.			1	9			Electrical	
KANSAS Eureka (5 miles east of), Greenwood County	30	Afternoon			0	0			Funnel aloft	Vortex cloud aloft observed.
TEXAS Spur (20 to 30 miles north of), Dickens County	30	4:25 p.m.			0	0			Funnel aloft	Funnel sighted aloft moving north-northeastward.
TEXAS Waskom, Harrison County	30	5:08 p.m.			0	0			Funnel aloft	Funnel sighted aloft moving northward.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

APRIL 1957

Place	Date	Time	Length of path, miles	Width of path yards	Number of persons Killed	Number of persons Injured	Estimated damage by categories † Property (exclusive of crops)	Estimated damage by categories † Crops	Character of storm	Remarks
LOUISIANA Moisant Airport (10 miles west-northwest of), St. John the Baptist Parish	30	5:40 p.m.			0	0			Funnel aloft	Sheriff followed funnel, which moved west-southwestward, but found no damage.
WASHINGTON Yakima area, Yakima County	30	6:40-7:30 p.m.			0	0	3		Wind, dust, and tornado (suspected)	Severe duststorm developed in valley below Yakima and moved northwestward through Union Gap and over Yakima. Towering cumulus clouds associated with duststorm. Roofs of 2 garages lifted off and deposited several feet from building. Some evidence this was very small tornado.
TENNESSEE Woodbury (near), Cannon County	30	P.m.			1				Electrical	Lightning struck and killed hunter, seeking refuge under tree.
TENNESSEE Mocking Crow Mountain, Monroe County	30								Electrical	Forest fire, started by lightning burned 500 to 600 acres.
	30									Minor storm also reported at Hugo, Okla.; and in Waverly and vicinity, Tenn.

° Includes crop damage.
C Crop damage included with property damage.
* Miles instead of yards.
** Yards instead of miles.
† Storms are placed in categories varying from 1 to 9 as follows:

1	Less than $50
2	$50 to $500
3	$500 to $5,000
4	$5,000 to $50,000
5	$50,000 to $500,000
6	$500,000 to $5,000,000
7	$5,000,000 to $50,000,000
8	$50,000,000 to $500,000,000
9	$500,000,000 to $5,000,000,000.

GENERAL SUMMARY OF RIVER AND FLOOD CONDITIONS

APRIL 1957

Most significant during the month were the severe floods that developed in Texas during the last 10 days of the month. Excessive flooding occurred on nearly all streams throughout the area east of the Pecos River to the Sabine River. Seventeen lives were lost, several hundred homes were destroyed, and large lowland areas were evacuated. A great amount of damage was done by comparatively small streams in urban areas where flood flows were flashy and large in comparison to stream capacities. The floods were in progress at the end of the month.

ST. LAWRENCE DRAINAGE

Lake Erie.--The heavy precipitation during April caused rivers in the Lake Erie drainage to remain at high levels throughout the month. It was the second wettest April of record at Ft. Wayne, Ind., with a total of 7.11 inches. The 10.6 inches of snowfall recorded at this point was the greatest of record. The Maumee River at Ft. Wayne was above flood stage for 9 consecutive days, with a crest of 19.2 feet reached on the 11th due to considerable snowmelt. This was the highest stage reached at this point since February 1950. No serious damage resulted from the high water as preliminary precautions were taken.

Lake Ontario.--Little or no damage resulted from the high water on Oatka Creek which inundated some farmland near Garbutt, N. Y., on the 6th and 7th.

The Groveland-Mt. Morris, N. Y., road was inundated by several feet of water as the Canaserago Creek overflowed on the 6th. No other damage was reported in that area except for the delay that resulted in planting crops due to the wet soil. No damage resulted from the flooding of the Genesee River at Scio, N. Y., on the 6th and 25th.

ATLANTIC SLOPE DRAINAGE

Heavy precipitation (3 to 4.5 inches) during the period April 1-12 caused some flooding along the Wallkill River at Gardiner and Phillipsburg, N. Y. The highest stage reached at these two points was about 13.5 feet. The water level remained at a stage of 12 to 13 feet for a period of 7 days. Some crop damage resulted.

Minor flooding occurred on several streams in New Jersey during the period 5-8th due to heavy precipitation (3.5 to 4.5 inches, April 1-6). The heaviest precipitation occurred during the night of the 4-5th, when about 2 inches was recorded. Some road underpasses were flooded in the vicinity of Manville and Bound Brook, N. J., delaying traffic for several hours. Near Chatham, N. J., a few manufacturers were forced to curtail operations on the 6th due to back-up of drainage.

The minor flooding on the Lackawaxen River at Hawley, Pa., on the 6th and 7th was due to heavy precipitation (2.3 inches) on the 5th, which fell as snow and melted rapidly on the 6th. There was some flooding on small streams in the Lehigh drainage on the 5th from the heavy rain (2.7 inches) over the basin on the 4th and 5th. Larger creeks, as well as the Lehigh, remained well within their banks.

Local flooding occurred on Perkiomen Creek at Graterford, Pa., on the 5th and 6th from the heavy precipitation during the first 5 days of the month. Fairly high rises occurred on the Schuylkill, but there was no flooding.

Minor flooding occurred on the Susquehanna and Chemung Rivers in New York on the 6th and 7th from heavy precipitation (1.5 inches) on the 5th and 6th. The precipitation on the 5th was in the form of wet snow (8 inches in the Chemung Basin) which melted rapidly on the 6th. No damage was reported.

The flooding in the James River Basin in Virginia from the 5th to the 8th was due to heavy rainfall during the first 6 days of April. The precipitation averaged 2.5 inches above Lynchburg, Va., and 1.75 inches below. Flood damage was limited mostly to inconvenience resulting from rerouting traffic on low-lying roads and streets and the moving of livestock from low-lying pastures.

Minor flooding occurred in the Roanoke Basin in Virginia and North Carolina between the 6th and 26th from the heavy rainfall (2-3 inches) from the 5th to the 9th. Rainfall in the other river basins in eastern North Carolina was comparatively light (less than 1 inch) and no flooding occurred.

The high water in the Yadkin Basin in North Carolina and the Pee Dee River Basin in South Carolina between the 5th and 16th was due to heavy rain (3.5 to 4.5 inches) on the 4th and 5th. Runoff was heavy as nearly 2.5 inches of rain occurred on the 1st and 2d. At Wilkesboro, N. C., the Yadkin crested 4.5 feet above bankfull, the highest stage since 1945. The major damage was to small, private bridges (farm) and to gullies washed as the water receded. The Airport was also waterlogged for several days.

Heavy rains (2-3 inches) over the upper Saluda, with local amounts in excess of 5 inches in the headwaters of the Broad and Catawba Rivers in South Carolina on the 4th and 5th, caused light to moderate overflows in those streams. The Catawba River reached its highest stage at Catawba, N. C., since June 14, 1947. A considerable portion of these flood waters was contained in reservoirs downstream so that only a light spill occurred at Wateree Dam. The Saluda above Lake Greenwood crested at the highest values since last spring. Lake Greenwood did not spill, although the reservoir almost reached capacity storage. Lake Murray has continued to rise and is at the highest level in several years, although still several feet below spilling. On the Broad unusually high stages occurred from Gaffney northward due to excessive rains in the headwaters, while crest stages downstream were not as pronounced. Lake Marion also rose to the highest level in the last year.

Little, if any, damage resulted from the flooding along the Ocmulgee River in Georgia during April as most of the land adjacent to the river banks is generally uncultivated and uninhabited. Lumbering interests which maintain equipment in the lowlands were given sufficient warning to move equipment to higher ground.

EAST GULF OF MEXICO DRAINAGE

Moderately heavy rains on the 1st and 2d, averaging 1 to 1.5 inches, followed by heavy to excessive rain (3 to 5 inches) on the 5th, produced light flooding along the Chattahoochee River at West Point, Ga., and Eufala, Ala., and along the Apalachicola in Florida. Warnings were timely in permitting stockmen to remove their livestock from flooded areas. Loggers and sand dredging interests adjusted their activities with little or no loss in time from high water.

No damage was reported from the flooding along the Choctawhatchee River in Alabama and Florida which resulted from the heavy rains on the 4th. However, there was considerable farm damage from erosion due to heavy rains.

Heavy rain in the Alabama River Basin (3.7 inches) in Georgia and Alabama during the 24-hour period ending on the morning of the 5th caused all streams in the basin to rise above flood stage. The rainfall ranged from 1.77 inches at Gadsden, Ala., to 7.18 inches at Natchez, Ala. Runoff was heavy as light to moderate to occasionally locally heavy rainfall had fallen somewhere over the basin during the first 4 days of April. The Coosa River rose 28 feet overnight on the 4-5th at Wetumpka, Ala., and several head of livestock were marooned for several days. This was the greatest flood on the Alabama River since 1948. Civil Air Patrol pilots reported several thousand head of livestock marooned in the Alabama, lower Tallapoosa and lower Coosa River lowlands on the afternoon of the 6th. One pilot reported about 50 head of cattle were marooned 8 miles north of Montgomery and evacuation was being attempted by swimming them out. Hundreds of lowland homes were completely surrounded by water and scores were evacuated. Many rural roads were inundated from 4 to 10 feet deep and several were closed. About 100 persons were evacuated in Montgomery, Ala., on the 7th. The Tallapoosa River rose rapidly and was 3 miles wide, with flood waters reaching almost up to the prison. Several thousand head of cattle were marooned in the Milstead, Ala., area and the lower Tallapoosa River for several days, and livestock losses are believed to have been rather heavy.

Minor flooding occurred over the upper reaches of the Warrior and Tombigbee Rivers and over the lower reaches of the Tombigbee during the first part of April due to heavy rainfall on the 1st and 4th. The rainfall averaged 1.5 inches during the first period and 2 inches during the latter, with the heaviest concentration over the middle section near the confluence of the two rivers. Agricultural damage was heavier than would normally occur during the winter as some crops had been planted in the lowlands. Warnings were issued well in advance of the high water to give residents time in which to remove cattle and logging equipment.

Heavy rains on the nights of March 31-April 1 and April 3-4 produced flood conditions on the Pearl River and high stages in the Pascagoula River System. The rainfall ranged from 1.1 inches at Union, Miss., to 4.53 inches at Philadelphia, Miss., with distribution elsewhere ranging mostly from 2-4 inches. Substantial damages were reported over the Pearl River Basin.

MISSISSIPPI SYSTEM

Upper Mississippi Basin.--The main surge of the spring snowmelt in the Upper Mississippi Basin above Aitkin, Minn., began on the 17th. It was accompanied with general rains (2.25 inches) over the area on the 19th and 20th. The potential flood threat was not too great as the Upper Reservoirs were low and the upper crust of the ground was dry, even with frost still evident below the first 6 to 12 inches of topsoil.

Spring snowmelt in the upper Chippewa River and upper Wisconsin River drainages was small and spread out so that the hydro-electric plants were able to absorb or flatten the peak flow in their pools.

The mean monthly flow at Merrill, Wis., on the upper Wisconsin River, was 2,456 c.f.s. This is only 64 percent of the normal 3,850 c.f.s. flow. In 1956, Merrill's April flow was 4,007 c.f.s.

There were three periods of flooding on the Meramec River in Missouri. The first overflow was due to rains averaging 1.75 inches during the 48-hour period ending 7 a.m. on the 4th. The second overflow was due to light to moderate recurring rains which began on the 16-17th and continued to the 20th. Additional heavy rain (1.5 inches) occurred in the upper reaches of the basin on the 22d. The last overflow was due to moderately heavy rains (1.25 to 1.5 inches) during the 24-hour period ending on the 27th. The flooding in the Illinois Basin was due to moderately heavy rains (about an inch) which fell during the 24-hour periods ending on the mornings of the 25th and 27th. Very little damage resulted from the overflows as very few crops had been planted.

Missouri Basin.--Heavy rains in southeastern Montana on the 22d-23d resulted in some local overflow of small streams in the Yellowstone River Basin. A few fences were washed out, and there was some erosion of farmland and small creek banks.

Heavy rainfall on the 3d and 4th produced crests on the Grand River one-half foot under bankfull stage at Chillicothe, Mo., and 2 feet above bankfull at Sumner, Mo. The Platte in Missouri crested 3 feet under bankfull. One-half bankfull rises occurred in the tributaries of the lower Kansas and in the Marais des Cygnes River and tributaries in Kansas. The same storm deposited heavy snowfall in western Kansas, Nebraska and South Dakota.

Heavy rains in South Dakota on the 19th and 20th caused minor rises on the middle James and upper Big Sioux Rivers. Heavy rains in Kansas and Nebraska on the 22d-23d caused near bankfull rises on Red Willow Creek, and one-half bankfull crests in the upper Republican. The Marmanton at Ft. Scott crested one-half bankfull.

Ohio Basin.--Bankfull stages were reached on small tributary streams in the Beaver, lower Allegheny, and upper Ohio Basins in Pennsylvania from the light to heavy precipitation which fell over the watershed from the 3d through the 6th. Rainfall averaged 1 to 1.25 inches over the lower Allegheny and upper Ohio Basins on the 4th and 5th, and 0.5 to 0.75 inch over the Allegheny Basin on the 5th and 6th. Light to heavy precipitation (rain and snow) fell over the watershed on the 8th and 9th. Precipitation averaged 1.5 to 1.75 inches over the upper Allegheny, and 0.5 to 1 inch over the lower Allegheny, with snow depths varying from 4 to 18 inches. No flood stages were reached along the main stem of the Allegheny and Beaver Rivers. Flash flooding occurred on the 24th and 25th in the Titusville, Pa., area, where 5 families were evacuated. Water reached the living room levels. Six herds of cattle were evacuated due to the fast-rising streams. Many secondary roads were closed due to high water and landslides. Several streets in the business district of Titusville were flooded, and several cellars had to be pumped out.

The flooding on the New River near Radford, Va., on the 5th and 6th was due to heavy rainfall during the 24-hour period ending on the morning of the 5th. Several stations reported amounts between 2 and 4.7 inches.

Heavy rain during the first 10 days of April resulted in wide-spread flooding along the Scioto River and Paint Creek in Ohio. Flood damage was confined to a small percentage of seeded farmlands where less than 5 percent of the acreage along the lower Scioto had been planted.

Several families in the Big Walnut and Alum Creek areas were temporarily evacuated on the 4th. Flood damages were light, but further rises of 1 foot would have resulted in major damage to residential and industrial property.

The flooding on the Little Miami River in Ohio was due to heavy rainfall (2.5 inches) on the 3d and 4th. Runoff was heavy as the ground was saturated from the rain (0.75 to 1 inch) on the 1st and 2d. About 26 persons were evacuated, and many others marooned in Old Fort Country Club, Tower Hill, Fort Scott, Miami Grove and Bass Island, where water was 4 feet deep in some residential areas.

Rainfall was heavy over much of the Ohio Basin on the 3d-4th, averaging 2 to 2½ inches with locally heavier amounts on the Green River in Kentucky. A few stations reported between 4 and 5 inches.

Another general rain over the basin on the 7-8th averaged 1 to 1.5 inches. These rains brought a rapid rise to all streams in the Ohio Basin.

Flooding occurred along the Green in Kentucky, except in the upper portion. The high water was less pronounced than in February and caused little, if any, additional damage.

It was necessary to evacuate some families in Mill Shoals, Ill., along Skillet Creek, as well as at Carmi, Ill., along the Little Wabash. The high water delayed spring planting for about 3 weeks. There was some loss of wheat, barley and clover, otherwise crop damage was fairly low.

Several families were evacuated along the Wabash River in the Wabash, Ind., area by the Red Cross, local police and Civil Defense agencies, as the Wabash rose to 9.5 feet above flood stage on the 6th. At Montezuma, Ind., the Wabash remained above flood stage from the 4th through the end of the month. At Elliston, Ind., the White River crested at a stage of 26.45 feet (flood stage 18 feet), only a few tenths of a foot short of the stage which would have resulted in the rerouting of traffic of the Milwaukee Railroad. River stages in many areas were the highest since 1950. A few levees gave way at points along the Wabash River and in the Petersburg area on the White River. Many state highways were closed by high waters and a number of areas not flooded directly were inconvenienced for this reason.

The moderate flooding on the French Broad River in North Carolina was due to heavy rain during the night of the 4th and 5th. The rainfall ranged from 3.1 inches at Hot Springs to 5.99 inches at Hendersonville. It was the highest April flood of record.

Locally heavy rains during the same period caused the South Chickamauga Creek to rise 3.7 feet above flood stage near Chickamauga, Tenn., on the 5th. No damages resulted from this rise. Another locally heavy rain on the 8th caused flash floods on Pistol Creek in Maryville, Tenn., and Guest Creek in Sevierville, Tenn. The crest was the highest in the memory of several old residents in the area. Damages were limited to flooding of basements and roads. Another flash flood occurred on Colburn Creek at Colburn, Va., on the 22d from a local thunderstorm of one hour's duration. A retaining wall gave away and flooded a used car lot.

Flooding along the main stem of the Ohio was limited to the reach at and below Dam 33 at Maysville, Ky., a river distance of 576 miles. This flood was comparatively minor and damages were limited mostly to pasture lands as other crops had been destroyed in the February flood. There was some delay in preparing ground for spring planting.

White Basin.--Heavy rains on the 3d and 4th caused a sharp rise in streams in the White Basin in Arkansas with flooding on the Black, Little Red and White Rivers. The Black and the White Rivers were in continual flood in some portions of the lower reaches the remainder of the month. There were two distinct overflows on the Little Red, the last overflow being due to heavy rains during the last week of the month. Damages along the Black and Little Red were heavy, amounting to around a quarter of a million dollars in each basin.

Arkansas Basin.--The flooding in the Arkansas Basin during April was due to heavy rainfall (4 inches) on the 3d and 4th, and from the 21st to the 23d. The flooding on the Illinois River at Tahlequah, Okla., was the sixth highest of record. The principal flood damages occurred on the Illinois River above Tahlequah, Okla., and in the Arkansas Basin between Sallisaw, Okla., and Van Buren, Ark.

Red Basin.--There were two periods of flooding in the Little River in Arkansas and in the Sulphur River in Louisiana and Texas during April. The first period of flooding occurred between the 1st and the 14th and the second from the 22d through the end of the month. This second overflow also included the Cypress River in Texas and the Red River in Arkansas and Louisiana. The rainfall that caused these overflows averaged 2.75 inches in the Upper Red Basin during the first 4 days of the month, and 10.5 inches in the lower portion. During the 2d period, from the 20th to the 27th, precipitation averaged about 7 inches in the upper and lower Red, and 14 inches in the central portion. Damages from the flooding is expected to be heavy as it continued into May.

Lower Mississippi Basin.--The St. Francis continued in flood from the 3d through the end of the month and was due to heavy rainfall that averaged nearly 5 inches during the first 4 days of the month. Moderate rains during the remainder of the month kept the river in flood with little change in stage.

Minor flooding of farmlands occurred in the Big Black River Basin in Mississippi.

The lower Mississippi was in flood at Caruthersville, Mo., from the 13th through the 24th, due to high flows from the Ohio Basin resulting from the heavy rains on the 4th and 8th. Overflow was confined to very low areas in Missouri and Arkansas between the levee and the river and lowlands in Tennessee. There was some damage to highways and buildings in the flooded area.

WEST GULF OF MEXICO DRAINAGE

There were two rises on the Sabine River in Texas during the month. The first overflow was due to heavy rains on the 1st (0.75 to 1 inch) and 4th (1.5 to 3.4 inches). The second period of flooding was due to heavy precipitation from the 20th to the 30th which averaged about 11 inches over the Sabine, with 2.5 inches of it occurring during the 24-hour period ending at 7 a.m. on the 27th. In the Longview-Marshall area, 4.5 inches was reported in that 24-hour period.

The light flooding in the Nezpique Bayou and the Mermentau River in Louisiana was set off by heavy rainfall on the 17th. At Mermentau, La., and Hecker, La., 4.4 inches and 4.3 inches, respectively, were reported on that date.

The major flooding which was in progress on the Trinity River in Texas as the month ended began on the 21st at Trinidad, Tex., and was due to the record-breaking rainfall which began on the 19th and continued into May. The heaviest rainfall occurred on the 26th, with several stations reporting more than 7 inches on that date. There was extensive damage to agricultural interests with 200,000 to 300,000 acres inundated. Streets and highways also suffered extensive damage, and there was some damage to a limited number of residences near small streams in the Fort Worth area, and considerable damage to residential areas in the southern section of Dallas unprotected by levees. There was moderate damage to transportation facilities and utilities. Approximately 900 families were evacuated in the river bottoms in South Dallas during the afternoon of the 26th.

Flooding occurred on all portions of the Guadalupe, Lavaco, Navidad and the San Antonio Rivers, except for the middle portion at and below Falls City, Tex. Flooding began on the 23d in the Guadalupe at Victoria, Tex., and on the 24th in the San Antonio River. Rains up to 9 inches occurred above New Braunfels, Tex., on the Guadalupe and above the Medina Dam on the Medina during the early morning hours of the 24th, resulting in moderate flash flooding in those areas.

Rains during the day of the 24th caused the Blanco River to rise sharply, with some areas of San Marcos, Tex., flooded during the early morning hours of the 25th. As the crests from these rains moved downstream they were increased and delayed by additional heavy rains over all watersheds. There was considerable damage to growing crops and grazing lands in the middle and lower sections of the rivers. Approximately 100 families were evacuated in San Antonio on the 28th, and 15 to 25 families in Victoria, Tex., on the last of April and the first part of May.

Heavy rains on the Colorado River watershed below Mansfield Dam caused the first flood stages at Columbus and Wharton, Tex., since establishment of the control dams above Austin, Tex. The crest of the high water passed Columbus, Tex., on April 29, and Wharton in the early morning hours of May 1. Flood damage at Columbus and below was largely to crops that were inundated and to roads washed out between Bay City and Matagorda, Tex. Cropland flooding was most extensive below Columbus between the towns of Garwood and Eldridge, Tex. The peculiar combination of heavy rains above Mansfield Dam and also downstream did not permit release from Lake Travis until the floodwater below Austin had moved into the Gulf. This resulted in the highest levels ever known in Lake Travis since the dam was built. There was extensive damage to many homes around Lake Travis which had been constructed below the spillway level of 714 feet.

Considerable flooding occurred in the middle and lower Nueces, the middle and lower Frio, and the Atascosa Rivers in Texas from the heavy rains during the last 2 weeks of April. The highest stage since 1946 was reported at Three Rivers, Tex., on the Nueces. Otherwise, there was no major flooding as the rainfall was sufficiently spaced. Flood damages were limited to soil erosion with minor damage to highway and railroad bridges and embankments. Construction on the new Wesley Seale Dam on the lower nueces and damages are not expected to be high except for about 2 months' delay in construction time. Most of the flooding occurred on ranch and farmlands with minor damage. A few families were evacuated from their homes along the Nueces River at Cotulla, Tex., during the flash flooding on the 22d.

The minor flooding on the Rio Grande, at Eagle Pass, Tex., on the 29th was due to heavy rains that fell over the basin from Langtry to Brownsville, Tex., during the nights of the 27th and 28th. The rainfall ranged from 1 to 4 inches, with unofficial amounts considerably higher. No damage was reported.

FLOOD STAGE DATA

(All dates in April unless otherwise specified)

River and station	Flood stage	Above flood stages -dates		Crest *	
		From–	To–	Stage	Date
ST. LAWRENCE DRAINAGE Lake Erie	Ft.			Ft	
St. Marys: Decatur, Ind.	15	4 18	14 24	19.9 17.3	8 21
St. Joseph: Montpelier, Ohio	10	6 11	8 14	10.3 11.3	7 13
Maumee:					
Ft. Wayne, Ind.	15	4	14	19.2	11
Defiance, Ohio	10	5 10	9 12	12.1 11.1	7 11
Grand Rapids, Ohio	15	6	7	15.2	6
Napoleon, Ohio	10	6 11	8 11	11.5 10.2	7 11
Sandusky:					
Upper Sandusky, Ohio	13	5	6	14.35	5
Tiffin, Ohio	7	7	7	7.0	7
Fremont, Ohio	10	5	6	10.4	6
Lake Ontario					
Canaseraga Creek: Groveland, N.Y.	11	6	6	12.4	6
Oatka Creek: Garbutt, N. Y.	5	6	7	5.6	7
Genesee: Scio, N. Y.	8	6 25	6 25	8.1 8.5	6 25
ATLANTIC SLOPE DRAINAGE					
Ramapo: Pompton Lakes, N. J.	1.7	6	6	1.7	6
Millstone:					
Blackwells Mills, N. J.	7	6	6	8.6	6
Raritan:					
Manville, N. J.	12	6	6	12.6	6
Bound Brook, N. J.	8	6	6	9.5	6
Passaic: Little Falls, N. J.	126	7	11	126	8
Lackawaxen: Hawley, Pa.	9	6	7	10.0	6
Perkiomen Creek: Graterford, Pa.	8	5	6	9.0	5
Chemung:					
Elmira, N. Y.	12	6	6	12.8	6
Chemung, N. Y.	12	6	7	15.1	6
Susquehanna: Conklin, N. Y.	11	6	8	11.1	6
Jackson: Covington, Va.	7	5	5	8.2	5
James:					
Buchanan, Va.	17	5	6	19.0	5
Lynchburg, Va.	18	6	6	16.5	6
Scottsville, Va.	20	7	7	19.3	7
Bremo Bluff, Va.	19	6	8	24.4	7
Columbia, Va.	18	6	8	24.7	7
Richmond, Va.	[illegible]	7	8	11.0	8
Roanoke:					
Altavista, Va.	18	6	6	23.95	6
Randolph, Va.	21	6	7	#24.85	7
Weldon, N. C.	31	7	13	#34.8	7
Scotland Neck, N. C.	28	11	15	#29.1	13
Williamston, N. C.	10	11	26	11.4	18
Rocky: Norwood, N. C.	16	6	7	20.1	6
Yadkin:					
Wilkesboro, N. C.	14	5	6	18.4	5
Yadkin College, N. C.	20	6	7	22.0	6
Pee Dee:					
Cheraw, S. C.	30	7	8	33.15	7
Pedee, S. C.	19	8	16	21.7	13
Saluda: Pelzer, S. C.	6	6	9	10.0	6
Broad:					
Gaffney, S. C.	10	6	6	10.8	6
Blairs, S. C.	14	6	9	17.6	7
Catawba: Catawba, N. C.	8	5	8	19.8	5
Santee: Rimini, S. C.	12	Mar. 1	1/	16.6	20
Ocmulgee:					
Macon, Ga.	18	6	8	20.2	8
Abbeville, Ga.	12	Mar. 31 8	3 17	13.2 13.35	2 14
EAST GULF OF MEXICO DRAINAGE	Ft.			Ft	
Chattahoochee:					
West Point, Ga.	19	6	6	19.7	6
Eufala, Ala.	40	7	8	43.1	7
Apalachicola:					
Chattahoochee, Fla.	20	8	11	21.9	9
Blountstown, Fla.	15	1	18	22.2	10
Choctawhatchee:					
Newton, Ala.	19	6	8	25.25	6
Geneva, Ala.	23	7	10	26.4	8
Caryville, Fla.	12	8	13	13.9	10
Oostanaula:					
Resaca, Ga.	22	6	9	27.0	6-7
Rome, Ga.	25	5	6	26.1	6
Etowah: Canton, Ga.	17	5	6	21.7	5
Coosa:					
Gadsden, Ala.	20	6	12	23.0	7
Childersburg, Ala.	20	6	7	21.9	6
Wetumpka, Ala.	45	7	8	45.9	7
Tallapoosa:					
Milstead, Ala.	40	6	7	43.3	6
Cahaba					
Centreville, Ala	21	4	7	29.0	5
Suttle, Ala.	32	7	--	37.5	8
Marion Junction, Ala.	36	8	8	36.0	8
Alabama:					
Montgomery, Ala.	35	5	12	47.5	8
Selma, Ala.	45	7	12	49.6	9
Millers Ferry, Ala.	40	5	17	50.7	11
Claiborne, Ala.	40	6	20	46.3	14
Black Warrior: Tuscaloosa, Ala.	47	5	6	49.6	5
Tombigbee:					
Amory, Miss.	A19	5 9	6 10	19.8 20.7	5 9
Fulton, Miss.	A15	4	12	16.3	10
Macon, Miss.	A25	5	7	26.9	6
Tupelo, Miss.	A21	4	4	21.9	4
Lock 4, Demopolis, Ala.	42	5	13	52.9	10
Lock 3, Whitfield, Ala.	33	4	15	52.1	10
Lock 2, Pennington, Ala.	46	6	14	53.2	11
Lock 1, Jackson, Ala.	31	6	16	35.6	13
Pearl:					
Edinburg, Miss.	20	5	11	23.8	7
Jackson, Miss.	18	1	20	32.2	11
Monticello, Miss.	15	1	20	20.2	5
Columbia, Miss.	17	5	12	19.0	7
Bogalusa, La.	15	1	26	19.2	11
Pearl River, La.	12	5	27	15.3	10
MISSISSIPPI SYSTEM Upper Mississippi Basin					
Illinois					
Morris, Ill.	13	26	May 1	#15.1	28
La Salle, Ill.	20	26	May 5	#23.5	30
Havana, Ill.	14	28	1	17.6	May 5
Beardstown, Ill.	14	27	1/	19.6	May 5-6
Meramec:					
Sullivan, Mo.	11	4 22 27	5 23 29	17.6 15.9 15.5	4 22 27
Pacific, Mo.	11	5 22 27	7 25 May 1	17.9 16.8 17.3	6 24 30
Valley Park, Mo.	14	5 23 28	7 25 May 1	22.2 17.6 20.7	6 24 30
Missouri Basin					
Grand: Sumner, Mo.	26	4	5	28.0	4
Gasconade: Hazlegreen, Mo.	21	5	5	21.0	5

FLOOD STAGE DATA

(All dates in April unless otherwise specified)

River and station	Flood stage	Above flood stages -dates		Crest*	
		From–	To–	Stage	Date
MISSISSIPPI SYSTEM (Cont'd.)	Ft.			Ft.	
Ohio Basin					
New: Radford, Va.	14	5	6	15.35	6
Paint Creek: Bourneville, Ohio	10	4	8	16.7	5
Scioto:					
Prospect, Ohio	10	5	12	15.6	7
La Rue, Ohio	11	4 7 19	7 11 20	13.1 #12.0 11.8	5 9 19
Circleville, Ohio	14	4	12	19.6	6
Chillicothe, Ohio	16	5	11	22.0	6
Piketon, Ohio	16	4	13	25.5	7
Little Miami:					
Perintown, Ohio	19	4	5	20.7	4
Milford, Ohio	12	4	5	15.5	4
Kings Mills, Ohio	17	4	5	19.55	4
Salt:					
Boston, Ky.	40	5	8	43.6	6
Taylorsville, Ky.	20	4	5	28.4	4
Rough: Dundee, Ky.	25	4	12	27.9	7
Green:					
Munfordville, Ky.	28	6	7	----	--
Lock No. 6, Brownsville, Ky.	28	4	11	----	--
Lock No. 4, Woodbury, Ky.	33	4	13	40.4 41.0	7 9
Lock No. 2, Calhoun, Ky.	23	7	22	29.7	15
Eel: Bowling Green, Ind.	17	4	5	18.6	4
East Fork:					
Columbus, Ind.	10	6	6	10.0	6
Seymour, Ind.	14	4	8	17.5	5
Bedford, Ind.	20	7	13	25.9	9
Williams, Ind.	10	8	12	14.1	10
Shoals, Ind.	25	11	11	25.3	11
White:					
Anderson, Ind.	10	4	11	14.0	5
Noblesville, Ind.	14	5	6	15.5	6
Spencer, Ind.	14	4	14	20.5	6
Elliston, Ind.	18	4	15	26.45	7
Newberry, Ind.	18	6	12	20.7	8
Edwardsport, Ind.	12	3	1/	22.9	9
Petersburg, Ind.	16	5	19	23.65	11
Hazleton, Ind.	16	7	18	24.7	12
Skillet Fork: Wayne City, Ill.	15	2 22	9 24	20.8 15.8	6 24
Wabash:					
Bluffton, Ind.	10	4 21 25	12 21 25	14.1 10.0 10.4	6 21 25
Wabash, Ind.	12	4 19 27	13 22 27	21.5 17.6 13.5	6 19 27
Lafayette, Ind.	11	4 19	15 29	20.2 18.3	[illegible] 21
Covington, Ind.	16	5 20	16 1/	23.85 21.65	10 22
Montezuma, Ind.	14	4	1/	24.0 21.0	11 24
Clinton, Ind.	18	--	--	23.6	11
Terre Haute, Ind.	14	5	1/	19.7 17.6	13 25
Hutsonville, Ill.	20	8 25	19 29	23.4 20.8	14 27
Riverton, Ind.	18	8 26	20 30	20.3 18.5	15 28
Vincennes, Ind.	16	6	1/	20.6 17.5	16 29
Ste. Marie, Ill.	18	5	11	20.8 18.45	6 11
Mt. Carmel, Ill.	17	6	29	23.2 17.2	15 28

River and station	Flood stage	Above flood stages -dates		Crest *	
		From–	To–	Stage	Date
MISSISSIPPI SYSTEM (Cont'd.) Ohio Basin (Cont'd.)	Ft.			Ft.	
Wabash (Cont'd.):					
New Harmony, Ind.	15	8	24	-----	--
French Broad:					
Rosman, N. C.	8	4	5	10.8	4
Asheville, N. C.	9	4	7	11.5	5
Marshall, N. C.	10	4	5	13.0	5
Hot Springs, N. C.	13	4	6	19.3	5
South Chickamauga Creek:					
Chickamauga (nr.), Tenn.	10	4	7	13.7	5
Tennessee: Paducah (nr.), Ky.	34	7	25	40.35	18
Ohio:					
Dam 33, Maysville, Ky.	50	10	12	50.5	11
Cincinnati, Ohio	52	11	12	52.35	11
Dam 41, Louisville, Ky. Upper Gage	28	11	12	28.8	12
Dam 41, Lower Gage	55	11	13	55.5	12
Dam 44, Leavenworth, Ind.	53	9	16	50.8	13
Dam 45, Addison, Ky.	47	10	16	49.5	13
Tell City, Ind.	38	8	18	----	--
Dam 46, Owensboro, Ky.	41	11	16	42.0	14
Dam 47, Newburgh, Ind.	38	7	21	44.5	14
Evansville, Ind.	42	14	16	42.2	15
Dam 48, Cypress, Ind.	38	8	21	44.2	15
Mt. Vernon, Ind.	35	8	23	42.4	16
Dam 49, Uniontown, Ky.	37	9	24	----	--
Shawneetown, Ill.	33	7	26	45.5	18
Dam 50, Fords Ferry, Ky.	34	7	27	----	--
Dam 51, Golconda, Ill.	40	12	23	44.3	18
Paducah, Ky.	39	17	21	39.7	18
Dam 52, Brookport, Ill.	37	9	24	41.5	18
Dam 53, Grand Chain, Ill.	42	9	25	46.2	18
Cairo, Ill.	40	8	26	43.8	12
White Basin					
Black:					
Poplar Bluff, Mo.	16	4	6	18.5	5
Pocahontas, Ark.	17	5	1/	22.5 21.3	9 May 2
Black Rock, Ark.	14	4	1/	26.9 21.0 24.7	5 23 29
Little Red:					
Heber Springs, Ark.	24	4 28	5 28	47.9 25.3	4 28
Judsonia, Ark.	30	4 27	8 1/	39.4 35.4	6 29
White:					
Batesville, Ark.	23	4 28	5 28	31.5 24.0	4 28
Newport, Ark.	26	5 29	11 1/	28.7 28.5	6 May 2
Augusta, Ark.	32	7	1/	33.9 34.1	8 May 3
Georgetown, Ark.	21	7	1/	25.7 27.0	10 May 4
Des Arc, Ark.	24	8	1/	28.4 30.1	12 May 3
Clarendon, Ark.	26	9	1/	30.1 31.2	16 May 7
Arkansas Basin					
Cimarron: Perkins, Okla.	11	23	24	E12.0	24
Bird Creek: Sperry, Okla.	21	22	22	21.9	22
Illinois: Tahlequah, Okla.	11	3	5	21.6	5
Poteau: Poteau, Okla.	24	3	4	29.25	4
Arkansas:					
Webbers Falls, Okla.	23	24	24	23.3	24
Sallisaw, Okla.	23	24 26	25 27	24.0 24.1	25 27

FLOOD STAGE DATA

(All dates in April unless otherwise specified)

River and station	Flood stage	Above flood stages -dates		Crest *	
		From–	To–	Stage	Date
	Ft.			Ft.	
MISSISSIPPI SYSTEM (Cont'd.)					
Arkansas Basin (Cont'd.)					
Arkansas (Cont'd.):					
Van Buren, Ark.	22	23	29	25.4	27
Ozark, Ark.	22	26	28	22.6	28
Dardanelle, Ark.	22	4 25	4 1/	22.15 24.95	4 27
Morrilton, Ark.	30	27	1/	31.6	28
Red Basin					
Little: Horatio, Ark.	27	5 23	6 1	29.9 33.1	5 28
Whitecliffs, Ark.	25	4 24	10 1/	27.0 29.8	6 29
Sulphur:					
Hagansport, Tex.	38	1 22	[illegible] 1/	41.9 43.4	[illegible] 27
Naples, Tex.	22	1 24	14 1/	29.3 32.3	5 29
Cypress: Jefferson, Tex.	18	26	1/	24.3	28
Red:					
Index, Ark.	25	28	1/	----	--
Fulton, Ark.	27	28	1/	----	--
Grand Ecore, La.	33	30	1/	----	--
Lower Mississippi Basin					
St. Francis:					
Fisk, Mo.	20	3	1/	24.3	8
St. Francis, Ark.	18	3	1/	21.9	10-11
Big Black:					
Pickens, Miss.	16	4	5	16.5	5
Bovina, Miss.	28	4	14	30.1	10
Mississippi: Caruthersville, Mo.	32	13	24	32.3 32.4	14-15 20-22
WEST GULF OF MEXICO DRAINAGE					
Nezpique Bayou: Basile, La.	22	20	23	22.3	22
Mermentau: Mermentau, La.	5	23	23	5.1	23
Sabine:					
Quitman, Tex.	16	4 23	6 1/	18.2 20.4	5 28
Mineola, Tex.	14	5 21	12 1/	17.65 22.2	6 29
Gladewater, Tex.	26	1 11 22	2 17 1/	26.7 30.0 40.3	1 14 May 1
Logansport, La.	25	26	1/	----	--
Bon Wier, Tex.	17	30	1/	33.15	30
Deweyville, Tex.	14	11	12	14.0	11
East Fork: Rockwall, Tex.	10	24 26 30	24 27 1/	10.1 14.1 ----	24 27 --
Trinity:					
Dallas, Tex.	28	24	1/	39.65	28
Rosser, Tex.	26	23	1/	37.2	28
Trinidad, Tex.	28	21	1/	43.1	30
Long Lake, Tex.	40	24	1/	#48.8	29
Midway, Tex.	40	25	1/	47.55	May 1
	Ft.			Ft	
WEST GULF OF MEXICO DRAINAGE (Cont'd.)					
Trinity (Cont'd.):					
Riverside, Tex.	40	30	1/	-----	--
Liberty, Tex.	24	26	1/	-----	--
Clear Fork: Ft. Griffin, Tex.	25	25	30	#31.8	29
Little River: Cameron, Tex.	30	24	--	#39.5	25
Brazos:					
Waco, Tex.	27	20 23	20 23	#31.6 #29.4	20 23
Valley Junction, Tex.	44	26	26	#45.1	26
Washington, Tex.	45	30	1/	-----	--
Hempstead, Tex.	40	28	1/	-----	--
Navidad: Ganado, Tex.	21	2 25 30	4 25 May 1	23.5 22.0 29.1	3 25 30
Lavaca: Edna, Tex.	21	29	30	23.5	29
Guadalupe:					
Gonzales, Tex.	20	26	May 2	33.6	28
Cuero, Tex.	23	29	May 3	30.4	30
Victoria, Tex.	21	23 28	23 May 6	21.0 29.8	23 May 3
Atascosa: Whitsett, Tex.	20	21 28	24 1	27.2 25.4 24.8	21 23 29
Frio:					
Calliham, Tex.	12	20	1/	21.85 20.0 20.6	21 24 28
Derby, Tex.	6	21	1/	9.7	22 24 26 29
Turkey Creek: Crystal City, Tex.	9	21	1/	11.0 11.3 11.9	22 25 30
Nueces: Cotulla, Tex.	15	22 30	22 1/	18.2 15.6	22 30
Tilden Crossing, Tex.	11	21	1/	17.95 18.35 22.3	23 27 May 1
Three Rivers, Tex.	35	29	1/	39.3	May 3
Mathis Dam, Tex.	74	21	1/	76.7	May 6
Calallen, Tex.	7	24	1/	9.9	May 7
Rio Grande: Eagle Pass, Tex.	16	29	29	17.0	29

* Provisional
# Highest stage reported
1/ Continued at end of month
$\bar{A}$ Tentative
E Estimated

RAWINSONDE DATA

Average monthly values

ALBANY, N. Y. (1008 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	86	8.0	68	259	3.7
1,000	30	151	9.3	58	249	5.2
950	30	575	6.9	58	271	10.5
900	30	1,017	4.3	61	275	15.5
850	30	1,480	1.8	59	282	17.5
800	30	1,967	- .8	55	283	18.8
750	30	2,488	- 3.0	52	280	22.0
700	30	3,025	- 5.5	51	278	25.8
650	30	3,607	- 8.3	52	282	29.9
600	30	4,220	-12.1	51	282	33.0
550	30	4,884	-16.0	47	281	35.9
500	30	5,592	-20.4	41	280	41.2
450	30	6,374	-25.8	39	278	46.2
400	30	7,207	-31.7	39	279	49.1
350	30	8,138	-38.4		282	55.0
300	30	9,181	-45.9		282	58.9
250	30	10,373	-53.3		283	63.1
200	29	11,794	-58.0		283	61.6
175	29	12,651	-59.3		280	56.9
150	29	13,600	-57.2		285	51.3
125	29	14,752	-57.5		286	40.4
100	28	16,157	-58.9		288	31.9
80	27	17,553	-59.7		284	23.9
60	26	19,353	-59.1		285	11.8
50	24	20,491	-58.3		276	9.5
40	22	21,903	-58.1		272	8.5
30	18	23,730	-57.2		293	[illegible]
20	12	26,328	-54.0		252	3.5
15						

ALBUQUERQUE, N. MEX. (833 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	1,619	13.6	32	355	1.2
1,000	30	52				
950	30	500				
900	30	966				
850	30	1,451				
800	30	1,963	11.7	30	276	6.4
750	30	2,500	7.1	34	269	10.9
700	30	3,060	2.3	38	263	14.2
650	30	3,653	- 3.0	44	255	16.1
600	30	4,280	- 8.3	50	255	18.1
550	30	4,948	-13.6	51	258	22.1
500	30	5,666	-18.9	42	254	25.6
450	30	6,452	-24.1		261	27.8
400	30	7,291	-30.1		259	30.7
350	30	8,225	-37.8		260	39.4
300	30	9,268	-45.5		253	37.1
250	29	10,458	-53.9			
200	29	11,867	-58.9			
175	29	12,705	-58.0			
150	28	13,677	-57.1			
125	26	14,821	-59.0			
100	25	16,210	-61.0			
80	23	17,591	-61.9			
60	18	19,373	-62.7			
50	15	20,512	-60.5			
40	14	21,904	-58.1			
30	10	23,713	-54.4			

AMARILLO, TEX. (889 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	1,099	11.6	59	105	2.5
1,000	30	91				
950	30	531				
900	30	985				
850	30	1,466	10.4	57	173	3.3
800	30	1,968	7.9	57	232	6.8
750	30	2,505	5.8	50	247	13.4
700	30	3,060	2.2	46	252	17.1
650	30	3,656	- 2.0	44	254	18.8
600	30	4,285	- 6.6	44	255	22.5
550	30	4,957	-11.7	46	256	25.4
500	30	5,680	-17.1	41	255	26.6
450	29	6,469	-23.0	40	258	26.6
400	29	7,317	-29.1		258	30.5
350	29	8,256	-36.5		256	31.3
300	29	9,305	-44.5		252	35.5
250	29	10,503	-52.6		246	40.2
200	29	11,919	-59.0		243	46.4
175	29	12,756	-58.4		249	47.4
150	29	13,728	-57.5		252	42.2
125	26	14,876	-58.9		254	39.0
100	25	16,267	-61.0		256	33.0
80	22	17,657	-62.7		259	23.9
60	20	19,426	-62.1		260	12.4
50	19	20,554	-60.7		269	7.8
40	19	21,950	-57.9		272	9.1
30	18	23,775	-53.9		248	11.3
20	15	26,402	-48.5		267	16.9
15	10	28,309	-44.3			

ANCHORAGE, ALASKA (1007 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	29	30	6.0	52	266	2.7
1,000	29	84			257	2.1
950	29	507	2.9	49	89	2.3
900	29	937	- .3	52	82	4.3
850	29	1,391	- 3.7	57	105	3.1
800	29	1,866	- 7.2	60	131	3.7
750	29	2,371	-10.4	62	142	4.1
700	29	2,894	-13.2	55	152	5.2
650	29	3,461	-16.7	53	159	3.3
600	29	4,051	-20.3	47	170	1.6
550	29	4,691	-24.2	45	251	.6
500	28	5,378	-28.8	45	287	.6
450	28	6,130	-33.9	45	301	.6
400	28	6,939	-39.5		42	1.0
350	26	7,838	-45.7		111	2.9
300	25	8,855	-52.0		111	2.5
250	25	10,025	-54.1		271	3.9
200	25	11,457	-52.6		252	9.1
175	24	12,321	-51.5		246	10.9
150	23	13,320	-50.3		251	11.5
125	23	14,507	-50.6		257	11.3
100	23	15,956	-51.4		279	9.9
80	23	17,400	-52.3		264	7.0
60	22	19,258	-53.1		292	8.5
50	22	20,430	-53.7		302	7.0
40	21	21,867	-53.9		316	5.6
30	13	23,732	-54.0			

ANNETTE, ALASKA (1012 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	37	7.1	73	167	2.5
1,000	30	139	6.2	74	164	3.5
950	30	553	3.3	72	176	4.9
900	30	993	.0	75	176	6.4
850	30	1,448	- 3.2	77	184	7.2
800	30	1,925	- 6.2	74	190	8.4
750	30	2,430	- 9.2	69	214	9.5
700	30	2,958	-12.1	62	216	10.5
650	30	3,523	-15.5	54	227	12.0
600	30	4,120	-19.2	49	242	14.8
550	30	4,762	-23.3	47	250	15.9
500	30	5,454	-27.8	43	259	18.8
450	30	6,210	-32.7	41	271	22.0
400	30	7,023	-38.3		269	21.6
350	30	7,928	-44.7		267	23.1
300	30	8,941	-51.5		267	25.4
250	29	10,112	-54.7		269	20.8
200	29	11,537	-54.0		263	7.8
175	29	12,395	-52.7		270	8.0
150	28	13,388	-52.4		253	6.4
125	27	14,563	-52.7		279	7.4
100	27	15,999	-53.8		245	9.1
80	25	17,419	-54.7		270	7.2
60	23	19,251	-55.3			
50	21	20,422	-55.8			
40	18	21,844	-55.5			
30	9	23,695	-55.4			

ATHENS, GA. (991 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	29	246	16.8	68	177	2.1
1,000	29	166				
950	29	612	16.7	56	198	5.4
900	29	1,065	13.6	58	223	7.8
850	29	1,544	10.1	62	224	8.4
800	29	2,045	6.9	62	235	8.2
750	29	2,580	4.4	49	241	9.5
700	29	3,132	1.5	41	246	14.2
650	29	3,733	- 1.6	38	253	18.1
600	29	4,359	- 5.3		256	20.8
550	29	5,039	- 9.4		254	22.7
500	28	5,765	-14.2		255	27.8
450	28	6,564	-19.7		260	32.2
400	28	7,419	-26.2		263	33.2
350	28	8,371	-33.3		264	37.9
300	28	9,435	-41.5		266	44.9
250	28	10,645	-51.2		266	49.0
200	25	12,062	-60.0		266	50.9
175	[illegible]	12,892	-61.9		265	55.4
150	23	13,843	-61.5		267	51.9
125	19	14,960	-62.7		271	42.3
100	19	16,329	-64.7		267	36.1
80	18	17,681	-65.8		265	24.5
60	16	19,439	-64.5		267	9.9
50	14	20,558	-61.0		282	4.5
40	13	21,962	-57.7		270	4.9
30	11	23,795	-53.6		301	1.9

BARROW, ALASKA (1018 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	8	-10.9	78	91	7.8
1,000	30	143	-10.0	78	111	8.5
950	30	544	- 7.9	71	137	10.1
900	30	960	- 8.2	56	139	9.7
850	30	1,402	- 9.5	48	144	10.1
800	30	1,869	-11.2	41	158	7.6
750	30	2,366	-13.5	37	169	6.6
700	30	2,885	-16.1		174	6.4
650	30	3,443	-19.1		191	6.2
600	30	4,031	-22.2		191	7.2
550	30	[illegible]	-26.2		200	6.2
500	30	5,348	-30.7		216	6.2
450	30	6,097	-36.0		261	1.9
400	30	6,897	-41.7		252	2.3
350	30	7,789	-47.9		275	4.5
300	30	8,790	-53.6		269	6.4
250	29	9,952	-56.2		287	6.6
200	28	11,375	-51.9		273	6.2
175	28	12,243	-50.1		270	8.7
150	28	13,249	-49.7		273	6.8
125	28	14,440	-49.8		277	7.0
100	28	15,897	-50.4		270	4.9
80	27	17,352	-51.0		271	2.9
60	26	19,217	-51.4		276	3.7
50	25	20,399	-51.9		347	2.5
40	20	21,852	-52.3		348	3.3
30	12	23,685	-53.4			

BETHEL, ALASKA (1008 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	4	3.6	72	170	1.2
1,000	30	67			246	1.4
950	30	486	.5	70	139	3.1
900	30	912	- 2.0	70	141	4.1
850	30	1,364	- 5.0	69	159	7.0
800	30	1,838	- 8.0	70	166	8.0
750	30	2,342	-10.9	66	172	8.4
700	30	2,863	-14.1	62	173	9.1
650	30	3,428	-16.9	53	170	8.2
600	30	4,018	-20.3	48	170	5.8
550	30	4,662	-23.9	45	166	6.2
500	30	5,347	-28.3	44	146	8.2
450	29	6,098	-33.3	40	154	12.4
400	29	6,909	-39.1		136	9.1
350	29	7,810	-45.7		137	8.5
300	29	8,820	-52.3		108	6.6
250	28	9,991	-55.7		132	3.7
200	27	11,412	-51.6		232	8.0
175	27	12,282	-49.7		230	9.9
150	27	13,291	-49.2		237	8.0
125	27	14,483	-49.8		255	8.0
100	27	15,939	-50.5		250	8.0
80	27	17,391	-51.4		258	5.8
60	23	19,250	-52.5		280	7.6
50	23	20,426	-53.3		292	8.2
40	21	21,849	-54.5		313	9.3
30	17	23,688	-55.2			

BISMARCK, N. DAK. (956 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	505	5.7	58	89	1.2
1,000	30	135				
950	30	562			14	.6
900	30	1,001	4.2	54	130	1.4
850	30	1,463	.7	58	228	1.4
800	30	1,947	- 2.5	57	252	4.7
750	30	2,464	- 5.3	57	273	7.2
700	30	2,995	- 8.4	50	274	11.5
650	30	3,573	-11.6	43	274	13.4
600	30	4,175	-15.2	40	274	16.5
550	30	4,832	-19.3	38	267	17.3
500	29	5,526	-24.1	38	272	21.2
450	28	6,297	-29.5		270	23.1
400	28	7,115	-35.5		274	23.1
350	28	8,030	-42.6		261	25.3
300	28	9,054	-50.1		258	19.0
250	28	10,226	-55.8		260	25.4
200	28	11,646	-55.5		244	21.0
175	28	12,497	-55.2		271	19.2
150	28	13,483	-53.8		268	18.8
125	27	14,647	-54.5		269	18.6
100	25	16,073	-55.3		267	18.1
80	24	17,498	-56.5		269	15.3
60	24	19,317	-57.7		276	11.3
50	21	20,474	-58.2			
40	18	21,850	-58.0			
30	9	23,672	-57.3			

BOISE, IDAHO (914 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	868	10.8	54	320	6.0
1,000	30	106				
950	30	541				
900	30	993	10.8	47	322	7.6
850	30	1,467	7.3	47	325	10.9
800	30	1,962	3.2	53	317	9.7
750	30	2,488	- 1.0	59	306	9.5
700	30	3,029	- 4.9	59	303	10.3
650	30	3,611	- 8.9	54	298	9.1
600	30	4,222	-12.9	54	300	10.1
550	30	4,882	-17.3	48	306	10.3
500	30	5,587	-22.4	46	304	10.9
450	30	6,360	-28.1	44	299	12.2
400	30	7,187	-34.5	43	297	11.5
350	30	8,105	-41.6		277	13.0
300	30	9,132	-49.2		284	10.7
250	29	10,308	-56.2		293	10.7
200	25	11,731	-58.6		282	14.2
175	25	12,571	-57.4		283	15.3
150	22	13,544	-54.9		273	17.7
125	17	14,689	-55.6			
100	11	16,113	-57.2			
80	[illegible]	17,511	-58.6			
60	7	19,321	-59.1			
50	6	20,461	-59.9			

BROWNSVILLE, TEX. (1011 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	7	22.6	86	122	9.3
1,000	30	104	22.0	86	121	11.3
950	30	552	19.9	81	137	15.9
900	30	1,016	18.6	67	144	14.4
850	30	1,505	16.5	59	156	12.6
800	30	2,019	14.6	46	174	9.5
750	30	2,568	12.0	37	194	9.3
700	30	3,136	8.5	35	219	13.4
650	30	3,748	4.0	36	237	17.1
600	29	4,391	- 1.0	37	235	18.6
550	29	5,077	- 6.5	39	244	20.2
500	29	5,815	-11.9	35	252	24.7
450	29	6,621	-17.7		255	28.2
400	29	7,483	-24.1		255	32.1
350	29	8,441	-31.5	37	260	30.9
300	29	9,512	-39.8		265	35.0
250	29	10,730	-49.6		269	37.7
200	29	12,155	-58.9		270	50.5
175	29	12,986	-61.7			
150	27	13,934	-63.4			
125	25	15,041	-66.3			
100	22	16,371	-69.5			
80	19	17,682	-71.6			
60	16	19,382	-65.8			
50	14	20,499	-62.2			
40	12	21,891	-59.5			
30	11	23,709	-54.3			
20	5	26,281	-48.6			
15						

BUFFALO, N. Y. (996 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	182	7.3	83	227	2.1
1,000	30	151			106	.6
950	30	574	7.5	68	236	8.7
900	30	1,018	5.2	67	244	12.6
850	30	1,483	2.4	66	254	15.2
800	30	1,971	- .4	65	264	19.0
750	30	2,493	- 2.7	64	275	21.4
700	30	3,030	- 5.3	62	270	25.3
650	30	3,613	- 8.7	60	271	27.4
600	30	4,224	-12.2	56	270	30.9
550	30	4,888	-15.9	55	270	35.2
500	30	5,596	-20.4	50	271	39.8
450	30	6,376	-25.6	54	272	42.7
400	30	7,212	-31.5	54	273	46.6
350	30	8,142	-38.5		273	52.1
300	30	9,184	-46.1		272	58.5
250	30	10,374	-53.3		268	63.7
200	29	11,780	-57.9		269	62.4
175	29	12,620	-58.3		270	55.9
150	29	13,592	-57.0		270	46.6
125	28	14,756	-57.4		274	37.9
100	24	16,169	-59.3		272	31.7
80	24	17,563	-59.8		270	24.7
60	21	19,351	-60.0		264	15.3
50	20	20,483	-59.7		271	11.3
40	16	21,878	-58.7		285	6.6
30	12	23,712	-56.9		285	6.0
20	9	26 298	-52.9			
15	5	28,216	-50.5			

BURRWOOD, LA. (1017 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	29	3	20.0	86	131	5.8
1,000	29	146	19.8	83	120	9.1
950	29	589	17.7	76	138	12.4
900	29	1,049	15.6	67	149	10.7
850	29	1,533	14.0	56	165	7.2
800	29	2,042	11.6	52	189	7.6
750	28	2,586	8.9	46	214	4.3
700	28	3,147	5.6	39	238	5.6
650	27	3,752	1.8	39	250	5.4
600	25	4,394	- 2.4	32	270	9.1
550	25	5,079	- 7.2		264	14.2
500	25	5,814	-12.2		259	15.7
450	25	6,618	-18.0		262	19.0
400	24	7,478	-24.8		263	18.5
350	24	8,434	-32.4		264	23.3
300	23	9,505	-40.7		255	21.0
250	22	10,721	-50.1		261	26.8
200	21	12,146	-59.7		255	26.8
175	21	12,976	-61.2		252	35.5
150	19	13,928	-61.5			
125	18	15,056	-63.8			
100	17	16,409	-67.3			
80	17	17,744	-69.6			
60	15	19,472	-66.0			
50	14	20,586	-62.0			
40	14	21,981	-57.6			
30	13	23,815	-53.2			
20	9	26,476	-46.7			

CAPE HATTERAS, N. C. (1020 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	4	16.1	80	203	4.7
1,000	30	176	16.5	67	208	7.6
950	30	615	14.5	57	222	11.8
900	30	1,067	12.0	53	243	12.0
850	30	1,543	8.7	52	261	10.5
800	30	2,042	5.9	50	268	10.3
750	30	2,575	3.7	42	275	12.4
700	30	3,126	.8	43	282	15.7
650	29	3,721	- 2.0	38	279	18.8
600	29	4,348	- 5.8	35	279	21.4
550	29	5,023	-10.0		277	24.3
500	29	5,752	-14.7		279	26.6
450	29	6,548	-20.2		280	32.8
400	28	7,409	-26.5		274	35.4
350	28	8,359	-33.8		270	40.0
300	28	9,421	-42.0		272	43.1
250	28	10,628	-51.3		269	46.0
200	27	12,049	-59.4		276	51.3
175	27	12,881	-60.9		274	52.1
150	25	13,840	-60.6		283	49.7
125	24	14,974	-61.2		280	38.9
100	22	16,346	-62.9		288	31.7
80	21	17,720	-64.0		291	21.8
60	20	19,484	-62.9		285	12.8
50	18	20,605	-60.8		283	7.2
40	17	22,000	-58.3		284	2.9
30	16	23,821	-54.6		277	5.4
20	12	26,441	-50.3			

CARIBOU, ME. (992 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	191	1.4	73	292	6.2
1,000	30	126				
950	30	544	1.5	60	296	13.6
900	30	974	- .7	62	310	19.8
850	30	1,429	- 3.0	65	308	20.4
800	30	1,907	- 5.3	60	308	19.0
750	30	2,420	- 7.6	53	304	20.2
700	30	2,946	-10.0	46	301	23.3
650	30	3,521	-13.0		299	25.6
600	29	4,113	-17.2		300	30.9
550	29	4,766	-20.6		294	32.6
500	29	5,461	-24.7		295	35.4
450	28	6,237	-29.5	46	294	39.0
400	28	7,057	-35.4		295	42.0
350	27	7,970	-42.1		292	43.7
300	27	8,997	-48.6		290	51.1
250	27	10,180	-53.3		287	56.5
200	27	11,609	-55.1		289	51.5
175	27	12,462	-54.5		287	47.8
150	27	13,448	-54.0		292	39.4
125	26	14,614	-54.1		291	34.8
100	24	16,051	-55.4		291	29.5
80	22	17,452	-56.5		292	20.6
60	15	19,267	-55.7		285	13.8
50	13	20,423	-56.4		276	11.8
40	12	21,834	-56.6		263	11.1
30	10	23,653	-56.0		255	8.7
20	7	26,258	-54.2			
15	5	28,105	-53.1			

These average values for standard pressure surfaces were obtained by rawinsondes, dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

RAWINSONDE DATA

Average monthly values

CHARLESTON, S. C.
(1019 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	13	15.9	86	139	3.5
1,000	30	177	18.6	71	163	8.2
950	30	618	16.3	66	171	10.3
900	30	1,074	13.8	61	187	6.8
850	30	1,554	10.9	59	198	3.7
800	30	2,057	8.6	46	249	2.7
750	30	2,595	6.3	40	267	4.9
700	30	3,153	3.6	33	274	6.4
650	30	3,757	.4	28	272	8.9
600	30	4,390	- 3.4		270	11.5
550	30	5,076	- 7.9		276	14.4
500	30	5,807	-12.7		270	14.6
450	30	6,608	-18.5		266	17.7
400	30	7,471	-25.1		272	17.9
350	29	8,424	-32.6		281	16.1
300	29	9,491	-41.1		277	18.1
250	29	10,704	-50.8		277	16.9
200	29	12,125	-60.1		283	18.1
175	29	12,954	-61.7		286	23.1
150	28	13,913	-61.2		283	27.2
125	27	15,041	-62.9		286	26.2
100	27	16,406	-65.5		293	22.7
80	27	17,756	-67.4		329	11.7
60	26	19,497	-64.7		25	5.4
50	26	20,615	-62.3		49	4.3
40	26	22,000	-59.1		43	5.4
30	24	23,822	-54.5		324	2.7
20	9	26,426	-49.9			

COLD BAY, ALASKA
(1005 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	29	3.8	81	139	0.8
1,000	30	66			292	7.4
950	30	484	1.0	79	273	8.7
900	30	913	- 1.6	75	270	11.8
850	30	1,366	- 3.9	72	266	11.8
800	30	1,842	- 6.3	67	253	10.3
750	30	2,350	- 9.2	62	258	11.8
700	30	2,875	-12.2	57	245	11.3
650	30	3,448	-15.5	53	239	12.0
600	30	4,037	-19.1	48	248	12.0
550	30	4,684	-23.2	45	236	10.7
500	30	5,370	-27.9	46	235	11.7
450	30	6,126	-33.0	44	238	13.4
400	30	6,938	-38.8		242	17.1
350	30	7,841	-44.4		261	17.7
300	30	8,859	-49.6		241	18.3
250	30	10,040	-52.5		247	24.1
200	30	11,481	-51.3		243	26.2
175	30	12,350	-50.1		246	24.3
150	30	13,355	-49.8		248	22.3
125	30	14,545	-49.9		243	18.1
100	30	15,998	-50.8		249	14.4
80	30	17,449	-51.1		253	12.0
60	30	19,314	-51.6		257	10.7
50	29	20,493	-52.1		273	10.7
40	27	21,938	-52.8		255	9.1
30	16	23,812	-53.2		250	10.9
20						

COLUMBIA, MO.
(988 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	238	11.8	74	105	2.3
1,000	30	135				
950	30	569	10.9	69	131	5.4
900	30	1,016	9.0	69	177	8.4
850	30	1,487	6.4	73	217	9.3
800	30	1,983	4.1	72	232	12.4
750	30	2,514	1.7	69	239	16.7
700	30	3,060	- 1.1	66	244	18.3
650	30	3,653	- 4.2	59	252	21.2
600	30	4,274	- 8.0	56	250	24.3
550	30	4,945	-12.0	47	259	26.6
500	30	5,668	-17.0	43	258	30.5
450	30	6,459	-22.3	44	252	34.6
400	30	7,305	-28.6	43	250	40.6
350	30	8,246	-35.7		248	45.5
300	30	9,297	-44.0		245	52.6
250	30	10,493	-53.0		246	57.7
200	30	11,903	-60.2		244	62.9
175	30	12,733	-60.0		250	58.5
150	30	13,698	-58.3		254	48.4
125	29	14,846	-58.3		256	42.2
100	29	16,242	-59.9		257	32.4
80	29	17,629	-61.1		259	22.5
60	28	19,402	-61.1		260	13.6
50	26	20,533	-60.6		247	10.9
40	22	21,923	-58.8		257	9.1
30	21	23,740	-56.6		263	12.0
20	9	26,372	-52.5			

DAYTON, OHIO
(983 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	297	11.6	67	195	0.6
1,000	30	156				
950	30	582	10.5	65	211	4.5
900	30	1,035	8.3	67	237	8.9
850	30	1,505	5.8	68	247	14.8
800	30	1,999	3.3	64	256	18.5
750	30	2,523	.5	58	259	22.5
700	30	3,071	- 2.6	58	263	23.5
650	30	3,657	- 5.7	56	263	24.7
600	30	4,279	- 9.2	54	267	27.6
550	30	4,950	-13.1	52	266	31.9
500	30	5,667	-17.5	46	265	36.1
450	30	6,452	-22.9	44	267	39.4
400	30	7,302	-28.9	41	266	45.1
350	30	8,242	-36.0		264	47.8
300	30	9,293	-43.8		265	51.3
250	30	10,493	-52.2		[illegible]	54.4
200	29	11,903	-58.4		266	55.0
175	28	12,741	-59.7		[illegible]	55.6
150	27	13,712	-58.4		[illegible]	47.4
125	26	14,859	-58.3		270	39.6
100	26	16,256	-59.8		269	33.0
80	26	17,645	-61.0		272	22.0
60	21	19,431	-60.5		269	13.0
50	20	20,569	-59.4		277	7.8
40	17	21,965	-58.2		243	7.0
30	8	23,768	-54.9			
20						

DENVER, COLO.
(835 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	1,608	4.4	73	[illegible]	3.9
1,000	30	112				
950	30	547				
900	30	995				
850	30	1,465				
800	30	1,960	4.1	[illegible]	167	5.1
750	30	2,487	1.3	[illegible]	205	3.3
700	30	3,034	- 2.4	[illegible]	248	[illegible]
650	30	3,620	- 6.3	64	263	10.7
600	30	4,239	-10.5	64	270	14.4
550	30	4,903	-15.4	53	[illegible]	17.9
500	30	5,615	-20.2	54	263	20.2
450	30	6,395	-25.8	47	[illegible]	22.5
400	30	7,229	-32.2	45	253	28.0
350	30	8,157	-39.5		251	29.9
300	30	9,192	-47.9		251	35.0
250	30	10,375	-54.8		254	37.7
200	29	11,785	-58.0		250	37.5
175	28	12,627	-56.9		253	36.3
150	28	13,605	-55.7		255	35.4
125	27	14,769	-55.9		257	30.1
100	27	16,183	-58.0		258	23.1
80	25	17,585	-58.7		257	15.5
60	22	19,391	-60.1		266	6.8
50	19	20,552	-59.2		273	4.9
40	17	21,956	-57.7		279	2.9
30	12	23,815	-54.6		326	2.1
20	6	26,430	-51.5			

DODGE CITY, KANS.
(923 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	792	10.0	72	87	7.2
1,000	30	114				
950	30	547				
900	30	999	9.5	66	87	7.8
850	30	1,471	7.3	64	126	4.3
800	30	1,969	5.5	61	240	3.1
750	30	2,499	3.1	57	258	9.1
700	30	3,050	- .1	50	263	15.9
650	30	3,644	- 3.9	47	269	17.1
600	30	4,266	- 8.3	48	274	21.4
550	30	4,937	-12.9	47	269	23.3
500	30	5,656	-17.8	44	266	26.0
450	30	6,439	-23.5	40	264	31.3
400	30	7,285	-29.7		256	36.9
350	30	8,221	-37.2		244	35.7
300	30	9,267	-45.3		236	40.4
250	30	10,460	-53.1		225	42.7
200	30	11,872	-59.2		226	46.0
175	30	12,707	-58.7		232	45.6
150	29	13,674	-56.8		241	38.3
125	27	14,827	-57.4		245	39.6
100	25	16,233	-59.2		249	34.8
80	25	17,624	-60.9		247	25.4
60	25	19,406	-61.0			
50	22	20,536	-59.9			
40	20	21,942	-58.1			
30	17	23,763	-54.6			
20						

EL PASO, TEX.
(877 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	1,195	19.5	22	293	3.9
1,000	30	51				
950	30	504				
900	30	972				
850	30	1,466	18.6		270	6.0
800	30	1,981	14.3	21	265	10.5
750	30	2,525	9.7	23	263	15.9
700	29	3,091	5.0	27	258	19.2
650	29	3,691	- .1	29	249	22.5
600	29	4,325	- 5.1	28	251	23.1
550	29	5,003	-10.1		254	25.3
500	39	5,730	-15.0		270	22.3
450	29	6,525	-21.0		281	25.3
400	28	7,379	-27.8		283	25.4
350	28	8,323	-35.3		279	25.3
300	28	9,377	-43.9			
250	28	10,574	-52.9			
200	28	11,988	-58.9			
175	27	12,821	-58.5			
150	25	13,788	-58.9			
125	24	14,926	-61.2			
100	23	16,299	-63.9			
80	22	17,657	-65.0			
60	21	19,418	-63.8			
50	21	20,543	-61.1			
40	19	21,943	-57.4			
30	19	23,776	-53.4			
20	5	26,437	-48.8			

ELY, NEV.
(805 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	1,908	7.2	40	330	3.7
1,000	30	78				
950	30	519				
900	30	976				
850	30	1,452				
800	30	1,956	7.5	39	322	4.3
750	30	2,492	3.8	42	298	8.4
700	30	3,040	- 1.0	47	299	9.5
650	30	3,628	- 6.1	53	292	11.1
600	30	4,247	-10.8	55	295	12.2
550	30	4,913	-15.8	53	291	14.2
500	30	5,620	-20.9	51	292	17.9
450	30	6,400	-26.4	47	289	20.4
400	30	7,230	-32.4	45	293	24.3
350	30	8,157	-39.8		308	23.3
300	30	9,191	-47.8		288	22.3
250	30	10,374	-54.9		266	26.0
200	27	11,786	-57.7			
175	25	12,625	-55.2			
150	24	13,604	-55.3			
125	23	14,763	-56.7			
100	22	16,173	-58.3			
80	19	17,569	-58.6			
60	13	19,351	-60.8			
50	8	20,480	-60.4			
40	6	21,879	-58.6			
30						
20						

FAIRBANKS, ALASKA
(996 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	135	4.5	55	15	1.0
1,000	30	104			190	1.4
950	30	524	1.5	47	132	1.6
900	30	953	- 1.8	53	99	1.7
850	30	1,405	- 5.2	59	112	3.1
800	30	1,878	- 8.3	62	192	4.3
750	30	2,383	-11.1	58	205	5.8
700	30	2,903	-13.8	54	206	5.4
650	30	3,473	-17.0	47	218	5.6
600	30	4,058	-20.5	41	228	4.1
550	30	4,703	-24.5	38	[illegible]	3.5
500	30	5,385	-29.1	39	231	3.5
450	30	6,139	-34.2		309	2.7
400	30	6,945	-39.9		266	2.9
350	30	7,842	-46.4		254	1.4
300	30	8,849	-53.3		282	3.3
250	30	10,010	-55.9		233	5.2
200	30	11,435	-53.1		253	6.8
175	30	12,298	-51.2		249	8.0
150	29	13,301	-50.6		253	7.8
125	29	14,486	-50.9		260	6.0
100	29	15,933	-51.7		274	7.0
80	28	17,374	-52.8		269	7.0
60	28	19,226	-53.2		289	5.4
50	28	20,397	-53.6		293	3.7
40	26	21,833	-53.7		293	4.5
30	15	23,697	-54.0			
20						

FLINT, MICH.
(990 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	234	10.9	77	217	2.1
1,000	30	150				
950	30	577	7.1	68	236	5.6
900	30	1,018	4.8	68	261	10.7
850	30	1,481	2.1	68	258	12.0
800	30	1,969	- .1	60	275	14.8
750	30	2,489	- 2.2	48	[illegible]	17.9
700	30	3,029	- 4.6	46	276	20.2
650	30	3,611	- 7.8	47	275	22.7
600	30	4,227	-11.4	47	272	25.8
550	30	4,890	-15.2	44	269	28.0
500	30	5,602	-19.7		268	33.2
450	30	6,379	-24.9		267	37.9
400	30	7,221	-31.0		268	47.6
350	30	8,154	-37.9		266	54.4
300	30	9,199	-45.6		265	57.5
250	30	10,392	-53.1		264	60.4
200	30	11,808	-58.5		265	56.9
175	29	12,654	-58.6		265	56.1
150	29	13,623	-57.3		271	48.4
125	29	14,777	-57.1		272	41.0
100	29	16,184	-58.3		271	33.4
80	29	17,582	-59.6		267	25.1
60	28	19,379	-60.1		268	17.5
50	27	20,521	-59.7		275	14.0
40	25	21,906	-58.9		270	12.8
30	21	23,710	-56.8		274	13.8
20	7	26,284	-54.8			

FORT WORTH, TEX.
(993 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	178	17.5	77	165	5.1
1,000	30	117				
950	30	558	15.8	75	156	12.0
900	30	1,013	13.6	74	180	14.8
850	30	1,494	11.6	75	202	14.2
800	30	2,000	9.8	67	229	14.6
750	30	2,537	7.0	57	243	17.5
700	30	3,098	3.7	49	247	19.0
650	29	3,696	- .5	45	246	21.2
600	28	4,327	- 5.2	42	252	24.1
550	28	5,007	- 9.6	34	257	27.0
500	28	5,733	-14.8	37	254	29.3
450	27	6,529	-20.8	38	249	31.7
400	27	7,381	-27.1		246	34.2
350	27	8,327	-34.4		244	36.3
300	27	9,384	-42.6		245	43.5
250	27	10,589	-51.6		247	45.3
200	27	12,007	-59.0		245	49.9
175	26	12,835	-60.3		248	46.0
150	23	13,803	-60.3		247	48.2
125	20	14,935	-61.8		252	44.1
100	16	16,311	-63.9		245	34.8
80	14	17,680	-65.1		233	19.8
60	12	19,442	-63.0		219	9.3
50	11	20,554	-61.7		216	5.8
40	11	21,945	-57.9		262	3.7
30	9	23,790	-53.6			
20	9	26,423	-49.1			
15	9	28,310	-45.9			

GLASGOW, MONT.
(933 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	695	5.9	57	106	1.9
1,000	30	124				
950	30	550				
900	30	994	5.4	54	97	2.5
850	30	1,458	1.8	58	283	1.4
800	30	1,944	- 1.5	60	284	5.2
750	30	2,462	- 4.9	62	289	6.4
700	30	2,994	- 8.3	60	290	8.4
650	30	3,571	-11.7	55	291	11.1
600	30	4,174	-15.5	52	291	14.0
550	30	4,831	-19.8	49	291	17.5
500	30	5,525	-24.8	47	286	20.0
450	30	6,293	-30.3	45	292	23.5
400	30	7,110	-36.4	44	289	23.5
350	30	8,021	-43.7		282	18.3
300	30	9,038	-51.3		284	21.8
250	30	10,205	-56.6		272	22.1
200	29	11,627	-55.5		262	20.0
175	29	12,480	-54.2		264	21.8
150	25	13,470	-53.6		254	17.7
125	24	14,645	-53.8		260	18.1
100	23	16,071	-54.9		265	18.3
80	21	17,497	-56.2		261	16.7
60	20	19,325	-57.3		276	10.5
50	20	20,476	-57.7		271	9.1
40	17	21,877	-57.5		261	7.0
30	12	23,705	-57.5			
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GRAND JUNCTION, COLO.
(847 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	1,474	9.9	50	346	1.6
1,000	30	71				
950	30	514				
900	30	969				
850	30	1,447				
800	30	1,952	8.4	40	249	3.5
750	30	2,488	4.1	43	237	6.2
700	30	3,037	- .6	48	242	9.5
650	30	3,628	- 5.7	55	244	10.9
600	30	4,245	-10.7	58	252	13.4
550	30	4,911	-15.8	58	256	15.3
500	30	5,619	-20.7	53	261	18.6
450	30	6,400	-26.4	49	257	21.8
400	30	7,229	-32.8	44	264	22.5
350	30	8,154	-40.2		268	17.1
300	29	9,194	-47.7		291	20.2
250	29	10,375	-54.7			
200	29	11,789	-56.8			
175	28	12,642	-55.5			
150	28	13,625	-55.1			
125	27	14,788	-55.7			
100	27	16,201	-57.7			
80	27	17,606	-58.3			
60	25	19,412	-59.3			
50	20	20,550	-58.7			
40	15	21,978	-57.0			
30	9	23,807	-54.6			
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GREAT FALLS, MONT.
(886 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	1,123	6.6	56	288	3.7
1,000	30	112				
950	30	514				
900	30	991				
850	30	1,459	4.5	53	289	4.9
800	30	1,950	.7	58	303	4.5
750	30	2,473	- 3.4	64	298	7.0
700	30	3,006	- 6.9	69	283	10.1
650	30	3,586	-11.0	69	284	13.8
600	30	4,190	-14.8	60	285	14.0
550	30	4,850	-18.9	51	286	[illegible]
500	30	5,547	-23.8	47	290	17.9
450	30	6,317	-29.4	46	284	17.3
400	30	7,138	-35.7	48	288	19.2
350	30	8,051	-43.0		288	21.8
300	30	9,071	-50.7		282	25.8
250	30	10,239	-56.8		284	30.7
200	30	11,650	-56.5		[illegible]	25.3
175	30	12,500	-54.9		282	23.7
150	30	13,486	-54.0		276	23.3
125	30	14,655	-54.3		277	21.6
100	29	16,084	-55.2		269	17.9
80	28	17,505	-56.0		270	17.3
60	28	19,331	-56.8		271	15.7
50	28	20,483	-57.7		275	11.5
40	26	21,895	-58.0		282	9.1
30	22	23,734	-56.7		272	7.4
20	7	26,337	-55.6			
15						

GREEN BAY, WIS.
(991 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	210	5.9	76	164	1.6
1,000	30	139				
950	30	562	6.1	65	205	3.7
900	30	1,001	4.0	63	246	6.0
850	30	1,464	1.6	63	270	6.8
800	30	1,950	- 1.0	60	276	9.1
750	30	2,468	- 3.5	53	280	11.7
700	30	3,005	- 6.2	47	278	14.6
650	30	3,587	- 9.1	41	275	17.9
600	30	4,197	-12.6	39	271	18.8
550	30	4,854	-16.8	40	274	22.5
500	30	5,564	-21.4	40	272	25.4
450	30	6,338	-26.9		269	31.9
400	30	7,170	-32.9		263	35.5
350	30	8,096	-39.5		259	39.4
300	29	9,127	-46.9		261	40.0
250	29	10,314	-53.7		267	47.6
200	29	11,732	-57.0		266	40.6
175	28	12,585	-56.8		263	39.6
150	28	13,562	-55.7		[illegible]	37.3
125	27	14,733	-55.7		275	33.0
100	26	16,152	-57.0		[illegible]	[illegible]
80	25	17,569	-57.6			
60	24	19,374	-58.1			
50	21	20,525	-58.4			
40	17	21,938	-57.8			
30	9	23,690	-55.9			
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These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

RAWINSONDE DATA

Average monthly values

GREENSBORO, N. C. (988 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	273	15.2	69	236	1.9
1,000--	30	172				
950----	30	611	16.4	53	220	8.0
900----	30	1,068	13.3	56	222	11.8
850----	30	1,546	9.7	60	237	12.4
800----	30	2,047	6.7	56	246	12.0
750----	30	2,581	3.4	57	251	12.8
700----	30	3,131	.7	52	271	15.3
650----	30	3,730	- 2.6	49	272	18.1
600----	30	4,354	- 6.2	40	274	19.4
550----	30	5,034	- 9.7	34	276	21.4
500----	30	5,760	-14.4		275	24.1
450----	30	6,558	-20.0	38	273	23.1
400----	30	7,413	-26.4	36	275	26.0
350----	29	8,365	-33.9		271	26.6
300----	29	9,425	-42.1		268	23.9
250----	29	10,632	-51.1		278	25.1
200----	29	12,051	-59.3		276	25.1
175----	29	12,881	-61.1		288	22.3
150----	29	13,840	-59.5		286	30.9
125----	29	14,977	-60.6		294	25.3
100----	29	16,356	-62.3		297	22.1
80-----	27	17,724	-63.2		309	14.2
60-----	24	19,491	-61.8			
50-----	23	20,619	-59.8			
40-----	23	22,017	-57.5			
30-----	18	23,839	-54.2			
20-----	6	26,441	-50.5			
15-----						

HILO, T. H. (1015 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	9	23.4	74	58	7.8
1,000--	30	139	21.9	74	61	7.8
950----	30	585	18.4	79	68	8.4
900----	30	1,045	15.0	81	73	6.6
850----	30	1,527	12.3	82	60	3.7
800----	30	2,034	9.9	78	74	1.6
750----	30	2,578	8.5	60	188	.8
700----	30	3,138	6.1	43	270	2.7
650----	30	3,746	2.9	36	260	5.8
600----	30	4,385	- .7	33	256	9.9
550----	30	5,079	- 4.8		254	13.2
500----	30	5,817	- 9.7		254	16.5
450----	30	6,628	-15.4		257	20.6
400----	30	7,501	-21.8		257	26.8
350----	30	8,469	-28.9		257	35.9
300----	30	9,553	-36.8		254	40.4
250----	30	10,791	-45.5		261	48.8
200----	30	12,243	-55.4		269	56.5
175----	30	13,084	-60.1		268	54.4
150----	30	14,034	-64.7		270	45.1
125----	30	15,135	-68.4		270	42.0
100----	30	16,461	-70.9		260	23.9
80-----	29	17,780	-70.6		256	15.3
60-----	29	19,503	-65.3		73	2.5
50-----	29	20,618	-62.4		82	10.9
40-----	28	22,004	-58.5			
30-----	26	23,825	-53.9			
20-----	17	26,473	-45.7			
15-----	8	28,382	-42.3			

INTERNAT. FALLS, MINN. (973 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	360	3.4	60	312	2.1
1,000--	30	136				
950----	30	554	3.2	58	293	1.7
900----	30	990	.5	60	295	4.3
850----	30	1,445	- 2.4	62	287	7.2
800----	30	1,924	- 4.5	60	286	8.9
750----	30	2,439	- 6.7	57	282	10.7
700----	30	2,967	- 9.2	52	285	12.4
650----	30	3,541	-12.3	48	284	14.2
600----	30	4,144	-15.7	47	279	16.7
550----	30	4,797	-19.8	42	275	20.0
500----	30	5,495	-24.5	43	271	22.7
450----	30	6,262	-29.9		267	26.8
400----	30	7,082	-36.0		268	31.1
350----	30	7,996	-42.2		267	38.1
300----	30	9,022	-49.0		266	42.3
250----	28	10,200	-53.9		268	45.3
200----	23	11,625	-54.3		266	38.7
175----	22	12,489	-53.7		259	34.4
150----	18	13,485	-52.8		263	34.8
125----	18	14,658	-53.8		264	29.9
100----	16	16,066	-53.9		270	21.2
80-----	14	17,503	-54.8		268	26.4
60-----	14	19,334	-56.6		258	10.1
50-----	12	20,476	-56.6		248	9.7
40-----	9	21,895	-56.9			
30-----	6	23,728	-56.7			
20-----						
15-----						

JACKSON, MISS. (1006 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	101	17.8	77	160	3.9
1,000--	30	148			150	3.9
950----	30	589	16.3	66	163	13.2
900----	30	1,046	13.7	68	172	13.6
850----	30	1,526	11.3	65	189	11.3
800----	30	2,030	8.9	59	217	9.9
750----	30	2,566	6.1	54	239	12.2
700----	30	3,125	3.2	51	251	15.5
650----	30	3,724	- .3	46	251	17.9
600----	30	4,357	- 4.2	39	255	22.1
550----	30	5,039	- 8.5	36	257	23.7
500----	30	5,770	-13.2		256	27.4
450----	30	6,570	-18.7		255	30.3
400----	30	7,430	-25.0		257	32.1
350----	30	8,386	-32.5		252	34.2
300----	30	9,453	-40.8		254	36.3
250----	30	10,668	-50.4		251	41.4
200----	29	12,095	-60.1		253	44.5
175----	29	12,923	-61.9		256	44.7
150----	29	13,877	-61.2		257	43.9
125----	28	15,006	-62.4		257	39.8
100----	26	16,376	-65.2		252	29.3
80-----	25	17,726	-67.2		249	21.4
60-----	22	19,476	-65.0		228	7.6
50-----	20	20,592	-62.7		197	4.3
40-----	17	21,984	-58.5		218	2.5
30-----	15	23,804	-54.1		261	2.9
20-----	8	26,441	-49.6			
15-----						

JACKSONVILLE, FLA. (1020 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	6	19.0	85	124	4.7
1,000--	30	177	19.2	78	126	8.7
950----	30	616	17.0	73	142	12.0
900----	30	1,077	14.3	68	157	7.2
850----	30	1,558	12.0	58	222	5.8
800----	30	2,063	10.1	48	236	7.4
750----	30	2,601	7.7	39	242	9.7
700----	30	3,163	4.6	36	254	11.5
650----	30	3,764	.8	38	259	12.8
600----	30	4,401	- 3.3	37	258	14.6
550----	30	5,086	- 7.5	36	263	16.7
500----	30	5,819	-12.4	33	262	20.2
450----	30	6,621	-17.9	34	263	23.7
400----	30	7,486	-24.2		265	24.3
350----	30	8,444	-31.9		266	28.6
300----	30	9,514	-40.6		267	31.7
250----	30	10,728	-50.3		268	43.3
200----	30	12,151	-59.7		269	51.3
175----	30	12,980	-61.8		271	54.8
150----	30	13,932	-62.5		272	51.9
125----	30	15,049	-65.0		273	45.1
100----	29	16,403	-67.6		275	37.3
80-----	26	17,744	-69.4		274	25.8
60-----	21	19,465	-66.2		274	8.0
50-----	19	20,576	-63.0		257	2.7
40-----	17	21,955	-59.6		106	1.6
30-----	16	23,773	-53.6		63	4.5
20-----	9	26,418	-49.1			
15-----						

KING SALMON, ALASKA (1008 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	15	6.0	64	117	2.1
1,000--	30	78			217	1.7
950----	30	496	1.6	67	129	4.7
900----	30	927	- 1.5	71	138	4.5
850----	30	1,380	- 4.5	72	167	4.1
800----	30	1,855	- 7.1	68	174	5.1
750----	30	2,358	-10.1	62	176	5.2
700----	30	2,884	-12.9	56	188	6.6
650----	30	3,448	-16.5	50	180	8.0
600----	30	4,042	-20.1	44	189	4.9
550----	30	4,684	-24.1	42	218	5.8
500----	30	5,371	-28.5	43	239	6.6
450----	29	6,129	-33.6		242	8.2
400----	29	6,938	-39.5		232	7.4
350----	29	7,838	-45.6		242	8.9
300----	29	8,851	-51.0		246	10.7
250----	29	10,026	-53.7		246	15.7
200----	29	11,462	-52.2		242	18.8
175----	29	12,327	-51.1		250	17.5
150----	29	13,331	-50.2		248	13.4
125----	29	14,520	-50.5		247	13.0
100----	27	15,973	-51.4		254	11.1
80-----	27	17,419	-52.4		256	9.1
60-----	27	19,277	-52.9		279	10.1
50-----	25	20,451	-53.4		290	10.5
40-----	24	21,882	-53.9		305	11.5
30-----	20	23,733	-53.9		306	11.7
20-----	12	26,353	-53.3		295	9.3
15-----	7	28,263	-51.0			

KOTZEBUE, ALASKA (1012 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	5	- 2.7	82	139	6.4
1,000--	30	96	- 3.3	74	127	7.6
950----	30	502	- 4.6	64	151	10.3
900----	30	925	- 5.8	60	161	9.7
850----	30	1,371	- 7.4	56	165	8.4
800----	30	1,841	- 9.4	49	166	5.8
750----	30	2,342	-11.9	48	169	6.0
700----	30	2,863	-14.7	42	169	5.8
650----	30	3,430	-18.0	40	163	5.8
600----	30	4,014	-21.5	36	176	5.1
550----	30	4,652	-25.4		181	4.1
500----	30	5,335	-29.9	37	173	3.7
450----	30	6,083	-34.9		227	3.7
400----	30	6,890	-40.3		288	4.1
350----	29	7,789	-46.7		295	5.4
300----	29	8,795	-52.8		326	5.2
250----	29	9,957	-55.5		304	5.2
200----	29	11,388	-51.6		290	3.1
175----	29	12,256	-50.3		234	4.9
150----	29	13,261	-49.5		241	3.9
125----	28	14,456	-49.4		253	5.4
100----	28	15,913	-49.9		255	5.2
80-----	26	17,364	-51.1		261	4.7
60-----	23	19,237	-51.2		244	3.9
50-----	22	20,413	-52.1		251	4.1
40-----	21	21,857	-52.7		307	2.7
30-----	19	23,709	-53.0		271	3.1
20-----	5	26,215	-56.5			
15-----						

LAKE CHARLES, LA. (1015 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	5	19.3	88	139	4.7
1,000--	30	133	19.4	82	138	6.6
950----	30	578	17.6	76	141	10.7
900----	30	1,035	15.0	72	151	10.1
850----	30	1,518	13.3	64	179	7.8
800----	30	2,027	11.1	59	202	8.4
750----	30	2,570	8.5	53	229	9.5
700----	29	3,132	5.6	42	251	13.8
650----	29	3,739	1.7	41	256	15.7
600----	29	4,374	- 2.9	42	259	19.0
550----	28	5,057	- 7.8	35	250	21.2
500----	28	5,793	-13.0	33	257	24.9
450----	28	6,594	-18.3		255	28.2
400----	28	7,456	-24.6		264	27.8
350----	28	8,413	-31.9		264	34.0
300----	27	9,486	-40.1		265	31.1
250----	26	10,702	-49.8		263	34.4
200----	25	12,127	-59.2		250	36.7
175----	25	12,959	-60.3			
150----	23	13,920	-60.7			
125----	22	15,050	-63.4			
100----	20	16,411	-66.2			
80-----	17	17,761	-68.4			
60-----	17	19,490	-65.9			
50-----	15	20,607	-62.2			
40-----	13	22,007	-58.3			
30-----	10	23,836	-54.8			
20-----	5	26,445	-50.2			
15-----						

LANDER, WYO. (825 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	1,696	3.6	65	268	4.1
1,000--	30	107				
950----	30	536				
900----	30	985				
850----	30	1,454				
800----	30	1,948	3.6	56	291	3.1
750----	30	2,473	.1	55	288	2.9
700----	30	3,018	- 3.7	55	281	6.6
650----	30	3,597	- 8.1	56	277	11.3
600----	30	4,216	-12.3	53	274	11.5
550----	30	4,874	-17.1	49	269	11.7
500----	30	5,582	-22.3	45	289	13.4
450----	30	6,350	-28.2	43	289	17.1
400----	29	7,186	-34.3	40	281	19.2
350----	29	8,105	-41.5		279	23.7
300----	29	9,132	-49.1		269	13.4
250----	29	10,308	-55.9		263	18.3
200----	29	11,715	-57.5		254	19.0
175----	29	12,562	-55.2		251	20.0
150----	28	13,541	-54.3		254	13.8
125----	28	14,707	-54.7		257	15.7
100----	28	16,130	-56.1		256	13.0
80-----	27	17,540	-57.1			
60-----	23	19,359	-58.4			
50-----	23	20,504	-58.3			
40-----	21	21,922	-57.3			
30-----	15	23,727	-55.9			
20-----	6	26,369	-52.7			
15-----						

LAS VEGAS, NEV. (933 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	660	20.3	21	238	5.8
1,000--	30	59				
950----	30	504				
900----	30	973	18.2	22	238	8.5
850----	30	1,458	14.0	25	248	9.9
800----	30	1,964	9.5	29	252	9.5
750----	30	2,499	4.9	33	277	9.3
700----	30	3,053	.2	37	289	9.9
650----	30	3,641	- 4.3	40	300	10.7
600----	30	4,267	- 8.8	38	300	15.0
550----	30	4,935	-13.3	36	296	18.5
500----	30	5,653	-18.5	34	295	21.0
450----	30	6,436	-24.2	34	291	23.9
400----	30	7,278	-30.7	36	285	25.8
350----	30	8,212	-37.9		287	29.9
300----	30	9,256	-45.8		283	34.8
250----	30	10,447	-53.3		285	41.2
200----	29	11,862	-58.4		281	43.1
175----	28	12,698	-57.2		277	42.0
150----	27	13,671	-56.5		275	36.9
125----	24	14,825	-57.1		279	32.4
100----	23	16,227	-59.1		267	26.8
80-----	23	17,622	-59.8		268	18.3
60-----	19	19,415	-60.1		266	9.5
50-----	17	20,551	-59.7		272	7.0
40-----	15	21,943	-57.9		315	8.4
30-----	13	23,763	-54.5		281	9.5
20-----	7	26,374	-49.2			
15-----						

LITTLE ROCK, ARK. (1006 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	79	16.3	76	112	4.3
1,000--	30	130			120	6.2
950----	30	571	15.4	64	159	10.7
900----	30	1,024	12.7	66	186	12.6
850----	30	1,502	9.7	69	208	13.4
800----	30	2,004	7.4	66	222	14.8
750----	30	2,540	4.6	65	240	16.5
700----	30	3,093	1.6	62	246	19.8
650----	30	3,690	- 1.9	59	246	22.0
600----	30	4,320	- 5.5	52	251	22.9
550----	30	4,997	- 9.9	48	248	24.3
500----	29	5,726	-14.7	48	248	24.3
450----	29	6,522	-20.1	46	252	22.9
400----	29	7,378	-26.1	44	250	24.9
350----	29	8,330	-33.2		246	29.7
300----	29	9,395	-41.6		242	33.2
250----	29	10,606	-51.1		242	38.9
200----	27	12,033	-59.8		246	43.1
175----	27	12,863	-60.9		244	41.4
150----	27	13,823	-59.7			
125----	26	14,959	-60.8			
100----	24	16,342	-62.6			
80-----	22	17,723	-64.3			
60-----	22	19,483	-63.1			
50-----	21	20,613	-61.6			
40-----	19	22,000	-58.9			
30-----	14	23,823	-55.0			
20-----						

McGRATH, ALASKA (999 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	103	4.8	48	77	1.6
1,000--	30	92			167	.8
950----	30	505	1.5	53	97	3.9
900----	30	940	- 1.8	58	117	4.3
850----	30	1,392	- 4.9	60	143	4.5
800----	30	1,866	- 7.9	60	164	4.5
750----	30	2,369	-10.8	57	192	5.8
700----	30	2,891	-13.7	53	205	6.4
650----	30	3,457	-17.0	49	210	5.1
600----	30	4,047	-20.4	44	226	5.4
550----	30	4,688	-24.1	40	229	6.8
500----	30	5,374	-28.4		242	6.2
450----	30	6,125	-33.4		272	4.9
400----	30	6,938	-39.3		282	6.6
350----	30	7,838	-45.8		241	2.1
300----	30	8,845	-52.9		269	2.7
250----	30	10,008	-55.6		255	5.6
200----	30	11,433	-52.8		228	6.2
175----	30	12,298	-50.8		230	7.0
150----	30	13,303	-49.8		250	6.8
125----	30	14,492	-50.2		232	6.2
100----	27	15,950	-51.1		250	6.6
80-----	26	17,394	-51.9		262	6.8
60-----	26	19,253	-52.4		282	6.2
50-----	26	20,428	-53.0		278	6.6
40-----	21	21,870	-53.7		285	8.2
30-----	15	23,717	-54.1			
20-----	6	26,302	-54.9			

MEDFORD, OREG. (969 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	401	14.2	52	313	3.7
1,000--	30	133				
950----	30	569	13.4	50	310	4.9
900----	30	1,020	9.7	54	307	5.1
850----	30	1,491	5.6	61	301	4.1
800----	30	1,983	1.6	66	300	4.3
750----	30	2,505	- 1.7	63	307	5.6
700----	30	3,046	- 4.6	54	311	9.3
650----	30	3,631	- 8.1	50	314	12.0
600----	30	4,243	-11.8	44	308	14.4
550----	30	4,906	-16.0	41	309	16.7
500----	30	5,615	-20.7	40	298	17.1
450----	30	6,392	-26.3	39	291	18.3
400----	30	7,226	-32.5	36	288	20.6
350----	30	8,153	-39.8		278	15.3
300----	29	9,188	-48.2		282	16.3
250----	29	10,365	-56.1		285	21.0
200----	28	11,770	-59.6		283	21.4
175----	27	12,599	-57.3		272	15.5
150----	27	13,576	-56.1		252	16.7
125----	26	14,732	-56.5		283	15.5
100----	25	16,141	-57.5			
80-----	23	17,547	-58.3			
60-----	21	19,363	-58.1			
50-----	20	20,510	-58.0			
40-----	17	21,920	-57.2			
30-----	14	23,734	-55.6			
20-----						

MIAMI, FLA. (1019 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	4	23.4	81	107	6.0
1,000--	30	166	22.5	79	105	10.3
950----	30	610	19.4	79	105	13.8
900----	30	1,075	16.5	77	109	11.5
850----	30	1,560	13.5	73	116	7.2
800----	30	2,069	11.2	60	141	4.5
750----	30	2,608	8.8	47	160	4.1
700----	30	3,173	5.6	43	166	4.3
650----	30	3,781	2.0	38	211	3.1
600----	30	4,417	- 1.7	35	242	4.3
550----	30	5,105	- 6.2	36	249	8.2
500----	30	5,844	-10.9	33	256	11.5
450----	30	6,652	-16.5	34	266	16.9
400----	30	7,521	-22.9	34	262	21.8
350----	30	8,484	-30.1	39	268	24.7
300----	30	9,562	-38.4		272	28.9
250----	29	10,788	-48.0		269	36.9
200----	29	12,223	-57.9		273	45.6
175----	28	13,056	-60.8		273	42.3
150----	27	14,005	-62.5		271	39.6
125----	26	15,114	-66.0		278	36.7
100----	24	16,459	-69.9		293	19.6
80-----	22	17,773	-71.8		298	9.1
60-----	18	19,475	-67.1		86	4.3
50-----	18	20,586	-62.8		100	10.3
40-----	16	21,970	-58.7		97	10.7
30-----	15	23,788	-54.1		85	10.3
20-----	6	26,382	-48.4			

MIDLAND, TEX. (913 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	871	16.7	46	154	2.1
1,000--	30	81				
950----	30	529				
900----	30	991	16.7	44	156	3.5
850----	30	1,475	14.3	41	196	6.6
800----	30	1,986	12.9	33	242	8.9
750----	30	2,528	9.2	33	250	12.6
700----	30	3,092	4.8	35	254	17.9
650----	30	3,691	.1	35	255	24.9
600----	30	4,327	- 4.8	37	259	28.4
550----	30	5,005	- 9.6	32	260	29.5
500----	30	5,734	-14.6		266	30.3
450----	30	6,530	-20.6		266	32.1
400----	30	7,382	-27.2		260	32.6
350----	30	8,328	-34.8		264	31.3
300----	30	9,384	-42.8		255	29.3
250----	30	10,588	-51.7		244	33.0
200----	28	12,006	-58.8		254	37.7
175----	28	12,839	-59.6		252	42.9
150----	26	13,802	-59.1			
125----	24	14,942	-61.7			
100----	21	16,306	-63.8			
80-----	19	17,666	-65.0			
60-----	16	19,429	-63.2			
50-----	14	20,549	-61.2			
40-----	13	21,936	-57.6			
30-----	10	23,787	-53.2			
20-----	6	26,450	-48.9			

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

RAWINSONDE DATA

Average monthly values

APRIL 1957

Standard pressure surface (mb.)	MONTGOMERY, ALA. (1012 MB.)						NANTUCKET, MASS. (1018 MB.)						NASHVILLE, TENN. (998 MB.)						N.Y. INT. AP IDLEWILD (1020 MB.)						NOME, ALASKA (1009 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	61	18.0	77	174	1.6	30	14	6.3	82	256	4.9	30	177	16.6	68	193	1.2	30	5	9.4	68	290	2.1	30	7	- 1.1	81	112	5.1
1,000	30	162	19.8	61	156	3.1	30	158	8.0	72	243	7.0	30	158			319	1.4	30	166	9.5	63	275	4.5	30	78	- 1.8	79	128	5.4
950	30	605	17.4	57	162	6.0	30	584	7.9	60	276	11.8	30	599	15.3	56	189	8.7	30	596	8.9	57	285	8.2	30	486	- 3.0	70	145	9.3
900	30	1,062	14.0	61	171	6.6	30	1,027	6.3	55	287	14.4	30	1,052	12.1	60	201	11.5	30	1,037	6.6	56	277	10.9	30	912	- 4.3	67	164	8.9
850	30	1,542	11.1	61	197	8.4	30	1,494	3.7	54	290	15.5	30	1,528	8.7	64	210	12.0	30	1,505	4.3	58	273	16.1	30	1,361	- 6.4	64	177	8.9
800	30	2,046	8.5	58	217	10.9	30	1,984	.8	54	291	18.6	30	2,027	5.8	60	232	10.7	30	1,996	1.8	59	278	19.6	30	1,832	- 8.8	60	188	9.5
750	30	2,584	5.7	56	229	12.0	30	2,506	- 1.6	49	290	22.1	30	2,555	2.8	58	243	14.0	30	2,518	- .9	57	280	22.9	30	2,336	-11.3	52	181	9.3
700	30	3,139	2.8	45	242	13.6	30	3,047	- 4.6	47	290	25.4	30	3,108	- .4	62	250	15.5	30	3,062	- 3.8	60	284	25.3	30	2,856	-13.9	46	180	10.3
650	30	3,744	- .2	37	249	17.3	30	3,634	- 7.4	48	294	29.9	30	3,701	- 3.0	54	260	16.5	30	3,651	- 6.9	58	285	28.6	30	3,421	-17.0	47	187	10.1
600	30	4,372	- 3.6		252	20.0	30	4,247	-10.7	47	296	34.6	30	4,328	- 6.5	50	260	21.2	30	4,265	-10.5	53	287	32.6	30	4,011	-20.4	47	188	10.3
550	30	5,058	- 7.8		256	23.1	30	4,913	-14.2	41	297	34.4	30	5,004	-10.4	43	258	22.5	30	4,935	-14.4	44	285	34.2	30	4,653	-24.3	45	194	9.7
500	30	5,789	-12.6		261	25.3	30	5,628	-19.0	40	300	36.3	30	5,730	-15.2	36	265	25.4	30	5,646	-19.0	39	284	37.7	30	5,337	-29.1	46	189	6.8
450	30	6,594	-18.2		259	27.6	30	6,412	-24.6	41	302	38.3	30	6,524	-20.6		253	24.1	30	6,430	-24.3	37	286	42.2	30	6,086	-34.4	45	204	5.2
400	30	7,453	-24.6		259	30.1	30	7,252	-30.7	42	317	37.1	30	7,377	-27.0		258	24.7	30	7,270	-30.2		285	47.6	30	6,895	-39.8		229	6.0
350	30	8,411	-32.0		262	35.4	30	8,185	-37.9		318	43.5	30	8,324	-34.4		255	26.6	30	8,206	-37.0		284	51.3	30	7,794	-46.1		248	6.8
300	30	9,479	-40.6		261	42.7	30	9,229	-45.3				30	9,382	-42.7		251	27.0	30	9,254	-44.8		285	54.6	30	8,802	-52.3		226	6.4
250	30	10,694	-50.2		259	46.0	30	10,423	-53.1				30	10,586	-51.8		254	30.3	29	10,438	-53.0		286	60.6	30	9,968	-55.1		181	5.2
200	29	12,122	-59.7		259	53.2	30	11,840	-58.7				30	12,000	-60.2		242	24.7	29	11,856	-58.7		281	62.5	30	11,402	-50.8		195	11.5
175	28	12,952	-61.1		261	51.5	30	12,674	-60.3				30	12,827	-61.5		243	27.8	29	12,690	-60.0		280	57.7	30	12,275	-48.6		195	11.5
150	28	13,909	-60.6		265	50.7	30	13,638	-58.2				30	13,783	-60.3		260	28.7	27	13,658	-58.9		283	55.7	30	13,287	-48.8		193	11.7
125	25	15,035	-62.4		264	41.4	30	14,783	-59.0				30	14,916	-60.9		254	26.6	27	14,803	-58.7		284	47.0	30	14,482	-49.1		140	6.0
100	24	16,408	-64.8		264	33.6	30	16,179	-59.8				30	16,293	-62.9		250	21.6	25	16,190	-59.8		281	42.0	30	15,943	-49.6		212	6.4
80	21	17,759	-66.6		261	23.1	29	17,575	-60.6				29	17,664	-64.3		233	12.4	23	17,583	-61.1		289	32.2	30	17,398	-50.7		213	5.8
60	20	19,504	-65.1		259	11.3	21	19,361	-59.5				28	19,417	-63.3		206	3.7	20	19,385	-59.9		296	19.2	30	19,266	-51.4		244	6.0
50	14	20,622	-62.1		267	6.6	17	20,497	-58.4				26	20,542	-61.3		120	2.7	16	20,515	-58.6		289	9.9	30	20,446	-52.0		261	[illegible]
40	12	22,010	-58.6		202	1.7	13	21,917	-57.8				25	21,933	-58.9		86	5.2	16	21,917	-58.0		287	8.4	27	21,885	-52.8		272	4.7
30	10	23,827	-54.3				10	23,734	-55.0				21	23,765	-55.0				9	23,754	-55.6				25	23,736	-53.8		343	1.9
20													7	26,377	-52.3										10	26,354	-53.3			

Standard pressure surface (mb.)	NORFOLK, VA. (1019 MB.)						NORTH PLATTE, NEBR. (916 MB.)						OAKLAND, CALIF. (1015 MB.)						OKLAHOMA CITY, OKLA. (968 MB.)						OMAHA, NEBR. (968 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	9	15.2	72	183	3.9	30	848	6.8	76	86	3.9	30	6	14.6	63	280	8.5	30	391	12.9	83	137	3.1	30	403	8.8	68	57	4.5
1,000	30	170	15.6	64	192	8.5	30	121					30	131	14.1	62	280	9.1	30	115					30	129				
950	30	611	14.6	56	221	13.2	30	550					30	569	12.4	59	289	7.8	30	550	13.5	73	138	4.3	30	558	9.4	59	61	5.6
900	30	1,060	11.6	59	242	14.8	30	994	7.1	68	89	5.1	30	1,015	10.3	53	289	5.2	30	1,003	11.1	71	155	2.9	30	1,003	6.6	60	95	4.5
850	30	1,536	8.7	58	256	17.1	30	1,462	4.2	67	125	6.6	30	1,489	8.1	45	303	5.6	30	1,479	9.4	69	218	6.4	30	1,470	3.5	65	116	2.1
800	30	2,035	5.5	60	267	17.5	30	1,953	1.3	69	192	3.3	30	1,986	5.2	43	314	5.6	30	1,981	7.9	65	242	11.3	30	1,960	1.5	64	216	3.3
750	30	2,567	2.8	53	273	18.6	30	2,476	- .9	65	227	6.6	30	2,515	2.1	37	303	7.2	30	2,519	5.6	53	245	12.8	30	2,488	- .8	57	244	8.2
700	30	3,116	.2	45	280	19.0	30	3,019	- 3.5	58	267	10.1	30	3,064	- 1.1	31	306	8.9	30	3,072	2.2	46	251	15.9	30	3,027	- 3.4	55	255	12.4
650	30	3,712	- 3.1	42	278	22.5	30	3,604	- 7.0	57	276	15.2	30	3,653	- 4.4	31	304	11.5	30	3,670	- 1.6	42	258	19.0	30	3,615	- 6.4	53	256	13.8
600	30	4,336	- 7.0	42	276	27.6	30	4,221	-10.7	55	274	19.2	30	4,278	- 8.5		303	15.5	30	4,298	- 6.1	39	255	20.6	30	4,232	- 9.7	47	258	18.1
550	29	5,010	-11.4	40	275	31.1	30	4,885	-15.1	52	275	23.5	30	4,948	-13.0	33	299	17.7	30	4,973	-10.9	43	253	24.5	28	4,901	-14.0	45	258	24.1
500	29	5,731	-16.0	38	274	35.7	29	5,598	-19.9	52	263	26.6	30	5,667	-18.0	33	299	22.0	29	5,695	-16.0	42	253	26.0	28	5,620	-18.9	46	260	27.8
450	29	6,530	-21.3		277	40.2	29	6,379	-25.7	50	262	28.4	30	6,455	-24.1	35	299	23.1	29	6,488	-21.8	39	251	27.6	28	6,399	-24.5	41	257	30.7
400	29	7,376	-27.5		277	42.2	29	7,213	-32.1	47	258	33.2	30	7,293	-30.6		297	27.6	29	7,334	-28.2	40	248	30.3	28	7,242	-30.9	38	258	34.4
350	28	8,316	-35.0		274	45.3	29	8,140	-39.5		255	36.1	30	8,226	-38.4		298	29.5	29	8,275	-35.6		237	33.4	28	8,174	-38.3		257	39.6
300	28	9,372	-43.5		269	49.0	29	9,176	-47.4		263	32.2	30	9,267	-46.5		296	34.6	28	9,323	-43.5		235	33.4	27	9,214	-46.1		252	45.8
250	27	10,579	-52.5		270	55.0	28	10,359	-54.4		243	38.7	30	10,454	-54.8		296	37.5	28	10,525	-51.8		230	37.9	26	10,410	-53.3		245	52.6
200	27	11,995	-59.9		270	59.6	26	11,778	-57.6		244	47.8	30	11,859	-60.3		291	38.9	26	11,945	-58.7		240	47.0	26	11,825	-58.6		244	55.6
175	25	12,829	-62.0		274	57.9	26	12,621	-56.8				29	12,686	-59.2		287	40.6	25	12,772	-59.8		245	44.5	26	12,662	-58.4		248	49.3
150	22	13,799	-60.1		281	52.4	23	13,588	-55.1				28	13,655	-57.6		284	39.4	25	13,735	-58.6				24	13,623	-56.1		252	42.0
125	21	14,935	-60.2		286	41.2	22	14,753	-55.7				27	14,803	-58.6		279	34.8	25	14,879	-59.0				23	14,774	-56.8		257	34.6
100	19	16,310	-62.0		282	33.6	22	16,169	-56.5				27	16,198	-60.3		278	26.6	22	16,269	-60.1				21	16,186	-57.7		259	29.7
80	12	17,680	-62.3		272	26.4	20	17,575	-58.2				27	17,588	-60.5		280	18.1	21	17,653	-62.5				21	17,585	-59.7		260	21.0
60	6	19,431	-59.1				17	19,384	-58.9				25	19,387	-59.8		282	11.5	19	19,422	-61.5				15	19,387	-60.0		267	14.2
50	5	20,586	-58.0				15	20,532	-59.0				23	20,524	-59.4		297	6.4	19	20,554	-60.1				13	20,511	-59.3		271	9.7
40							12	21,937	-57.8				23	21,924	-57.9		303	5.4	15	21,946	-57.2				11	21,889	-58.8		286	9.3
30							7	23,785	-55.8				23	23,749	-54.7		301	5.4	15	23,780	-52.7				6	23,663	-56.8			
20													18	26,354	-50.5		269	12.8	5	26,403	-48.8									
15													13	28,232	-46.9															
10													6	30,868	-44.2															

Standard pressure surface (mb.)	PEORIA, ILL. (993 MB.)						PHOENIX, ARIZ. (970 MB.)						PITTSBURGH, PA. (978 MB.)						PORTLAND, ME. (1016 MB.)						RAPID CITY, S. DAK. (904 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	201	10.2	76	114	1.4	30	341	23.2	26	277	3.7	30	353	10.2	73	213	0.6	29	20	5.6	73	293	3.1	30	966	4.2	73	13	1.6
1,000	30	143					30	76					30	162					29	150	6.4	61	276	5.2	30	131				
950	30	577	9.3	67	160	3.7	30	526	22.7	21	273	6.6	30	592	9.7	71	237	3.1	29	574	5.3	55	291	11.5	30	557				
900	30	1,018	6.6	66	210	5.4	30	991	19.0	21	270	10.1	30	1,039	7.8	71	255	11.1	29	1,010	3.3	56	303	14.4	30	1,001			17	1.6
850	30	1,485	4.3	64	232	8.7	30	1,477	14.8	23	265	10.9	30	1,508	5.4	69	256	17.1	29	1,471	1.0	54	297	17.9	30	1,464	2.6	70	269	3.1
800	30	1,977	2.2	64	243	12.0	30	1,985	10.5	26	259	10.5	30	2,002	2.8	67	258	21.2	29	1,957	- 1.2	54	296	21.2	30	1,952	- .1	72	232	5.8
750	30	2,507	- .3	65	258	15.9	30	2,520	6.0	29	257	10.5	30	2,528	.1	67	257	24.1	29	2,477	- 3.8	49	288	22.7	30	2,475	- 3.0	71	248	7.0
700	30	3,046	- 3.0	63	259	20.0	30	3,078	1.5	31	259	11.1	30	3,072	- 3.2	67	260	26.8	29	3,012	- 6.2	47	291	26.2	30	3,010	- 6.0	64	269	10.7
650	30	3,635	- 6.2	60	257	23.1	30	3,676	- 2.5	29	262	13.4	30	3,659	- 6.4	61	265	31.1	29	3,593	- 9.2	42	286	28.4	30	3,592	- 9.5	61	275	12.6
600	30	4,252	- 9.4	57	255	27.2	30	4,300	- 6.7		268	15.5	30	4,276	-10.2	54	267	33.8	29	4,203	-12.7		284	30.7	30	4,201	-13.7	55	283	17.7
550	30	4,923	-13.4	52	259	30.5	30	4,978	-11.3		273	17.9	30	4,945	-14.2	51	268	35.7	29	4,864	-16.7		286	36.7	30	4,859	-17.6	52	280	18.5
500	30	5,637	-18.1	48	261	35.0	30	5,698	-16.4		280	22.9	30	5,659	-18.8	45	269	38.7	29	5,572	-20.9	38	284	42.3	30	5,564	-22.4	50	277	22.1
450	30	6,427	-23.4	43	264	39.2	30	6,488	-21.3		279	22.5	30	6,445	-24.2	43	271	42.3	28	6,355	-26.0	39	283	46.6	29	6,342	-28.2	51	266	22.5
400	29	7,260	-29.7	44	260	44.9	29	7,332	-29.3		286	27.0	30	7,284	-30.2	45	272	46.4	28	7,189	-31.7	39	284	53.2	29	7,166	-34.5	50	264	24.9
350	29	8,198	-36.7		257	47.8	29	8,272	-34.0		282	28.2	30	8,219	-37.3	50	271	49.5	28	8,121	-38.0		283	62.2	29	8,084	-42.0		264	26.4
300	29	9,247	-44.7		257	53.0	29	9,322	-44.3		285	38.7	30	9,263	-45.3		269	53.2	28	9,165	-45.4		284	64.5	29	9,109	-50.2		260	28.6
250	28	10,433	-53.5		256	58.9	29	10,520	-52.6		289	41.0	30	10,454	-53.7		269	53.6	28	10,361	-51.9		283	69.5	28	10,286	-56.0		249	30.1
200	28	11,845	-59.2		257	67.2	28	11,937	-58.5				29	11,867	-59.5		269	59.2	28	11,789	-56.6		282	65.3	24	11,710	-56.9		240	32.8
175	28	12,680	-59.0		260	57.3	27	12,780	-57.6				25	12,718	-60.8		263	56.1	27	12,629	-56.7		285	62.7	19	12,575	-56.3		246	33.0
150	27	13,654	-57.4		261	50.5	26	13,750	-56.9				23	13,691	-59.0		268	52.3	26	13,602	-55.2		290	53.0	13	13,560	-54.1		226	29.3
125	27	14,804	-57.7		264	44.7	26	14,900	-58.7				21	14,840	-59.8		278	43.1	26	14,763	-56.0		287	48.6	10	14,756	-54.5			
100	27	16,208	-58.6		262	36.7	26	16,290	-61.5				18	16,197	-61.2		275	36.5	26	16,179	-57.1		288	39.2						
80	27	17,604	-60.4		263	26.4	24	17,674	-62.4				13	17,572	-61.5		282	28.0	22	17,593	-57.6		292	31.3						
60	24	19,386	-60.2		261	16.3	22	19,454	-61.8				6	19,336	-60.7				19	19,397	-57.4		290	17.7						
50	23	20,526	-59.9		258	11.7	22	20,585	-60.5										17	20,543	-57.4		273	11.8						
40	23	21,922	-58.6		264	7.2	20	21,990	-57.2										16	21,946	-56.8		261	12.0						
30	21	23,739	-56.3		259	11.1	18	23,825	-53.0										9	23,761	-55.8									
20							5	26,492	-49.2																					

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

RAWINSONDE DATA

Average monthly values

ST. CLOUD, MINN.
(978 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	316	6.2	65	312	1.0
1,000	30	134				
950	30	557	7.0	57	333	2.1
900	30	998	4.1	58	287	3.3
850	30	1,461	1.1	55	289	5.4
800	30	1,946	- 1.3	49	280	7.4
750	30	2,462	- 3.[illegible]	44	277	9.5
700	30	3,000	- 6.4	41	267	10.9
650	30	3,577	- 9.9	40	258	13.6
600	30	4,188	-13.7	39	261	16.3
550	30	4,840	-17.9	35	263	19.4
500	30	5,550	-22.6		263	21.2
450	30	6,319	-27.7		262	26.6
400	30	7,152	-33.5		259	28.9
350	30	8,075	-40.2		255	31.1
300	30	9,109	-47.8		258	32.8
250	30	10,291	-54.3		258	32.8
200	30	11,710	-56.4		245	33.0
175	30	12,559	-55.3		259	27.6
150	30	13,543	-54.7		256	24.1
125	30	14,707	-55.0		259	25.3
100	30	16,127	-56.2		270	23.5
80	30	17,542	-56.9		265	20.4
60	30	19,357	-58.1		269	14.4
50	30	20,503	-58.3		268	12.0
40	27	21,911	-57.7		267	8.9
30	24	23,726	-56.3			
20	7	26,369	-55.4			

ST. PAUL IS., ALASKA
(1004 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	10	1.0	85	141	1.0
1,000	30	42			277	.2
950	30	456	- 1.1	81	197	5.1
900	30	882	- 3.2	79	210	7.2
850	30	1,333	- 5.4	74	198	6.2
800	30	1,807	- 7.6	65	194	7.0
750	30	2,310	-10.1	55	192	6.8
700	30	2,835	-12.9	46	208	5.1
650	30	3,401	-16.2	44	231	3.5
600	30	3,994	-19.7	45	221	3.9
550	30	4,637	-23.3	42	238	4.9
500	30	5,325	-28.0	42	251	6.2
450	30	6,078	-33.2	43	272	8.2
400	30	6,891	-38.9		263	5.2
350	30	7,794	-44.8		266	10.7
300	30	8,808	-51.1		250	11.1
250	30	9,983	-52.9		258	14.8
200	29	11,435	-49.8		261	16.5
175	28	12,304	-48.8		266	15.3
150	28	13,317	-46.3		255	10.9
125	28	14,516	-48.7		241	12.0
100	27	15,973	-49.2		245	8.9
80	27	17,432	-49.9		244	9.5
60	24	19,301	-50.5		236	7.4
50	22	20,485	-51.1		227	10.1
40	15	21,938	-51.5			
30	9	23,793	-52.9			
20						

SALEM, OREG.
(1010 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	61	13.4	63	291	3.3
1,000	30	144	12.1	63	283	3.9
950	30	571	9.3	67	288	5.4
900	30	1,018	5.8	70	271	5.2
850	30	1,483	2.6	70	262	6.0
800	30	1,971	- .2	62	264	6.6
750	30	2,489	- 2.8	52	272	7.8
700	30	3,029	- 6.0	54	278	9.3
650	30	3,605	- 9.4	53	278	10.7
600	30	4,220	-13.0	49	290	14.6
550	29	4,879	-17.1	49	292	18.8
500	29	5,589	-21.8	49	291	19.8
450	29	6,360	-27.3	45	291	22.9
400	29	7,194	-33.5	44	294	26.2
350	29	8,115	-40.6		294	30.1
300	29	9,145	-48.2		299	35.2
250	29	10,322	-55.5		300	35.9
200	28	11,733	-59.4		294	34.6
175	28	12,569	-57.8		291	31.3
150	28	13,542	-56.4		289	29.7
125	28	14,698	-56.1		286	25.3
100	26	16,105	-57.1		280	22.7
80	22	17,506	-57.4		273	18.6
60	20	19,319	-57.8		257	13.6
50	18	20,462	-57.5		250	12.4
40	16	21,876	-57.5		266	10.9
30	10	23,674	-57.2			
20						

SALT LAKE CITY, UTAH
(868 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	1,288	9.5	52	43	0.8
1,000	30	91				
950	30	532				
900	30	987				
850	30	1,460	9.0	46	3	1.0
800	30	1,959	5.1	48	295	1.4
750	30	2,488	.9	52	300	4.7
700	30	3,032	- 3.4	56	282	7.0
650	30	3,621	- 7.8	57	272	9.5
600	30	4,231	-11.9	56	268	10.9
550	30	4,897	-16.5	51	266	13.4
500	30	5,601	-21.5	46	267	15.7
450	30	6,380	-27.0	45	269	18.5
400	30	7,208	-33.0	46	276	20.6
350	30	8,132	-40.2		286	24.1
300	29	9,165	-48.3		272	25.8
250	28	10,340	-55.9		269	28.4
200	28	11,747	-57.6		276	29.1
175	27	12,586	-55.1		280	24.7
150	27	13,570	-54.7		272	23.9
125	27	14,731	-56.1		274	23.7
100	27	16,145	-56.9		269	20.2
80	25	17,560	-57.5		250	13.6
60	25	19,369	-59.0		276	8.0
50	23	20,508	-59.0		281	5.6
40	21	21,904	-58.2		285	5.2
30	17	23,738	-55.3		292	6.2
20						

SAN ANTONIO, TEX.
(985 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	243	19.1	77	100	5.2
1,000	30	110				
950	30	557	17.8	75	114	11.5
900	30	1,014	16.2	73	150	11.8
850	30	1,498	14.1	69	183	12.6
800	30	2,009	12.2	61	208	13.8
750	30	2,556	9.5	50	229	15.9
700	30	3,115	5.8	44	240	18.8
650	30	3,723	1.7	41	253	21.2
600	30	4,357	- 2.8	36	258	24.9
550	30	5,040	- 7.9	36	255	27.0
500	30	5,773	-13.3	36	255	29.7
450	30	6,574	-19.2	34	251	33.6
400	30	7,430	-25.5		256	31.9
350	30	8,382	-32.8		256	34.0
300	30	9,447	-41.1		254	34.6
250	29	10,663	-50.1		253	38.7
200	28	12,089	-58.5		260	43.9
175	26	12,925	-60.3		256	50.3
150	25	13,878	-61.2		263	43.5
125	24	15,000	-63.2			
100	23	16,354	-66.5			
80	20	17,690	-68.6			
60	16	19,418	-64.5			
50	13	20,538	-61.7			
40	12	21,923	-58.0			
30	8	23,747	-55.3			
20						

SAN DIEGO, CALIF.
(1000 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	124	13.7	80	292	4.5
1,000	30	124			283	5.1
950	30	560	11.9	67	300	4.1
900	30	1,007	10.7	54	298	5.4
850	30	1,483	9.3	40	288	9.7
800	30	1,983	7.1	34	287	10.7
750	30	2,523	4.2	31	287	12.0
700	30	3,070	1.1		290	14.2
650	30	3,671	- 2.3		289	17.1
600	30	4,294	- 6.2		285	21.8
550	30	4,977	-10.5		289	26.8
500	30	5,697	-15.5		282	26.6
450	30	6,493	-21.6		280	30.3
400	30	7,340	-28.1		280	35.5
350	30	8,284	-35.4		279	38.1
300	30	9,338	-43.6		281	41.6
250	30	10,537	-52.9		282	48.6
200	30	11,952	-59.5		282	56.3
175	30	12,785	-59.8		276	59.1
150	30	13,750	-59.3		276	54.4
125	29	14,885	-60.6		275	48.0
100	29	16,266	-62.4		275	36.7
80	29	17,638	-63.5		268	21.6
60	28	19,407	-62.5		268	7.8
50	26	20,538	-60.9		312	4.1
40	26	21,933	-58.3		276	3.1
30	26	23,759	-54.3		280	2.5
20	19	26,405	-48.6		290	7.6
15	7	28,297	-47.6			

SAN JUAN, P. R.
(1017 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	6	23.4	81	92	6.2
1,000	30	156	23.2	76	90	12.4
950	30	604	20.1	79	88	16.3
900	30	1,066	17.0	77	91	15.2
850	30	1,552	14.0	74	86	13.2
800	30	2,061	11.0	73	80	11.5
750	30	2,605	9.5	47	75	9.9
700	30	3,169	7.6		67	7.2
650	30	3,782	4.6		61	5.6
600	30	4,423	1.0		66	3.5
550	30	5,118	- 3.1		337	2.3
500	30	5,864	- 8.0		283	6.2
450	30	6,683	-13.7		279	10.3
400	30	7,558	-20.2		273	16.1
350	30	8,531	-27.5		276	24.9
300	30	9,619	-35.8		275	34.0
250	30	10,859	-45.3		273	43.3
200	30	12,310	-56.3		269	51.7
175	26	13,148	-62.1		272	51.5
150	23	14,083	-67.6		272	46.6
125	22	15,166	-71.6		280	36.9
100	19	16,468	-75.0		299	20.4
80	17	17,754	-75.4		329	11.3
60	15	19,451	-67.8		74	8.9
50	15	20,560	-63.1		94	9.5
40	14	21,941	-60.4		87	10.5
30	12	23,744	-56.0			
20	5	26,384	-45.4			
15						

SANTA MARIA, CALIF.
(1007 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	74	12.5	74	296	7.2
1,000	30	133	12.2	74	299	7.2
950	30	571	11.9	64	321	8.2
900	30	1,015	11.4	54	341	7.6
850	30	1,491	9.4	45	355	6.6
800	30	1,991	6.2	40	344	7.0
750	30	2,523	3.4	31	322	10.1
700	30	3,073	.3		315	13.0
650	30	3,668	- 2.8		301	14.0
600	30	4,294	- 6.9		305	15.7
550	30	4,971	-11.5		292	17.7
500	30	5,690	-16.7		291	22.5
450	30	6,480	-22.5		291	23.9
400	30	7,326	-29.2		294	28.7
350	30	8,265	-36.3		291	32.4
300	30	9,315	-44.5		280	32.8
250	30	10,511	-53.3		289	37.7
200	30	11,923	-59.9		293	35.0
175	30	12,757	-59.4		277	37.1
150	30	13,724	-58.1		284	40.8
125	30	14,869	-59.3		281	33.8
100	29	16,261	-61.3			
80	28	17,641	-62.1			
60	24	19,422	-60.9			
50	24	20,559	-59.7			
40	22	21,963	-57.7			
30	19	23,796	-54.1			
20	8	26,454	-48.6			
15						

SANTA MONICA, CALIF.
(1011 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	38	13.9	79	262	6.4
1,000	30	125	13.1	79	262	6.6
950	30	564	13.1	66	266	6.6
900	30	1,013	11.4	58	288	2.5
850	30	1,489	9.7	47	295	3.7
800	30	1,990	7.0	43	306	6.0
750	30	2,519	4.0	37	300	8.9
700	30	3,075	.6	30	298	11.1
650	30	3,667	- 3.1	28	295	15.2
600	30	4,295	- 7.1	27	297	17.9
550	30	4,970	-11.5		297	22.3
500	30	5,692	-16.8		295	25.1
450	30	6,480	-22.8	33	291	29.1
400	30	7,327	-29.3	32	293	32.8
350	30	8,265	-36.5		291	38.1
300	30	9,314	-44.5		288	40.6
250	30	10,509	-53.5		289	44.1
200	29	11,924	-59.9		287	49.9
175	29	12,757	-59.4		281	48.6
150	29	13,723	-58.6		278	45.1
125	29	14,863	-60.4		276	41.6
100	28	16,246	-62.8		279	32.8
80	25	17,615	-63.0		274	22.7
60	23	19,385	-61.5		274	10.3
50	22	20,520	-60.2		302	7.0
40	21	21,913	-58.1		295	6.4
30	20	23,743	-52.5		286	7.4
20	16	26,388	-46.8		256	15.3
15	7	28,317	-45.2			

S. STE. MARIE, MICH.
(991 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	221	2.3	84	304	2.5
1,000	30	149				
950	30	567	3.1	72	279	4.1
900	30	1,002	1.4	68	292	6.4
850	30	1,461	- .8	63	276	9.7
800	30	1,943	- 2.6	58	277	13.4
750	30	2,458	- 5.0	53	280	14.6
700	30	2,992	- 7.8	52	279	17.1
650	30	3,569	-10.7	48	278	22.0
600	30	4,176	-14.3	41	281	23.5
550	30	4,833	-18.1	35	281	27.0
500	29	5,538	-22.7		278	31.3
450	29	6,311	-28.1		275	39.8
400	28	7,130	-34.0		273	46.2
350	28	8,052	-40.6		269	52.4
300	28	9,085	-47.6		269	58.7
250	26	10,250	-53.1		271	61.0
200	25	11,665	-54.5		271	57.3
175	23	12,506	-54.3		268	45.1
150	22	13,503	-54.0		263	33.6
125	21	14,675	-54.3		267	31.9
100	20	16,098	-55.5		271	23.5
80	19	17,520	-56.5		274	16.9
60	16	19,348	-57.2			
50	16	20,499	-57.5			
40	15	21,901	-56.7			
30	14	23,718	-55.3			
20	10	26,328	-53.0			
15						

* SEATTLE, WASH.
(1003 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	124	11.6	68	264	2.9
1,000	30	145			246	3.7
950	30	573	8.7	65	240	6.2
900	30	1,017	5.5	71	225	7.4
850	30	1,482	2.3	73	226	7.2
800	30	1,968	- 1.1	75	243	7.0
750	30	2,487	- 4.1	73	253	9.1
700	30	3,022	- 7.3	61	259	10.9
650	30	3,600	-10.5	52	268	14.2
600	30	4,207	-14.4	51	278	15.9
550	30	4,865	-18.7	49	275	17.5
500	30	5,565	-23.4	48	280	20.4
450	30	6,334	-29.0	48	283	23.5
400	30	7,157	-35.2	50	283	25.1
350	30	8,073	-42.2		282	28.4
300	30	9,098	-49.7		289	30.9
250	30	10,271	-56.3		290	34.2
200	30	11,676	-58.4		290	31.5
175	30	12,519	-56.5		291	28.6
150	29	13,504	-55.3		291	24.7
125	28	14,668	-56.0		289	22.1
100	28	16,084	-56.7		282	18.1
80	28	17,498	-56.6		279	14.8
60	27	19,319	-56.6		268	12.0
50	26	20,469	-56.8		272	10.5
40	23	21,864	-57.5		266	10.1
30	21	23,675	-56.7		268	12.8
20	20	26,242	-55.2		271	14.8
15	15	28,066	-52.8		268	19.2
10	11	30,671	-48.7		272	29.3

SHREVEPORT, LA.
(1006 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	76	17.4	78	151	4.1
1,000	30	127			151	4.7
950	30	568	16.0	69	171	11.7
900	30	1,023	13.5	67	183	14.0
850	30	1,503	11.4	63	206	14.4
800	30	2,009	9.3	60	232	15.3
750	30	2,547	6.4	56	240	17.9
700	30	3,104	3.3	49	239	21.2
650	30	3,708	- .4	47	243	22.9
600	29	4,336	- 4.8	47	249	26.6
550	29	5,017	- 9.3	42	252	28.4
500	29	5,745	-14.2	38	249	31.5
450	29	6,546	-19.7	41	253	34.6
400	29	7,399	-25.8	36	252	36.3
350	29	8,352	-32.8		250	40.4
300	28	9,414	-41.4		250	45.5
250	28	10,624	-51.1		249	47.4
200	28	12,043	-60.6		249	53.2
175	28	12,869	-62.2		251	56.3
150	28	13,825	-61.0		256	56.9
125	28	14,952	-63.1		257	48.4
100	27	16,309	-65.5		255	38.5
80	25	17,664	-65.9		256	24.9
60	24	19,408	-65.1		239	11.8
50	22	20,516	-62.4		250	8.4
40	20	21,900	-58.9		250	7.8
30	19	23,723	-54.9		236	7.2
20						
15						
10						

** SPOKANE, WASH.
(930 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	722	10.3	55	221	3.3
1,000	30	114				
950	30	547				
900	30	996	8.6	52	223	6.8
850	30	1,465	4.8	58	242	7.4
800	30	1,956	.8	64	257	9.1
750	30	2,476	- 3.4	72	265	6.5
700	30	3,012	- 7.3	72	273	8.5
650	30	3,594	-10.9	65	293	9.9
600	30	4,196	-14.7	56	289	12.8
550	29	4,853	-19.2	52	286	14.0
500	29	5,552	-24.0	46	285	15.7
450	28	6,322	-29.5	46	296	19.0
400	28	7,142	-35.5	48	299	24.7
350	28	8,056	-42.5		298	22.3
300	28	9,079	-49.9		296	25.8
250	27	10,257	-56.2		299	29.7
200	27	11,664	-57.6		296	25.8
175	27	12,509	-55.9		290	21.6
150	27	13,491	-54.4		286	21.4
125	27	14,658	-54.8		279	18.3
100	27	16,079	-55.9		277	17.5
80	24	17,504	-56.0		273	13.8
60	24	19,331	-56.4		255	11.3
50	24	20,486	-56.6		248	9.7
40	24	21,897	-57.1		261	6.8
30	23	23,724	-55.9		276	8.9
20	21	26,307	-54.1		295	9.3
15	17	28,163	-52.4		281	10.7
10	15	30,817	-48.0		274	18.8

TAMPA, FLA.
(1019 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	7	21.2	77	81	6.4
1,000	30	170	20.5	74	97	9.5
950	30	618	18.4	73	118	12.2
900	30	1,075	15.9	69	127	9.7
850	30	1,559	13.2	67	151	7.0
800	30	2,066	10.6	59	185	3.9
750	30	2,610	8.4	46	222	5.4
700	30	3,169	5.0	43	244	5.1
650	29	3,779	1.4	40	227	6.8
600	29	4,411	- 2.3	37	238	8.4
550	29	5,096	- 6.7	35	254	11.8
500	28	5,834	-11.5	34	260	14.2
450	28	6,644	-17.2		261	18.5
400	28	7,506	-23.4		265	20.6
350	27	8,467	-30.8		267	25.1
300	26	9,542	-39.3		269	31.7
250	25	10,765	-48.9		272	41.0
200	24	12,196	-58.3		277	37.5
175	24	13,032	-60.5		282	34.0
150	24	13,990	-61.4		279	28.9
125	21	15,121	-64.1		279	30.7
100	20	16,477	-67.1		292	21.0
80	19	17,816	-68.9		302	8.0
60	19	19,548	-64.8		97	6.0
50	19	20,669	-60.9		73	8.4
40	19	22,068	-57.2		89	6.8
30	16	23,904	-52.7			
20	8	26,542	-46.8			
15						
10						

TATOOSH ISLAND, WASH.
(1013 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	31	8.5	84	246	5.2
1,000	30	140	7.5	82	258	4.7
950	30	560	5.3	77	232	7.4
900	30	1,000	2.9	73	236	7.6
850	30	1,461	.5	71	260	8.2
800	30	1,945	- 1.9	63	259	8.0
750	30	2,458	- 4.8	62	266	10.1
700	30	2,995	- 7.9	59	269	11.8
650	30	3,569	-11.2	57	275	15.7
600	30	4,177	-15.0	55	276	17.5
550	30	4,827	-19.0	53	279	22.0
500	29	5,534	-23.7	56	283	25.6
450	29	6,296	-28.9	55	284	28.2
400	29	7,127	-35.2	51	285	30.3
350	29	8,041	-41.9		284	33.2
300	29	9,068	-49.1		286	34.0
250	29	10,248	-56.0		281	36.3
200	29	11,655	-58.3		282	33.8
175	29	12,497	-56.7		281	28.6
150	28	13,469	-54.8		279	25.6
125	28	14,634	-55.3		278	20.6
100	27	16,057	-56.3		281	18.3
80	26	17,474	-56.5		275	14.2
60	25	19,300	-57.0		279	10.7
50	24	20,455	-57.1		269	9.1
40	21	21,876	-57.0		264	7.4
30	16	23,711	-57.2		267	8.0
20						
15						
10						

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

* 7 mb., 5 obs., 33,043 m., -43.4°C.

** 7 mb., 11 obs., 33,134 m., -45.7°C.

RAWINSONDE DATA

Average monthly values

Standard pressure surface (mb.)	TOPEKA, KANS. (984 MB.)				Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	30	270	11.4	76	98	3.7
1,000	30	129				
950	30	558	10.2	73	130	5.6
900	30	1,007	7.7	75	153	6.8
850	30	1,477	5.9	75	200	8.2
800	30	1,972	3.8	71	228	11.1
750	30	2,501	1.7	66	239	14.0
700	30	3,048	- 1.0	60	245	17.3
650	30	3,639	- 4.7	60	251	19.4
600	30	4,261	- 8.7	53	254	22.9
550	30	4,930	-13.0	47	257	24.5
500	30	5,650	-17.7	41	259	28.6
450	30	6,435	-23.4	39	260	32.2
400	30	7,278	-30.1	38	257	35.7
350	30	8,214	-37.2		253	45.5
300	30	9,262	-44.9		248	48.8
250	30	10,458	-53.2		245	56.5
200	29	11,872	-60.0		243	58.7
175	29	12,706	-59.3		248	53.6
150	27	13,677	-57.7		251	44.7
125	27	14,826	-58.0		251	38.7
100	26	16,222	-59.9		257	31.3
80	23	17,608	-60.7		261	23.5
60	19	19,394	-61.1		264	15.0
50	17	20,534	-60.4		261	11.7
40	16	21,934	-58.7		277	8.7
30	8	23,720	-55.4			
20						

Standard pressure surface (mb.)	TUCSON, ARIZ. (922 MB.)				Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	30	781	21.6	20	305	4.9
1,000	30	68				
950	30	518				
900	30	990	20.2	20	296	9.7
850	30	1,478	15.8	23	281	12.2
800	30	1,988	11.2	28	265	12.6
750	30	2,525	6.4	34	249	12.4
700	30	3,082	1.6	39	239	13.2
650	30	3,679	- 2.2	33	247	14.8
600	30	4,306	- 5.9	29	259	19.4
550	30	4,982	-10.8		264	22.5
500	30	5,706	-15.7		266	26.8
450	30	6,497	-21.7		269	29.9
400	30	7,347	-28.0		268	35.2
350	30	8,291	-35.3		272	42.2
300	29	9,343	-43.7		273	44.7
250	29	10,543	-52.2		274	47.6
200	29	11,962	-58.8		272	54.0
175	29	12,800	-58.2		271	56.3
150	27	13,779	-57.7		268	51.3
125	26	14,922	-59.8		270	45.5
100	26	16,305	-62.9		268	37.7
80	26	17,675	-63.7		257	22.1
60	25	19,444	-62.6		256	4.7
50	23	20,576	-60.4		317	1.0
40	21	21,970	-58.0		255	1.0
30	16	23,805	-52.8		257	4.5
20	6	26,413	-47.7			

Standard pressure surface (mb.)	WASHINGTON, D. C. (1010 MB.)				Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	30	88	13.4	63	146	1.4
1,000	30	169	13.7	56	153	1.9
950	30	601	12.6	57	235	9.7
900	30	1,053	10.1	61	250	16.3
850	30	1,526	7.2	62	257	19.6
800	30	2,022	4.0	64	265	19.4
750	30	2,550	1.3	66	272	21.4
700	30	3,097	- 1.7	64	275	20.6
650	30	3,689	- 5.0	57	281	23.5
600	30	4,308	- 8.5	54	279	27.4
550	30	4,980	-12.6	48	280	32.2
500	30	5,699	-17.1	44	280	34.0
450	30	6,491	-22.5	39	277	34.8
400	30	7,336	-28.4	39	278	39.2
350	30	8,277	-35.6		282	41.6
300	30	9,329	-43.9		281	45.1
250	30	10,527	-52.8		284	50.5
200	30	11,940	-59.4		285	42.2
175	30	12,770	-61.1		286	41.4
150	30	13,730	-59.3		293	42.3
125	30	14,868	-59.8		294	35.2
100	29	16,254	-60.9		301	29.1
80	28	17,640	-61.8		302	22.5
60	28	19,419	-61.0		323	11.1
50	26	20,554	-59.9		323	7.0
40	25	21,948	-58.2		348	3.3
30	25	23,766	-55.3		303	5.4
20	8	26,320	-53.1			

Standard pressure surface (mb.)	WINNEMUCCA, NEV. (867 MB.)				Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	29	1,310	11.1	41	312	3.5
1,000	29	96				
950	29	537				
900	29	993				
850	29	1,472	10.0	40	313	5.2
800	29	1,972	6.0	41	304	9.1
750	29	2,506	1.5	47	297	9.1
700	29	3,048	- 3.2	54	291	7.8
650	29	3,634	- 7.7	59	293	10.3
600	29	4,247	-12.0	58	293	12.0
550	29	4,908	-16.1	49	299	17.9
500	29	5,618	-21.1	47	293	18.5
450	29	6,399	-26.6	44	291	19.4
400	29	7,227	-32.7	40	289	20.8
350	29	8,152	-40.2		296	24.5
300	27	9,193	-48.0		303	30.3
250	27	10,372	-55.4		301	32.1
200	25	11,778	-58.3		297	27.4
175	25	12,619	-57.2		291	28.9
150	25	13,596	-55.9		290	27.8
125	25	14,755	-56.0		283	23.1
100	24	16,167	-58.1		283	17.3
80	22	17,577	-58.6		275	14.2
60	22	19,383	-58.7		270	10.5
50	22	20,528	-58.6		292	8.4
40	20	21,926	-58.1		287	7.8
30	16	23,735	-56.7		280	10.7
20	5	26,333	-53.3			

Standard pressure surface (mb.)	YAKUTAT, ALASKA (1012 MB.)				Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	30	12	5.7	71	124	3.9
1,000	30	112	4.8	67	119	4.5
950	30	533	1.6	68	130	7.0
900	30	961	- 1.6	71	122	8.4
850	30	1,414	- 4.6	72	121	6.2
800	30	1,888	- 7.7	69	132	6.2
750	30	2,395	-10.7	62	138	5.2
700	30	2,915	-13.7	58	142	3.1
650	30	3,484	-17.3	54	166	1.7
600	30	4,070	-21.2	51	145	2.5
550	30	4,714	-25.4	48	300	.6
500	30	5,392	-29.8	46	283	3.3
450	30	6,143	-34.8	42	297	6.8
400	30	6,948	-40.3		291	6.8
350	30	7,845	-46.4		303	8.7
300	29	8,854	-51.1		305	9.5
250	29	10,032	-52.6		269	11.8
200	27	11,468	-50.9		251	12.6
175	27	12,338	-49.8		267	11.5
150	27	13,344	-50.2		271	11.1
125	25	14,528	-51.1		275	10.5
100	25	15,974	-52.0		274	8.9
80	24	17,410	-53.0		284	8.5
60	23	19,260	-53.7		257	7.8
50	19	20,445	-53.9		290	8.4
40	19	21,874	-54.1		286	6.0
30	12	23,733	-53.6			
20						

Standard pressure surface (mb.)	YUMA, ARIZ. (997 MB.)				Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	29	105	24.8	23	262	5.2
1,000	29	76				
950	29	522	21.7	24	267	7.8
900	29	988	17.8	26	260	8.7
850	29	1,473	13.7	29	268	8.9
800	29	1,979	9.5	30	276	10.5
750	29	2,513	5.3	31	284	12.2
700	29	3,070	1.8	30	293	13.6
650	29	3,665	- 1.9		292	14.0
600	29	4,295	- 6.2		288	17.9
550	29	4,970	-11.0		287	20.0
500	29	5,694	-16.2		280	22.9
450	29	6,481	-22.0		284	23.7
400	29	7,335	-28.5		288	30.3
350	26	8,269	-36.3		286	32.4
300	25	9,330	-44.3		288	40.0
250	21	10,525	-52.9		285	49.0
200	19	11,927	-58.6		282	58.1
175	18	12,761	-58.4		277	58.9
150	16	13,737	-58.5		278	52.6
125	14	14,878	-59.1		271	58.7
100	9	16,254	-60.5			
80	5	17,633	-60.1			
60	5	19,431	-59.3			

Note: All observations scheduled at 0300, G.C.T. except at Mazatlan, Merida and Veracruz, where they are taken near 0200, G.C.T. "Number of observations" refers to those of dynamic height only. Temperature, humidity or wind data may be missing for one or more pressure surfaces of some observations. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Relative humidity data are not published for standard pressure surfaces having less than 16 actual observations.

Relative humidity data beginning with October 1, 1948, were computed and expressed in these tables on the basis of vapor-pressure over water. Upper air values of relative humidity at levels with temperatures less than 0°C, have formerly been computed and expressed on the basis of the vapor-pressure over ice. All relative humidity observations are obtained by electric hygrometer and have been adjusted to compensate for the value occurring below the operating range of the humidity element.

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

SOLAR RADIATION DATA

Solar radiation intensities, tabulated in langleys per minute on a surface normal to the direction of the sun. APRIL 1957

Date	Sun's zenith distance								
	A. M.				0.0°	P. M.			
	78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°
	TUCSON, ARIZ.								
	Air mass								
	4.56	3.65	2.74	1.83	0.91	1.83	2.74	3.65	4.56
Apr.									
1	0.85	0.95	1.16	1.26	----	----	----	----	----
5	----	----	----	----	----	1.31	1.16	1.05	0.93
6	----	----	----	----	1.48	1.28	1.08	.90	.71
7	.93	.97	1.16	1.31	----	----	----	----	----
10	.84	.95	1.07	1.25	1.48	1.31	1.17	1.00	.88
11	----	----	----	1.25	1.49	1.27	1.13	1.03	.94
12	----	----	1.12	1.30	1.48	1.32	1.15	1.00	.92
15	.78	.90	1.03	1.18	1.38	1.13	.94	.82	.68
16	.75	.88	1.02	1.18	1.42	1.20	1.01	.87	.70
17	----	----	----	----	1.49	1.23	1.08	.90	.77
18	.89	.98	1.11	1.20	1.45	1.23	----	----	----
23	.87	.96	1.08	1.26	1.46	1.22	1.04	.91	.79
24	.81	.92	1.04	1.21	1.43	1.21	1.05	.92	.81
Averages	.84	.94	1.09	1.24	1.46	1.25	1.08	.94	.81
	ALBUQUERQUE, N. MEX.								
	Air mass								
	4.19	3.35	2.51	1.67	0.84	1.67	2.51	3.35	4.19
Apr.									
5	0.89	1.03	1.10	1.21	1.35	1.23	1.07	0.96	0.88
7	.74	.85	.97	1.14	----	----	----	----	----
8	.83	.92	1.01	----	----	----	----	----	----
10	----	.92	1.02	1.16	1.30	----	----	----	----
16	D.61	D.73	D.88	D1.05	D1.21	D1.03	D.86	D.67	D.59
18	----	.88	.99	1.14	----	----	----	----	----
19	----	----	1.03	1.19	1.31	----	----	----	----
24	.66	.79	.90	1.04	----	----	----	----	----
25	.71	.79	.93	1.07	1.17	----	----	----	----
27	----	----	----	----	1.23	----	----	----	----
30	.64	.73	.83	.98	1.19	1.01	.85	.72	.61
Averages	.73	.84	.97	1.11	1.26	1.09	.96	.82	.69
	WASHINGTON, D. C. (WBCO)								
	Air mass								
	5.00	4.00	3.00	2.00	1.00	2.00	3.00	4.00	5.00
	Instrument inoperable during April 1957								

S slight haze - indeterminable
M moderate haze - indeterminable
H haze
MH moderate haze
IH intense haze
D dust

Date	Sun's zenith distance								
	A. M.				0.0°	P. M.			
	78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°
	BLUE HILL, MASS.								
	Air mass								
	4.86	3.89	2.92	1.94	Noon	1.94	2.92	3.89	4.86
Apr.									
1	0.77	0.89	1.02	1.18	1.25	----	----	----	----
2	----	----	----	----	1.42	1.23	----	----	----
8	----	----	----	----	1.45	1.23	1.05	0.93	0.82
9	----	----	----	1.22	1.37	----	----	----	----
12	----	----	----	----	H1.15	----	----	----	----
14	----	----	----	1.23	----	----	----	----	----
15	----	----	----	----	1.45	1.24	1.08	.96	.85
16	.93	1.02	1.14	1.27	1.35	----	----	----	----
22	.85	.95	1.07	1.22	1.39	----	----	----	----
24	.63	.70	.85	1.03	----	1.00	.87	.72	.61
25	----	----	----	----	----	MH .93	MH .71	MH .57	MH .48
29	----	----	----	----	1.30	----	S .82	S .67	S .59
30	.82	.93	----	1.20	1.39	1.20	1.04	.90	.80
Averages	.80	.90	1.02	1.19	1.35	1.14	.93	.79	.69
	TABLE MOUNTAIN, CALIF.								
	Air mass								
	3.85	3.08	2.31	1.54	0.77	1.54	2.31	3.08	3.85
Apr.									
5	----	----	----	MH1.40	----	----	----	----	----
10	----	----	----	MH1.49	----	----	----	----	----
11	----	----	----	IH1.42	----	----	----	----	----
19	----	----	----	IH1.38	----	----	----	----	----
Averages	----	----	----	1.42	----	----	----	----	----
	MADISON, WIS.								
	Air mass								
	4.84	3.87	2.90	1.94	0.97	1.94	2.90	3.87	4.84
Apr.									
29	M0.70	M0.89	M0.97	M1.16	K1.37	Ci Clouds			
30	M .74	M .87	M .98	M1.15	S1.33	Ci Clouds			
11-22	Instrument inoperable								
Averages	.72	.88	.98	1.16	1.35	----	----	----	----
	TAGUAC, GUAM, M. I.								
	Air mass								
Apr.									
5	----	----	----	----	M1.34	----	----	----	----
17	S0.67	S0.76	----	----	----	----	----	----	----
26	----	----	----	----	----	M1.20	M1.01	M0.86	M0.82

Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station listed in Table 30 appears in Monthly Weather Review, Volume 75, No. 3, March 1947, p. 47.

SOLAR RADIATION DATA

APRIL 1957

Daily totals and average daily totals by weeks of solar and sky radiation, plus the radiation reflected from the ground, as received on a vertical surface facing south at Blue Hill, Mass. during the month

								Avg								Avg								Avg
Date------------	2	3	4	5	6	7	8		9	10	11	12	13	14	15		16	17	18	19	20	21	22	
Langleys--------	27	457	238	16	68	143	68	145	213	432	354	367	206	257	414	320	385	157	340	263	281	242	374	292
Date------------	23	24	25	26	27	28	29		30	1	2	3	4	5	6									
Langleys--------	317	287	147	142	313	181	323	244	342	317	347	230	299	295	242	295								

Daily totals and average daily totals by weeks of diffuse (sky) radiation as received on a horizontal surface at Blue Hill, Mass. during the month

								Avg								Avg								Avg
Date------------	2	3	4	5	6	7	8		9	10	11	12	13	14	15		16	17	18	19	20	21	22	
Langleys--------	62	94	255	39	133	220	115	131	245	99	145	137	190	199	87	157	140	217	225	245	267	246	106	206
Date------------	23	24	25	26	27	28	29		30	1	2	3	4	5	6									
Langleys--------	184	211	275	218	187	241	150	210	97	188	118	309	170	178	162	175								

Note. **Langley** is the unit used to denote one gram calorie per square centimeter

NET RADIATION

Net radiation in langleys per day (midnight to midnight) at Raleigh, N. C., during the month

APRIL 1957

Date.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**Avg.**
Langleys. . .	*70	266	252	121	*56	*284	273	*54	305	272	297	207	*36	297	298	264	220	194	225	321	330	*261	*368	317	332	**	369	360	*341	288		252

* Estimated values owing to occurrence of rain during period. While rain is falling, radiation is assumed to be zero.

** Radiometer inoperative

The measurement is made with a Beckman and Whitley net exchange radiometer over a plot of Bermuda grass. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the North Carolina State College at Raleigh. The instrument with which they were measured has not been checked by the Weather Bureau.

SOLAR RADIATION DATA

Daily totals and weekly averages of solar radiation (direct and diffuse) received on a horizontal surface, tabulated in langleys.

	Aklavik, MacKenzie	Albuquerque, N. Mex.	Annette, Alaska	Apalachicola, Fla.	Astoria, Oreg.	Atlanta, Ga.	Barrow, Alaska	Bethel, Alaska	Bismarck, N. Dak.	Blue Hill, Mass.	Boston, Mass.	Brownsville, Tex.	Canton Island Pacific Area	Cape Hatteras, N.C.	Caribou, Me.	Charleston, S. C.	Cleveland, Ohio	Columbia, Mo.	Davis, Calif.	Dodge City, Kans.	E. Lansing, Mich.	Edmonton, Alberta	El Paso, Tex.	Ely, Nev.	Fairbanks, Alaska	Ft. Worth, Tex.	Fresno, Calif.	Gainesville, Fla.	Glasgow, Mont.	Grand Junction,Colo	Grand Lake, Colo.	Great Falls, Mont.	Greensboro, N. C.	Griffin, Ga.	Indianapolis, Ind.	Inyokern, Calif.	Ithaca, N. Y.	Lake Charles, La.	Lander, Wyo.
1957																																							
Apr. 2------	264	517	239	612	142	590	335	478	550	83	96	614	680	526	161	626	154	86	589	14	457	362	264	323	188	(164)	617	336	343	183	384	595	515	599	67	626	33	337	461
Apr. 3------	292	447	176	611	175	580	348	472	180	613	606	479	674	646	564	556	186	43	581	89	270	445	479	372	350	(272)	588	610	301	316	448	520	463	612	26	724	534	160	421
Apr. 4------	255	505	398	318	129	60	347	326	232	411	357	631	638	426	631	389	99	137	602	355	30	454	622	346	374	(359)	595	583	460	459	542	400	64	162	283	732	47	570	703
Apr. 5------	373	692	436	416	237	560	---	164	264	55	29	641	618	259	213	137	140	184	548	665	69	300	705	446	334	668	563	137	307	480	234	181	167	533	152	670	45	690	705
Apr. 6------	399	420	181	713	594	714	364	457	307	170	127	582	663	(615)	124	687	75	534	619	493	102	393	729	384	243	(636)	(642)	652	432	272	279	313	587	678	244	727	297	600	402
Apr. 7------	401	552	232	662	482	636	351	184	517	288	412	295	614	622	202	672	119	62	612	72	172	271	632	693	335	(397)	621	520	411	271	331	490	601	644	118	---	291	293	738
Apr. 8------	410	581	236	279	575	214	301	202	388	136	110	150	679	459	622	---	114	395	574	697	213	369	723	524	---	(654)	583	435	402	573	688	312	114	282	---	---	49	168	642
Average-------	342	531	271	516	334	479	341	326	348	251	248	484	652	(508)	360	511	127	206	589	341	188	371	593	441	304	(450)	(601)	468	379	365	415	402	359	501	148	696	185	145	582
Apr. 9------	419	498	530	719	511	668	392	267	544	367	332	501	679	688	123	---	802	536	597	646	298	303	679	570	308	(599)	633	574	418	584	669	507	653	692	551	752	583	676	649
Apr. 10------	384	710	370	498	178	689	339	86	556	658	632	430	682	681	447	---	699	604	609	660	562	376	710	567	421	620	626	488	535	626	582	282	633	676	428	758	349	183	539
Apr. 11------	430	666	562	102	294	334	376	398	590	548	534	304	583	621	625	---	223	307	477	84	431	499	688	559	152	478	595	122	571	506	377	479	561	306	469	738	270	565	541
Apr. 12------	351	660	458	504	222	506	275	277	663	566	520	284	662	(205)	496	---	475	556	506	278	282	525	693	600	388	106	660	418	648	607	415	384	580	554	504	735	175	524	530
Apr. 13------	392	656	419	684	337	617	434	492	654	374	328	110	624	41	603	362	391	---	393	(668)	324	469	727	696	370	135	632	596	622	636	563	626	425	516	549	711	456	542	702
Apr. 14------	198	551	541	589	120	610	---	320	622	438	463	80	664	530	341	411	389	665	631	681	390	483	671	463	244	512	383	586	448	375	613	267	658	621	585	768	318	530	589
Apr. 15------	416	663	269	695	522	714	438	478	562	680	644	186	568	727	677	685	710	246	580	658	640	401	735	548	431	213	628	674	465	573	319	550	663	681	---	743	673	629	678
Average-------	370	629	450	542	312	591	376	331	599	519	493	271	637	(499)	473	---	527	486	542	(525)	418	437	701	572	331	(380)	594	494	529	558	505	442	596	578	514	744	403	521	604
Apr. 16------	458	720	388	690	514	648	355	342	305	641	594	336	513	709	616	665	136	---	253	(283)	120	530	716	624	464	114	463	561	301	574	660	607	429	622	---	813	371	50	694
Apr. 17------	454	685	530	365	311	207	312	200	192	295	244	368	614	544	364	293	104	---	168	133	169	510	743	426	479	303	165	562	559	652	691	603	477	336	77	539	142	---	530
Apr. 18------	442	687	453	647	304	272	266	264	215	554	556	461	619	591	663	178	247	346	501	466	137	498	716	371	485	281	555	628	200	296	576	542	419	288	283	843	396	590	439
Apr. 19------	500	760	450	676	405	574	237	449	52	436	527	471	640	606	619	647	630	462	525	452	443	521	801	482	473	393	476	194	117	496	318	451	381	408	477	732	383	502	502
Apr. 20------	464	734	562	671	652	473	306	379	562	516	489	373	538	609	51	658	438	219	470	444	367	267	769	335	497	316	223	558	645	451	474	615	618	483	447	447	474	520	519
Apr. 21------	533	715	314	---	332	476	540	556	463	453	499	460	657	673	366	614	602	121	578	422	583	367	709	416	507	(99)	274	560	499	491	630	403	611	579	414	701	568	233	602
Apr. 22------	510	---	344	679	499	373	552	601	333	691	667	652	649	604	668	533	383	471	488	(240)	331	506	623	191	448	354	293	580	565	468	565	631	541	343	367	---	650	560	109
Average-------	480	717	435	621	431	432	367	398	303	512	511	446	604	619	478	513	363	324	426	(349)	307	457	725	406	479	(266)	350	520	412	490	559	550	497	437	344	715	426	409	485
Apr. 23------	---	471	460	700	303	599	496	257	357	559	539	649	498	676	491	(667)	399	317	623	626	389	203	755	720	522	332	524	430	120	158	330	324	406	552	424	---	485	557	158
Apr. 24------	---	723	99	712	488	571	533	294	486	555	601	575	583	681	707	686	487	599	641	693	309	192	764	(517)	459	74	625	564	534	600	635	587	628	680	448	---	562	529	722
Apr. 25------	---	752	195	708	200	684	538	315	546	312	233	469	611	(725)	135	657	570	698	661	650	371	(512)	823	695	509	446	617	532	309	448	361	351	654	647	502	---	353	567	448
Apr. 26------	---	695	77	722	368	660	436	391	584	306	234	464	---	(732)	233	624	538	339	654	698	551	563	810	657	458	126	609	580	581	617	630	420	645	601	490	---	645	460	651
Apr. 27------	---	722	366	687	566	633	366	447	609	549	516	310	580	758	233	665	588	187	656	(613)	132	375	744	742	437	391	---	558	678	362	446	701	663	636	409	---	527	399	695
Apr. 28------	---	645	522	681	666	667	422	432	690	357	399	479	504	774	342	618	363	74	675	444	297	588	402	748	306	(199)	621	605	594	596	792	707	659	679	328	---	254	431	767
Apr. 29------	---	663	665	621	658	523	404	621	690	632	622	429	645	628	452	594	781	377	644	221	701	625	695	499	299	285	580	398	675	458	693	713	506	583	620	528	731	228	752
Average-------	---	667	340	690	464	620	456	394	566	467	449	482	570	(711)	370	(644)	532	370	651	(564)	393	(437)	713	(654)	427	(265)	596	524	499	463	555	543	595	626	460	---	508	453	599
Apr. 30------	---	745	433	311	416	597	375	631	515	707	707	708	613	754	515	655	783	657	606	199	713	604	819	557	528	295	617	189	526	559	772	395	582	548	---	803	728	177	600
May 1------	---	754	178	651	139	313	496	530	636	615	630	709	610	743	337	287	755	613	404	218	639	570	729	735	575	379	580	177	459	648	603	522	622	221	694	819	707	175	679
May 2------	---	693	533	708	277	201	593	661	509	749	729	317	455	---	221	250	760	317	521	218	628	313	648	748	355	336	648	714	677	699	667	592	501	318	695	858	770	465	707
May 3------	---	753	119	639	597	208	421	686	361	520	449	688	615	617	337	130	668	638	727	57	467	577	753	794	240	354	641	488	677	668	514	524	245	256	745	841	374	413	683
May 4------	---	762	528	526	697	193	405	573	741	621	644	692	451	64	704	58	552	750	699	469	632	555	728	708	485	303	649	595	660	738	437	617	583	156	387	862	473	608	516
May 5------	---	690	692	662	644	599	504	---	735	595	600	600	271	751	724	631	812	727	691	642	721	627	655	765	283	718	647	221	705	614	362	734	622	616	756	843	730	636	589
May 6------	---	---	713	746	654	741	439	282	619	557	539	132	574	815	611	627	793	731	655	678	702	605	338	795	---	697	631	638	706	615	449	531	679	750	754	680	724	676	685
Average-------	---	733	457	606	489	407	462	560	588	623	614	549	513	624	493	377	732	633	615	354	643	550	667	729	411	440	630	432	630	649	543	559	548	409	672	815	644	450	637

Note.--Langley is the unit used to denote one gram calorie per square centimeter.
Values in parentheses are interpolated.

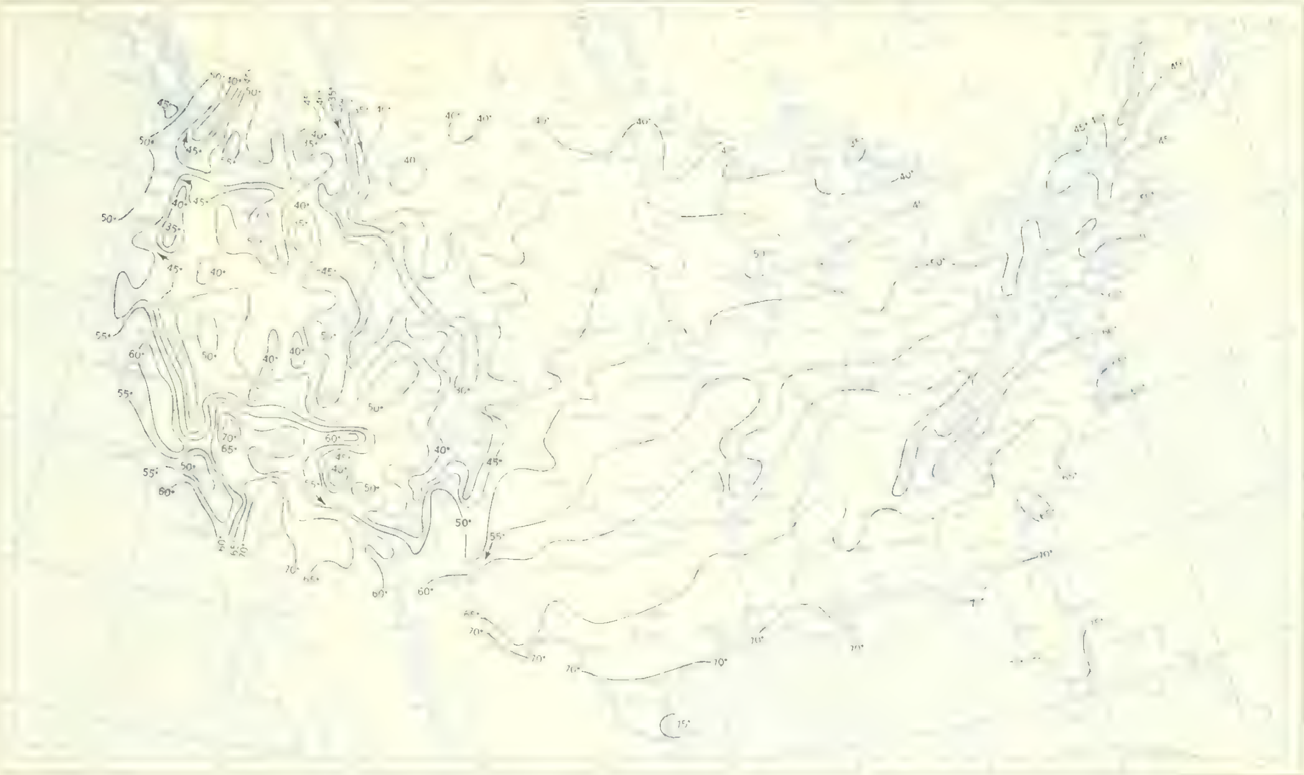
SOLAR RADIATION DATA

Daily totals and weekly averages of solar radiation (direct and diffuse) received on a horizontal surface, tabulated in langleys.

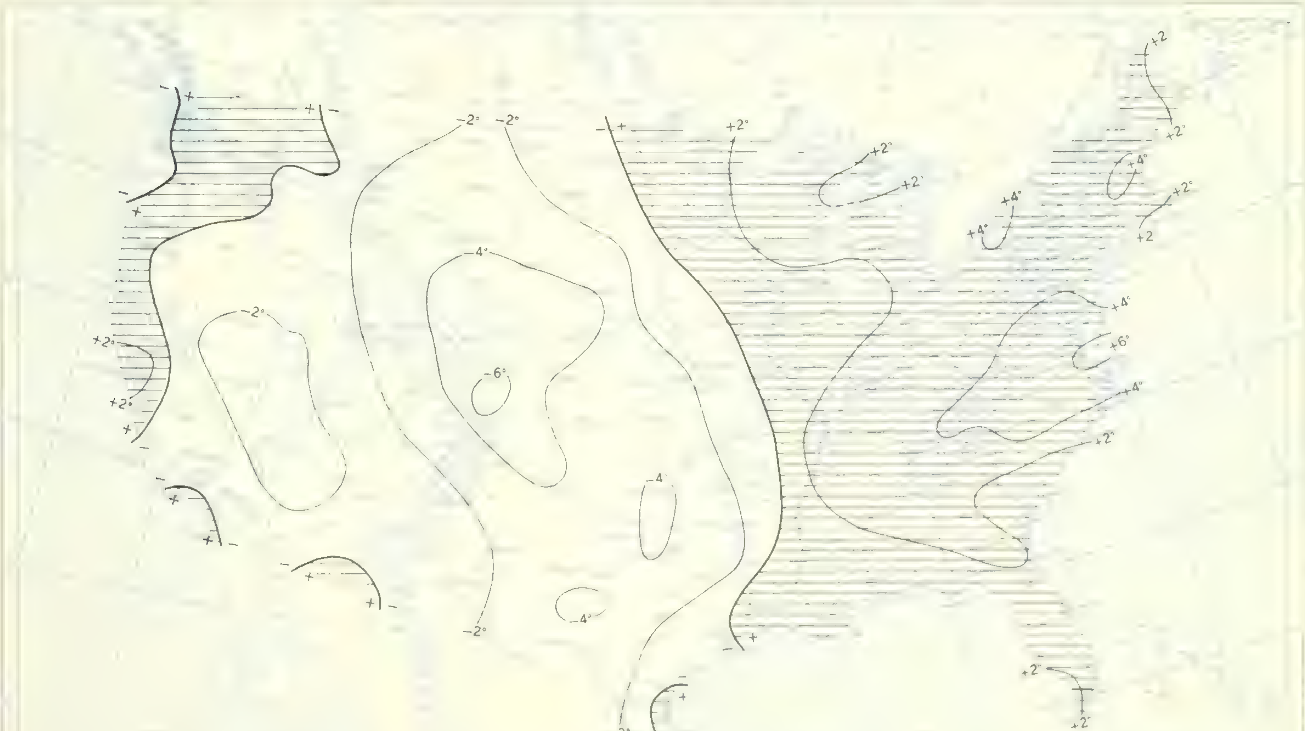
	Las Vegas, Nev.	Little Rock, Ark.	Los Angeles, Calif (urban)	Los Angeles, Calif.	Madison, Wis.	Matanuska, Alaska	Miami, Fla.	Medford, Oreg.	Midland, Tex.	Nashville, Tenn.	Newport, R. I.	New York, N. Y.	Oak Ridge, Tenn.	Oklahoma City, Okla.	Ottawa, Ontario	Phoenix, Ariz.	Portland, Me.	Prosser 4 NE, Wash.	Rapid City, S. Dak.	Riverside, Calif.	St. Cloud, Minn.	San Antonio, Tex.	Santa Maria, Calif.	S. Ste Marie, Mich	Sayville, N. Y	Schenectady, N Y	Seabrook, N. J.	Seattle, Wash (U. of W.)	Seattle-Tacoma, Wash.	Spokane, Wash.	State College, Pa.	Stillwater, Okla.	Tampa, Fla.	Toronto, Ontario	Tucson, Ariz.	Upton, N. Y.	Wake Island Pacific Area	Washington, D. C (Silver Hill Obs.)	Winnipeg, Manitoba
1957																																							
Apr. 2------	310	555	617	614	510	376	480	477	---	396	91	133	521	153	453	524	69	349	329	653	571	406	665	561	101	64	233	90	96	365	156	275	644	496	547	---	635	363	542
Apr. 3------	601	17	596	607	279	376	645	480	--	325	591	537	521	109	564	618	700	404	363	662	589	558	643	579	614	516	544	87	214	373	419	106	648	502	---	626	559	533	287
Apr. 4------	595	530	582	596	35	454	401	487	---	172	285	41	24	334	390	635	539	231	508	660	78	667	(660)	165	78	198	59	54	47	193	88	---	552	61	692	113	666	19	260
Apr. 5------	549	388	584	535	65	---	578	284	---	353	36	31	383	657	34	648	55	331	655	633	240	670	647	74	48	57	106	50	146	358	61	---	497	39	681	50	691	106	367
Apr. 6------	611	610	157	141	440	308	590	537	---	572	233	229	666	487	135	658	---	495	312	342	611	590	646	266	261	131	195	216	225	325	329	600	696	120	683	213	692	245	248
Apr. 7------	640	153	569	593	409	---	566	502	---	474	419	521	604	229	303	666	---	596	615	686	639	389	618	562	554	155	535	416	453	450	411	144	580	276	694	495	668	572	611
Apr. 8------	611	309	569	545	300	---	543	565	---	---	181	88	148	641	487	639	243	612	672	597	585	644	649	523	137	105	152	515	547	421	33	688	427	275	---	146	690	121	356
Average------	560	366	525	519	291	379	543	476	---	382	262	226	410	373	338	627	321	431	493	605	473	561	(647)	390	256	175	261	210	247	358	214	363	578	253	659	274	657	284	361
Apr. 9------	673	596	628	622	601	467	516	537	---	558	297	435	670	660	505	592	315	547	511	596	675	597	659	432	473	443	584	476	547	589	621	646	331	624	641	192	369	626	596
Apr. 10------	701	567	302	394	410	473	(329)	251	---	561	637	462	569	507	---	670	682	457	(423)	452	---	339	599	632	551	435	516	118	200	626	512	578	250	512	703	607	703	630	461
Apr. 11------	682	584	233	452	(439)	420	588	370	---	382	641	554	458	352	---	658	594	280	(662)	410	628	237	655	280	666	214	611	204	(274)	372	500	617	216	206	706	669	658	651	496
Apr. 12------	534	127	492	585	(610)	445	444	516	---	278	616	415	604	160	277	675	423	305	750	546	511	383	678	524	615	224	526	174	195	405	232	234	589	384	713	632	485	483	436
Apr. 13------	704	649	592	570	365	473	528	211	---	580	338	447	667	576	450	670	380	557	340	606	383	232	662	573	492	453	435	475	497	393	415	674	638	371	712	457	674	541	212
Apr. 14------	652	671	533	476	662	375	581	410	---	577	475	538	666	686	562	588	476	285	509	554	624	142	372	672	617	354	551	---	326	225	279	700	---	544	600	621	491	640	609
Apr. 15------	659	295	526	537	302	359	552	411	---	607	679	686	706	206	590	655	682	656	643	589	171	54	696	544	719	545	635	---	541	452	673	159	-	614	710	733	591	656	156
Average------	658	499	472	519	(484)	430	(505)	337	---	506	526	505	620	449	475	644	507	441	(548)	536	499	284	617	523	590	381	551	289	(369)	437	462	515	405	465	684	602	567	601	427
Apr. 16------	717	75	444	624	356	310	507	374	---	134	660	501	221	130	393	680	666	490	720	673	531	223	646	47	648	408	595	---	519	576	298	160	---	204	720	623	718	437	330
Apr. 17------	598	312	257	305	441	366	571	400	649	140	188	104	298	434	302	682	951	183	172	545	74	380	215	131	119	119	192	--	516	345	95	167	--	353	702	157	--	235	420
Apr. 18------	534	389	495	539	414	403	196	151	138	412	462	127	320	---	359	678	365	555	112	297	318	491	684	334	193	432	179	169	228	478	93	418	---	300	725	240	707	420	174
Apr. 19------	746	525	241	527	270	479	458	366	657	542	581	332	555	404	563	689	482	661	390	448	187	262	424	144	612	436	342	336	350	546	180	413	---	310	663	602	578	342	467
Apr 20------	504	363	189	155	570	380	521	693	477	375	384	323	571	232	257	659	536	515	(709)	180	163	475	417	357	248	376	321	590	601	647	424	401	---	458	747	353	704	427	(520)
Apr. 21------	197	398	669	611	533	368	521	440	613	414	440	118	434	314	464	231	533	588	(484)	495	657	262	242	607	467	502	552	203	304	581	441	361	---	620	516	469	622	561	(458)
Apr. 22------	420	296	147	224	139	488	568	620	451	428	685	649	414	397	624	297	702	675	(312)	148	630	414	303	513	735	545	633	471	436	659	199	383	---	629	494	732	---	521	529
Average------	531	337	354	427	389	399	478	435	548	349	486	351	402	319	423	559	605	524	(414)	398	366	358	419	305	432	403	402	354	422	547	290	329	---	411	653	454	666	420	(414)
Apr 23------	719	175	215	402	423	391	537	576	660	554	518	325	154	547	582	700	638	691	(535)	228	381	363	545	434	286	443	288	200	431	467	502	512	---	227	753	244	663	440	520
Apr 24------	695	381	511	599	477	195	531	580	704	556	369	474	601	638	---	699	669	580	(671)	661	505	232	--	68	524	362	369	417	544	419	442	701	---	413	751	560	692	479	266
Apr. 25------	735	224	660	640	299	272	513	451	494	440	548	132	634	582	---	698	97	629	(453)	659	584	293	718	121	315	78	75	180	200	378	334	567	---	407	690	371	726	270	497
Apr. 26------	719	335	649	596	332	---	558	558	465	545	282	457	647	267	343	695	124	678	(418)	694	488	289	710	319	489	414	389	404	469	639	475	260	---	583	731	497	715	446	292
Apr. 27------	738	102	672	609	482	---	508	640	349	463	411	450	649	382	252	717	399	685	(670)	708	636	152	714	408	556	456	581	465	541	650	532	386	---	484	746	590	418	636	434
Apr. 28------	771	304	689	662	630	---	468	650	214	484	563	435	659	165	518	738	467	673	(738)	756	626	261	(739)	674	492	343	506	629	649	674	624	307	---	347	739	437	686	574	535
Apr. 29------	679	545	611	624	693	---	262	617	272	514	536	573	468	111	252	693	672	680	(780)	717	672	440	496	597	590	558	478	625	645	670	722	171	--	653	610	589	676	592	657
Average------	722	295	572	590	477	---	482	582	451	508	461	406	587	385	373	706	438	659	(609)	632	556	290	(654)	374	465	379	384	417	497	557	519	415	---	445	717	470	654	491	457
Apr. 30------	746	528	579	---	678	497	388	475	416	569	719	730	658	---	(620)	715	695	630	619	546	633	644	523	691	776	592	680	624	651	570	735	---	---	678	665	754	697	692	595
May 1------	737	325	613	646	659	541	252	220	---	373	676	688	630	66	585	713	612	506	(765)	604	349	544	609	686	726	564	673	161	191	586	711	355	---	671	657	729	736	695	344
May 2------	773	468	574	652	542	523	605	481	---	339	740	733	491	258	640	730	742	399	(712)	535	356	717	769	702	790	547	683	258	339	296	751	305	706	709	736	761	739	696	358
May 3------	771	483	696	673	735	420	291	685	649	593	610	759	502	258	220	750	451	712	(555)	743	610	574	762	522	754	361	691	586	684	441	757	---	616	475	765	772	721	736	689
May 4------	783	726	674	622	743	442	255	666	384	637	633	347	729	449	666	741	624	519	128	725	736	268	749	745	393	486	489	662	680	500	374	---	607	653	747	486	753	695	721
May 5------	773	728	525	363	754	513	416	---	635	600	644	552	668	769	674	588	739	435	(448)	510	698	669	433	636	748	600	400	591	670	612	564	786	238	701	426	741	679	519	672
May 6------	660	719	541	525	715	---	417	605	613	623	611	500	739	---	526	500	703	627	526	586	689	536	599	782	385	566	539	675	641	353	715	781	---	663	416	476	712	573	693
Average------	749	568	600	580	689	63[illegible]	375	522	539	533	662	616	631	360	(562)	677	652	504	(536)	607	581	565	635	680	653	531	594	508	551	480	658	557	542	650	630	674	720	658	582

Note.--Langley is the unit used to denote one gram calorie per square centimeter.
Values in parentheses are interpolated.

Chart I. A. Average Temperature (°F.) at Surface, April 1957.

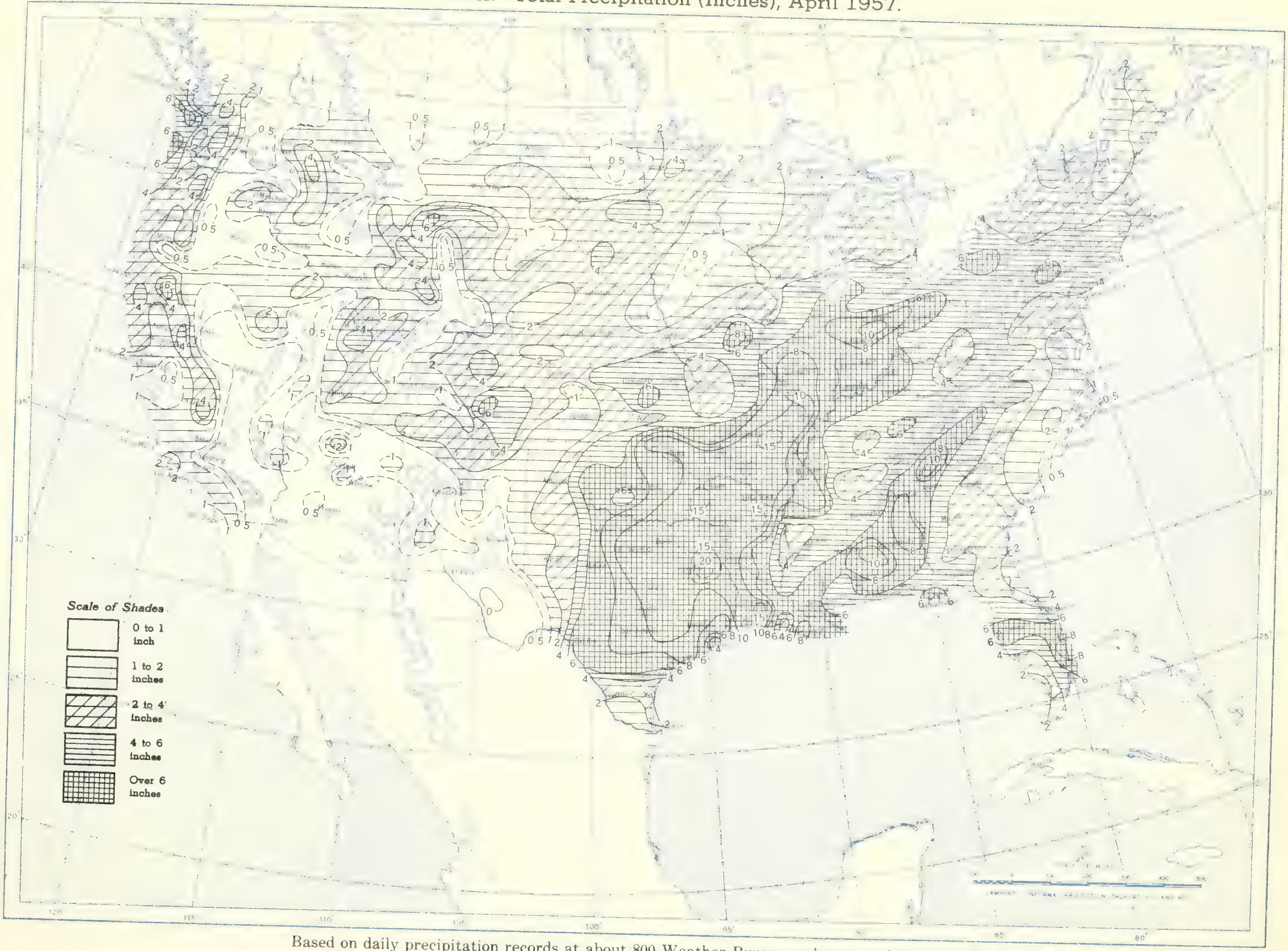


B. Departure of Average Temperature from Normal (°F.), April 1957.



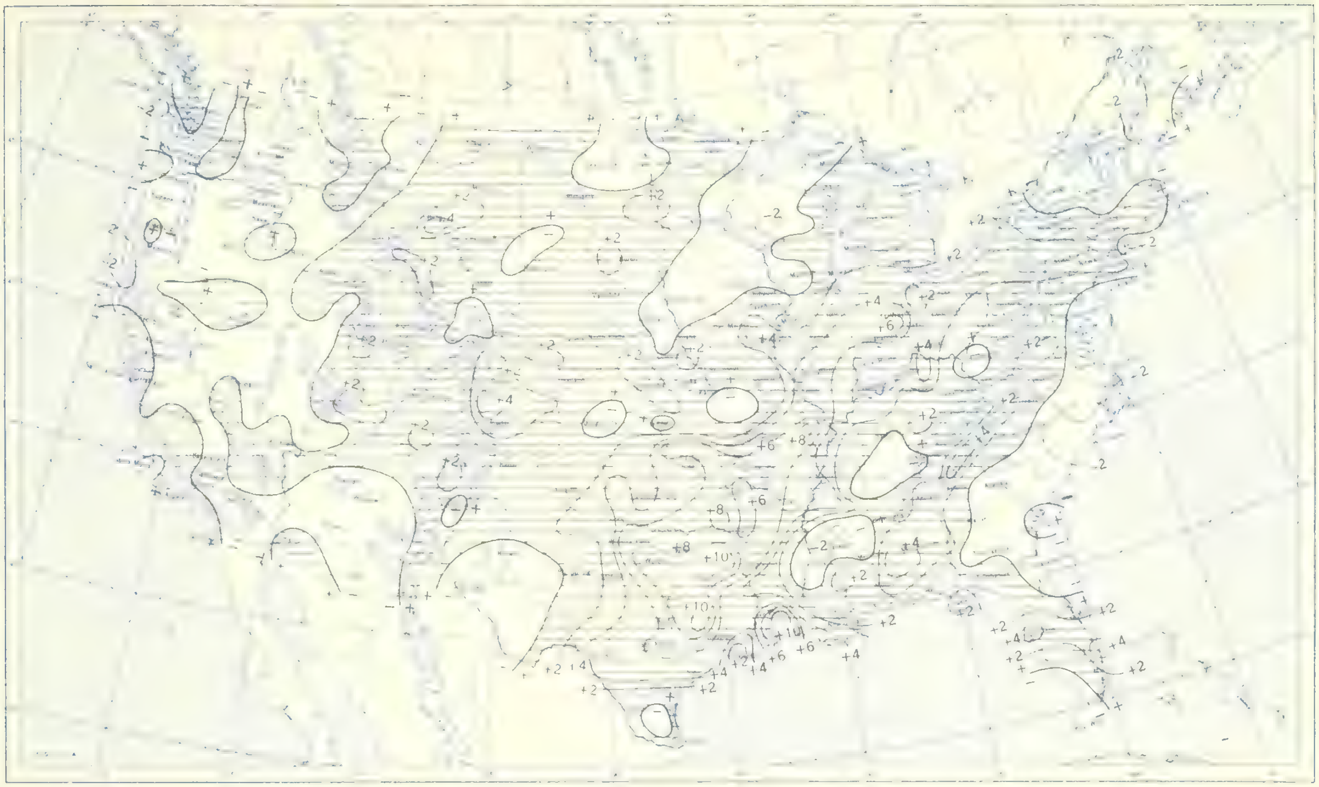
A. Based on reports from over 900 Weather Bureau and cooperative stations. The monthly average is half the sum of the monthly average maximum and monthly average minimum, which are the average of the daily maxima and daily minima, respectively.
B. Departures from normal are based on the 30-yr. normals (1921-50) for Weather Bureau stations and on means of 25 years or more (mostly 1931-55) for cooperative stations.

Chart II. Total Precipitation (Inches), April 1957.

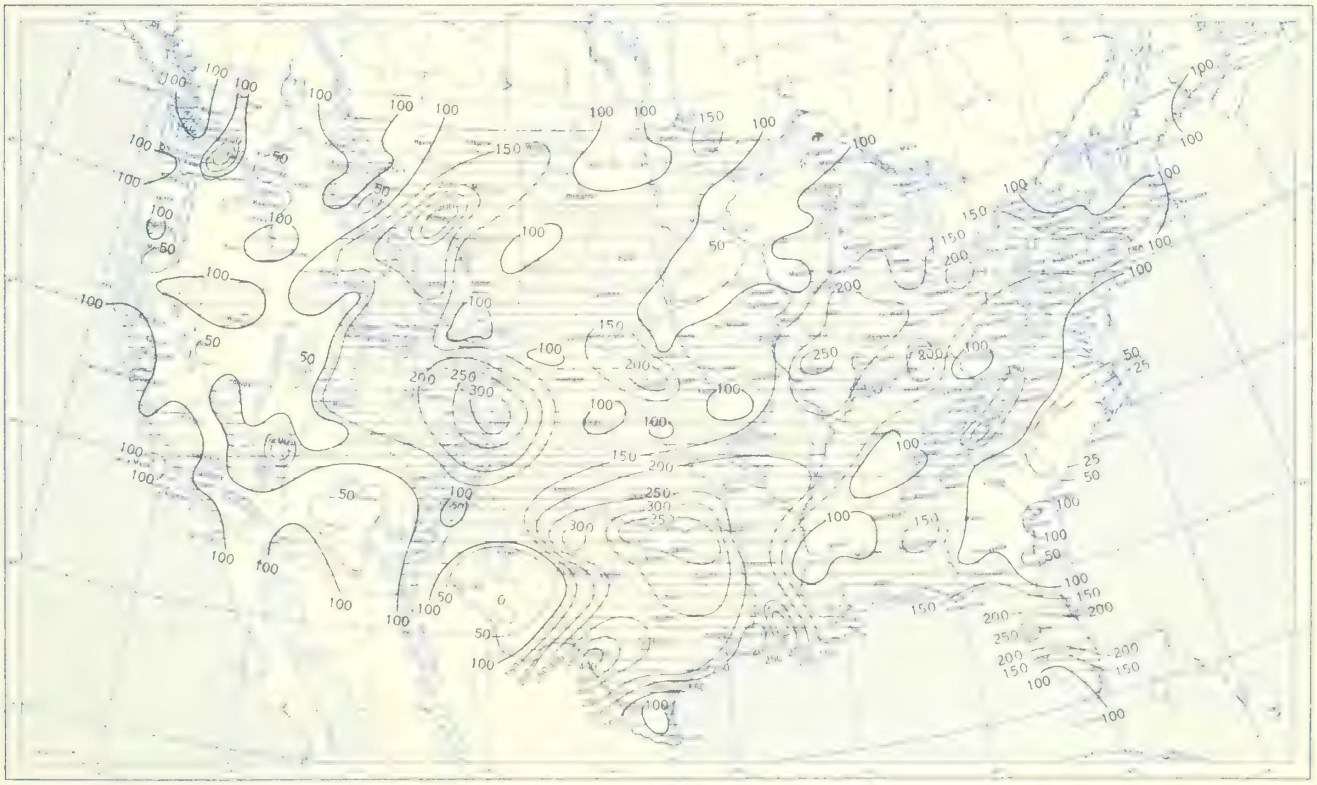


Based on daily precipitation records at about 800 Weather Bureau and cooperative stations

Chart III. A. Departure of Precipitation from Normal (Inches), April 1957.

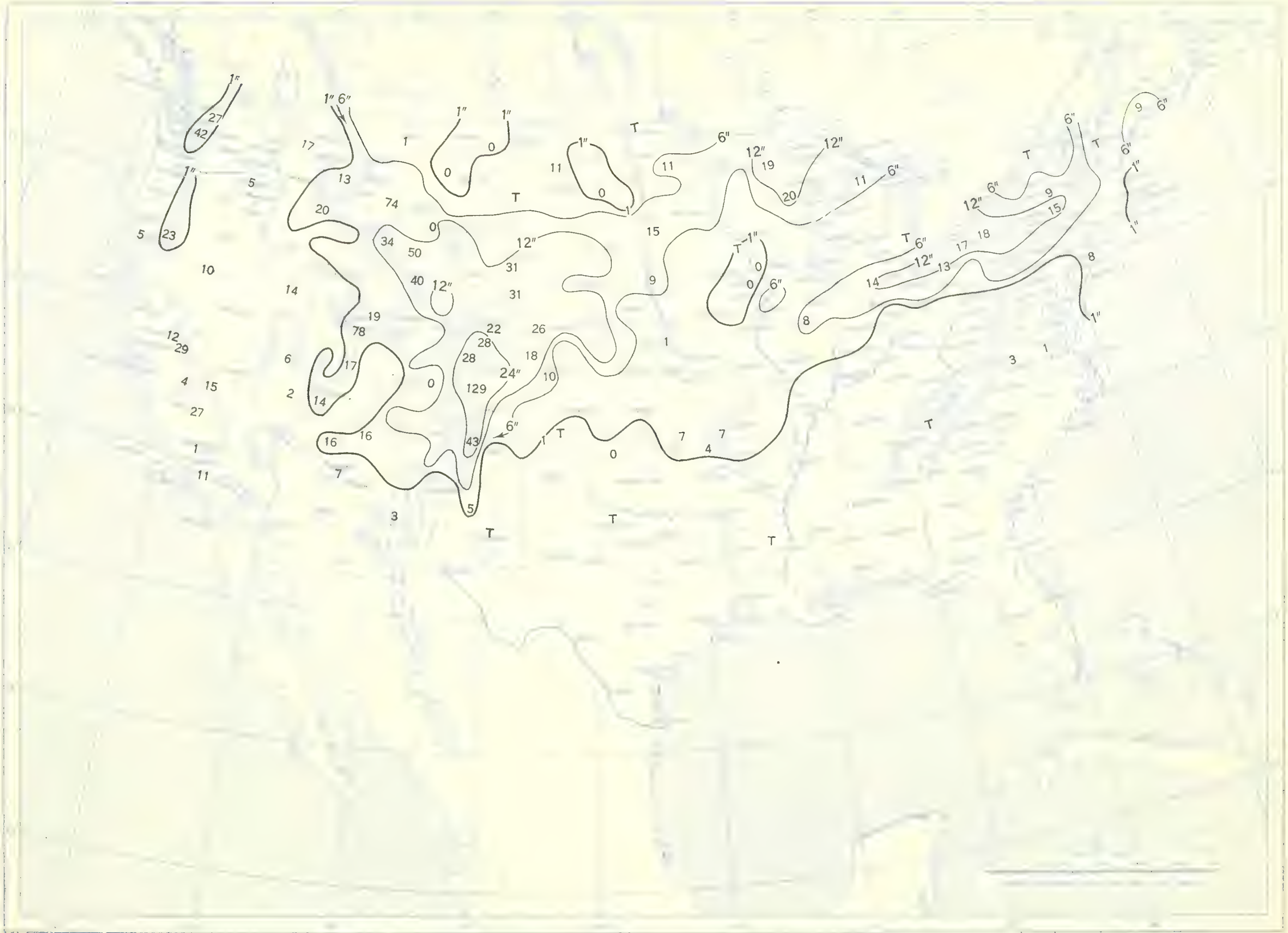


B. Percentage of Normal Precipitation, April 1957.



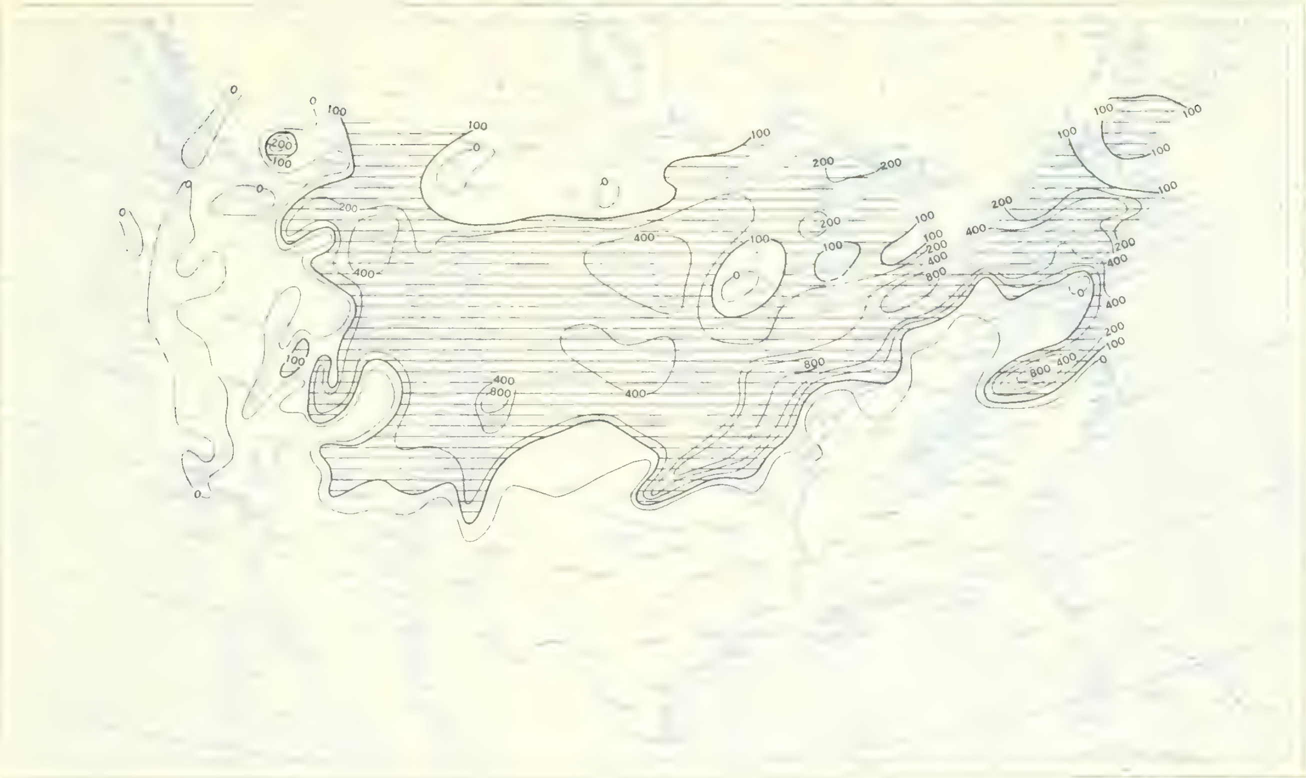
Normal monthly precipitation amounts are computed from the records for 1921-50 for Weather Bureau stations and from records of 25 years or more (mostly 1931-55) for cooperative stations.

Chart IV. Total Snowfall (Inches), April 1957.



This is the total of unmelted snowfall recorded during the month at Weather Bureau and cooperative stations. This chart and Chart V are published only for the months of November through April although of course there is some snow at higher elevations, particularly in the far West, earlier and later in the year.

Chart V. A. Percentage of Normal Snowfall, April 1957.

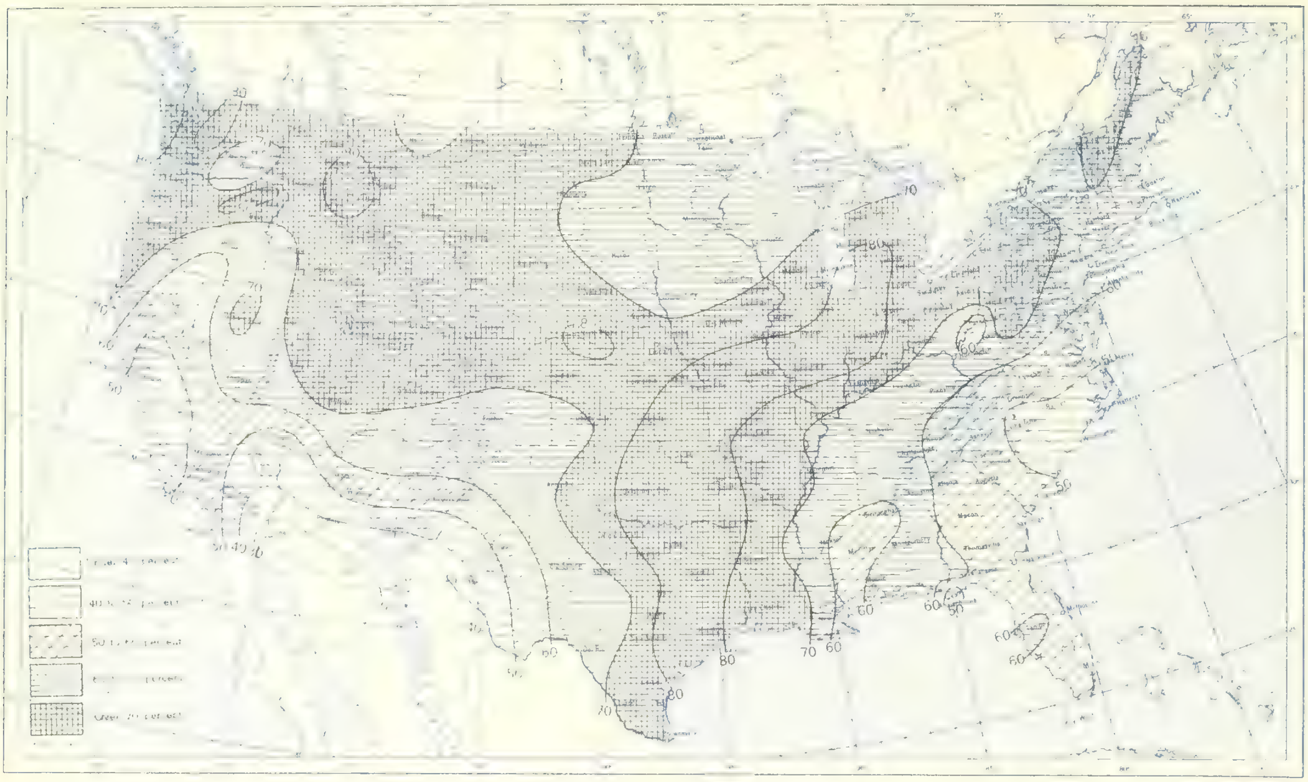


B. Depth of Snow on Ground (Inches). 7:30 a. m. E. S. T., April 29, 1957.

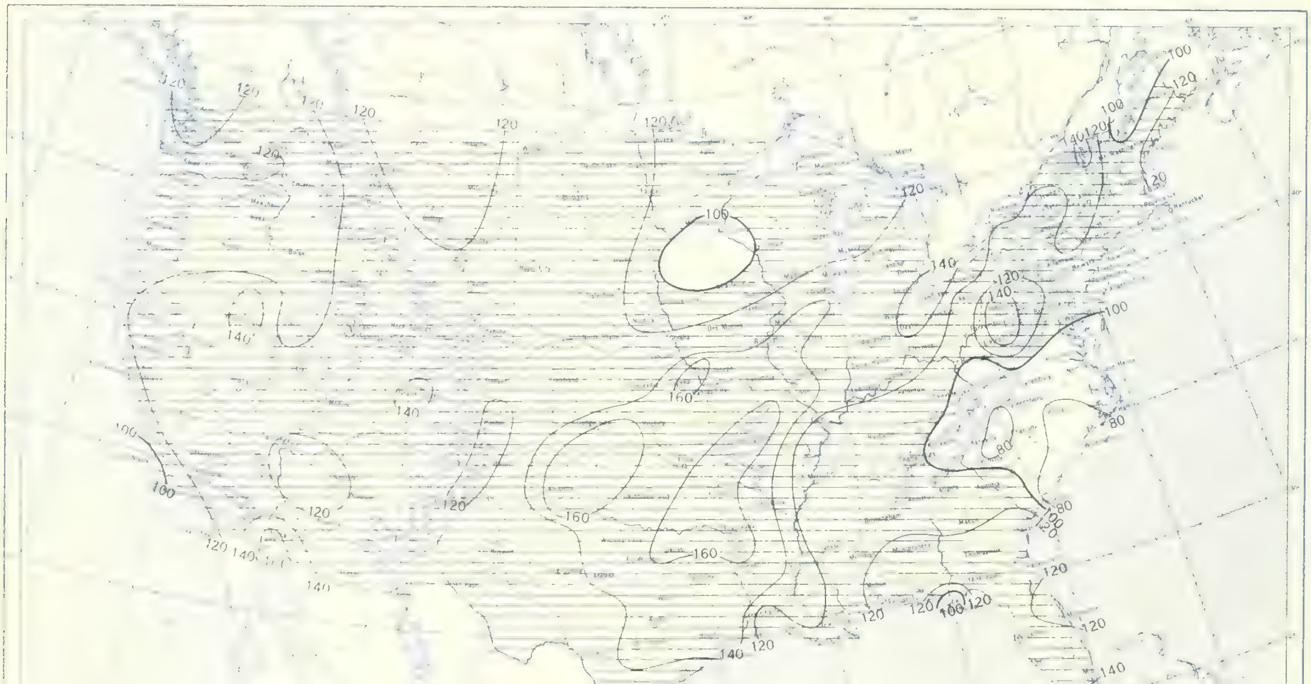
DISCONTINUED UNTIL NOVEMBER

A. Amount of normal monthly snowfall is computed for Weather Bureau stations having at least 10 years of record.
B. Shows depth currently on ground at 7:30 a. m. E. S. T., of the Monday nearest the end of the month. It is based on reports from Weather Bureau and cooperative stations. Dashed line shows greatest southern extent of snowcover during month.

Chart VI. A. Percentage of Sky Cover Between Sunrise and Sunset, April 1957.

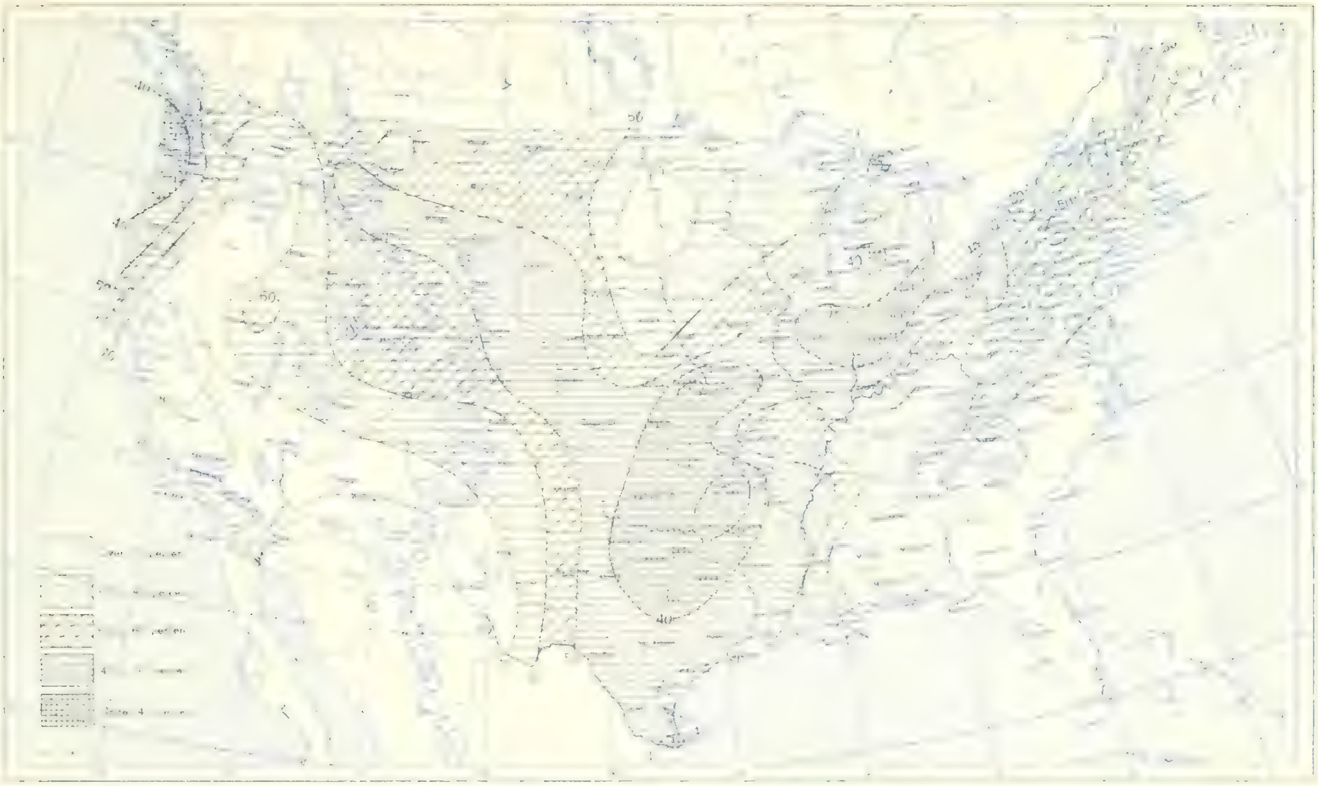


B. Percentage of Normal Sky Cover Between Sunrise and Sunset, April 1957.

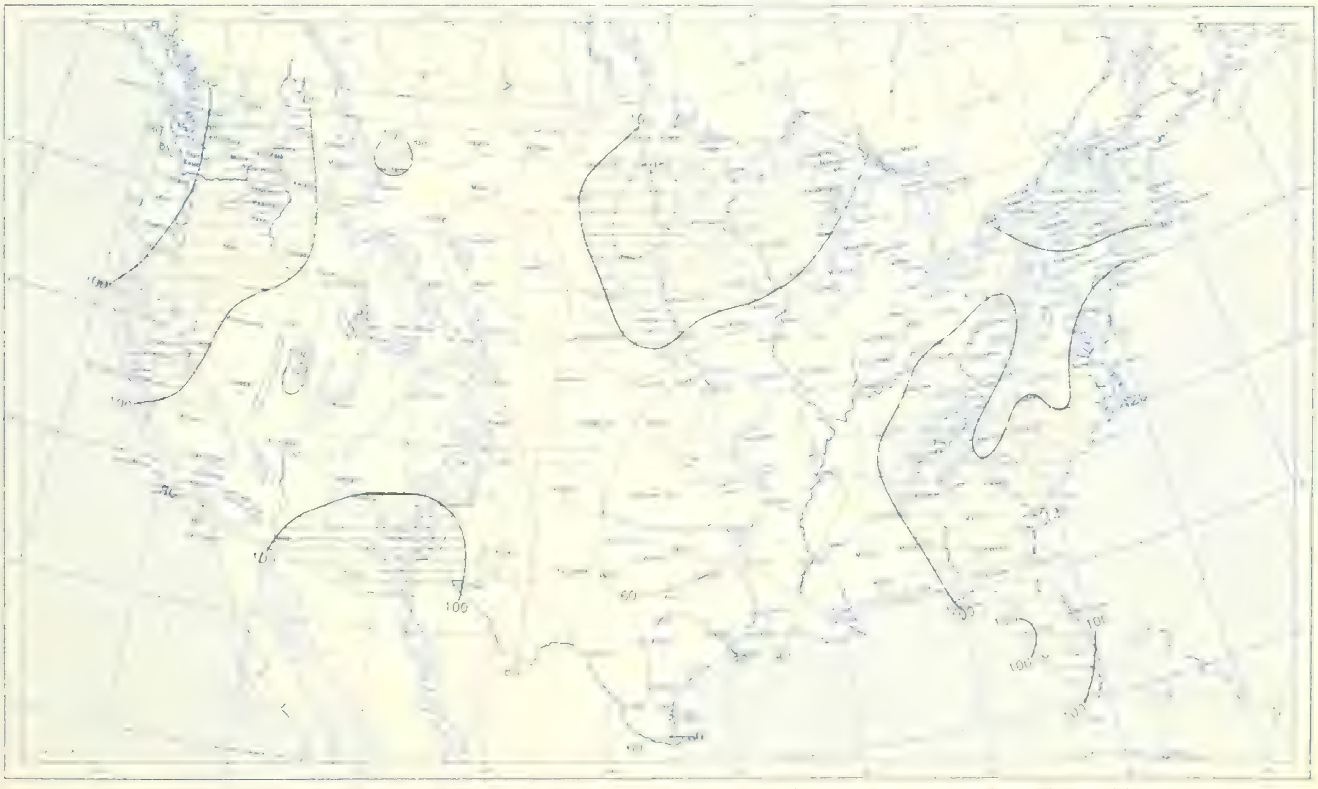


A. In addition to cloudiness, sky cover includes obscuration of the sky by fog, smoke, snow, etc. Chart based on visual observations made hourly at Weather Bureau stations and averaged over the month. B. Computations of normal amount of sky cover are made for stations having at least 10 years of record.

Chart VII. A. Percentage of Possible Sunshine, April 1957.



B. Percentage of Normal Sunshine, April 1957.



A. Computed from total number of hours of observed sunshine in relation to total number of possible hours of sunshine during month. B. Normals are computed for stations having at least 10 years of record.

Chart VIII. Average Daily Values of Solar Radiation, Direct + Diffuse, April 1957. Inset: Percentage of Mean Daily Solar Radiation, April 1957. (Mean based on period 1951-55.)

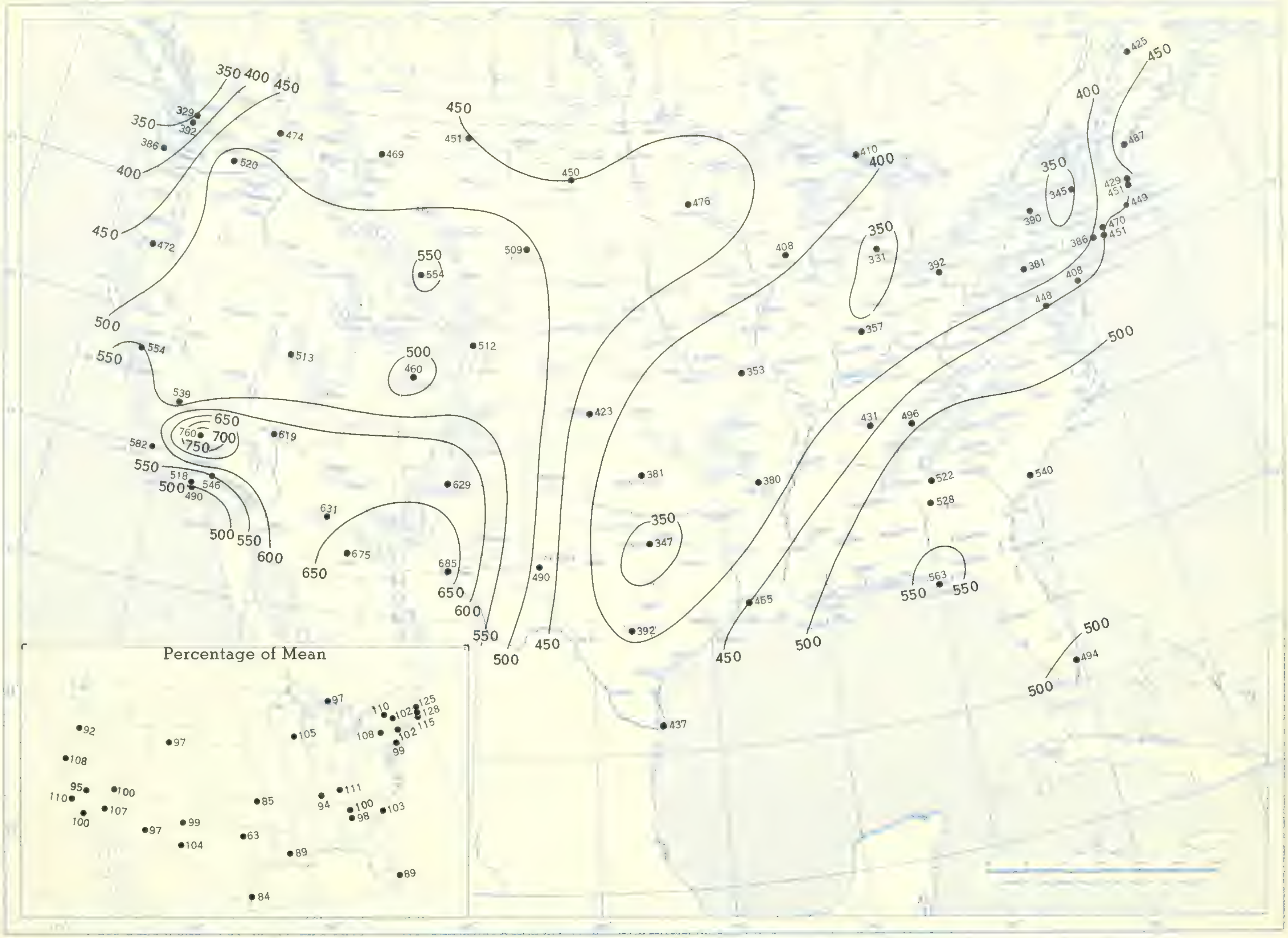
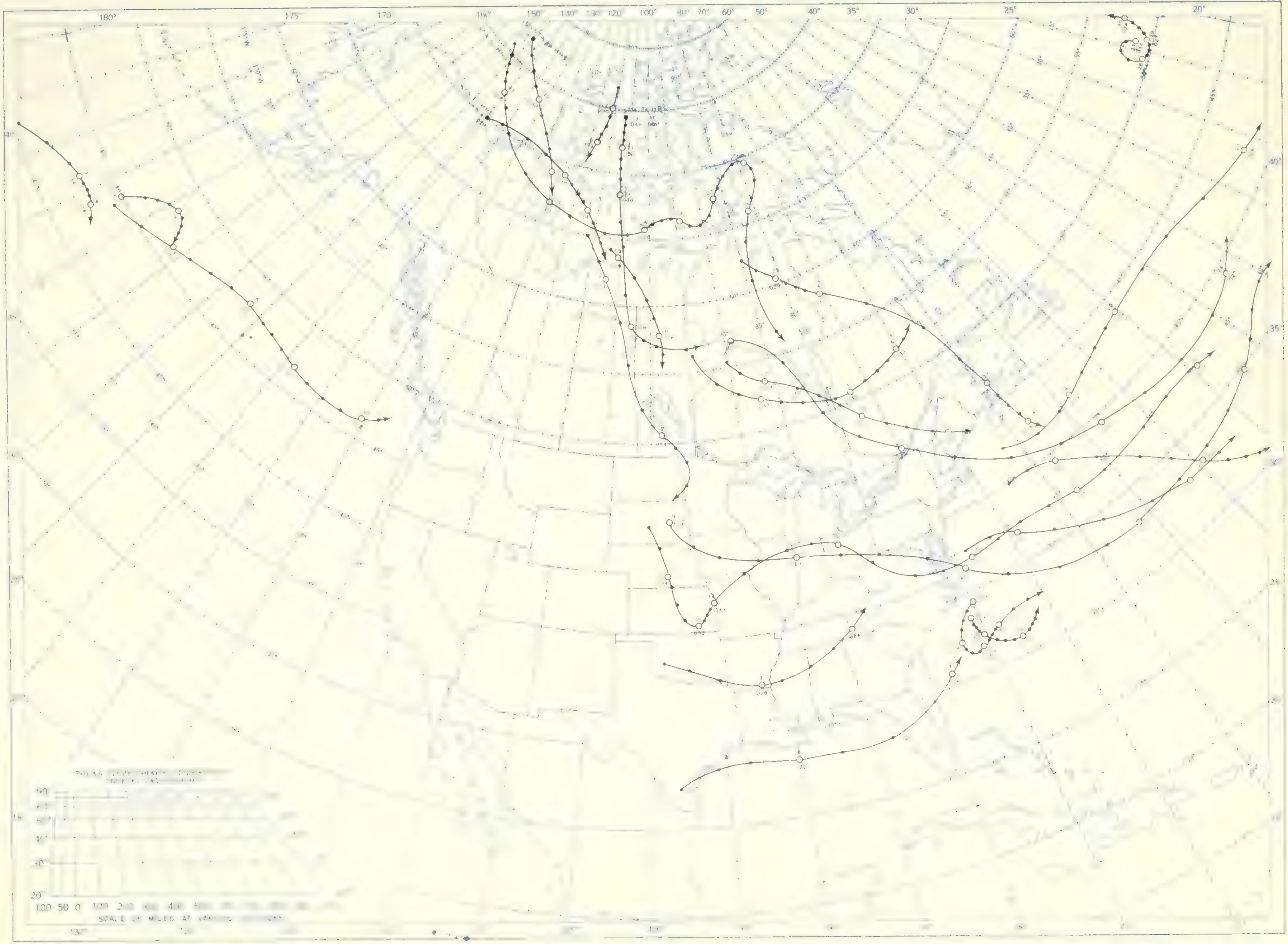


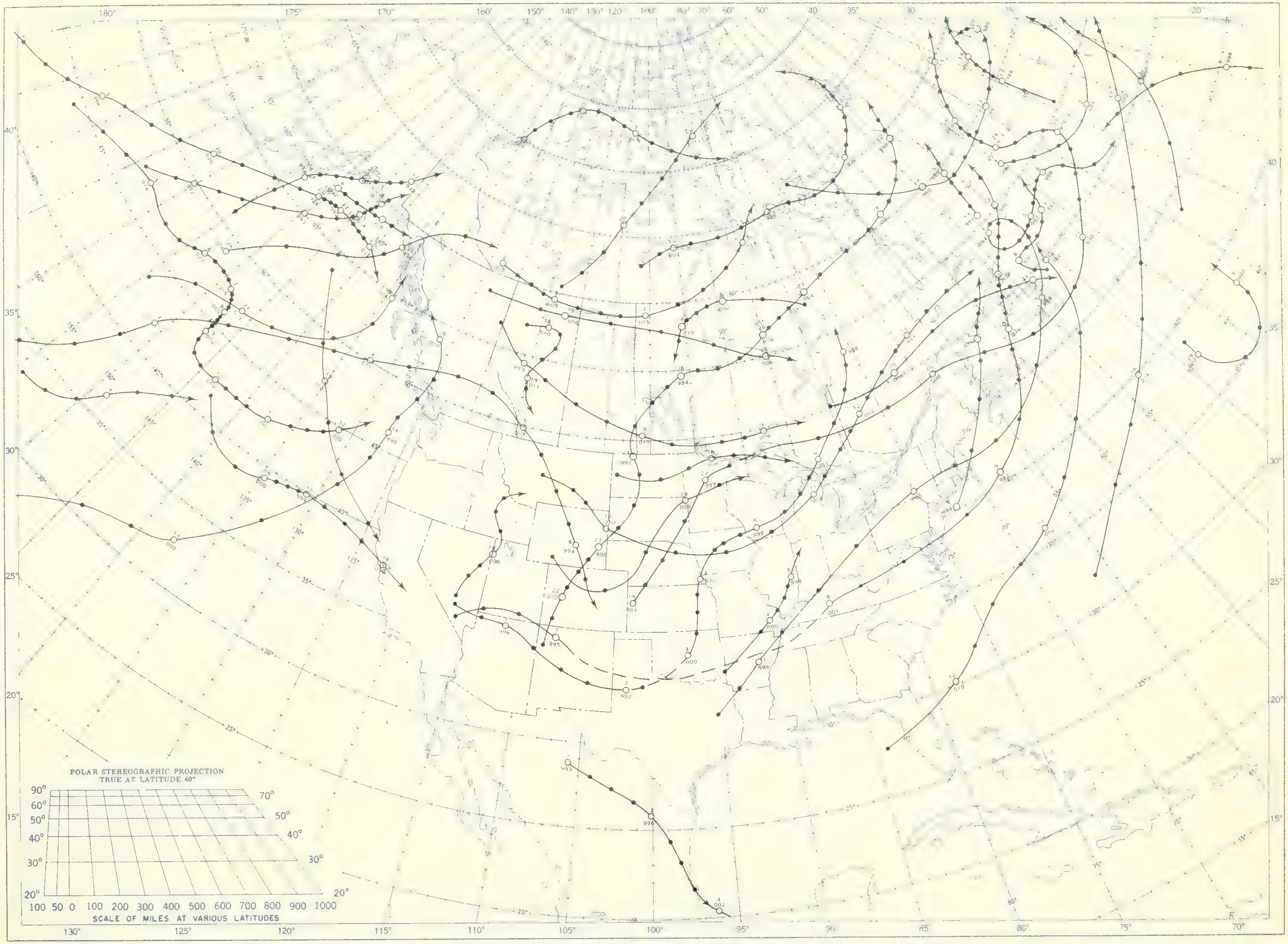
Chart shows mean daily solar radiation, direct + diffuse, received on a horizontal surface in langleys (1 langley = 1 gm. cal. cm. $^{-2}$). Basic data for isolines are shown on chart. Further estimates are obtained from supplementary data for which limits of accuracy are wider than for those data shown. The inset shows the percentage of the mean based on the period 1951-55.

Chart IX. Tracks of Centers of Anticyclones at Sea Level, April 1957.



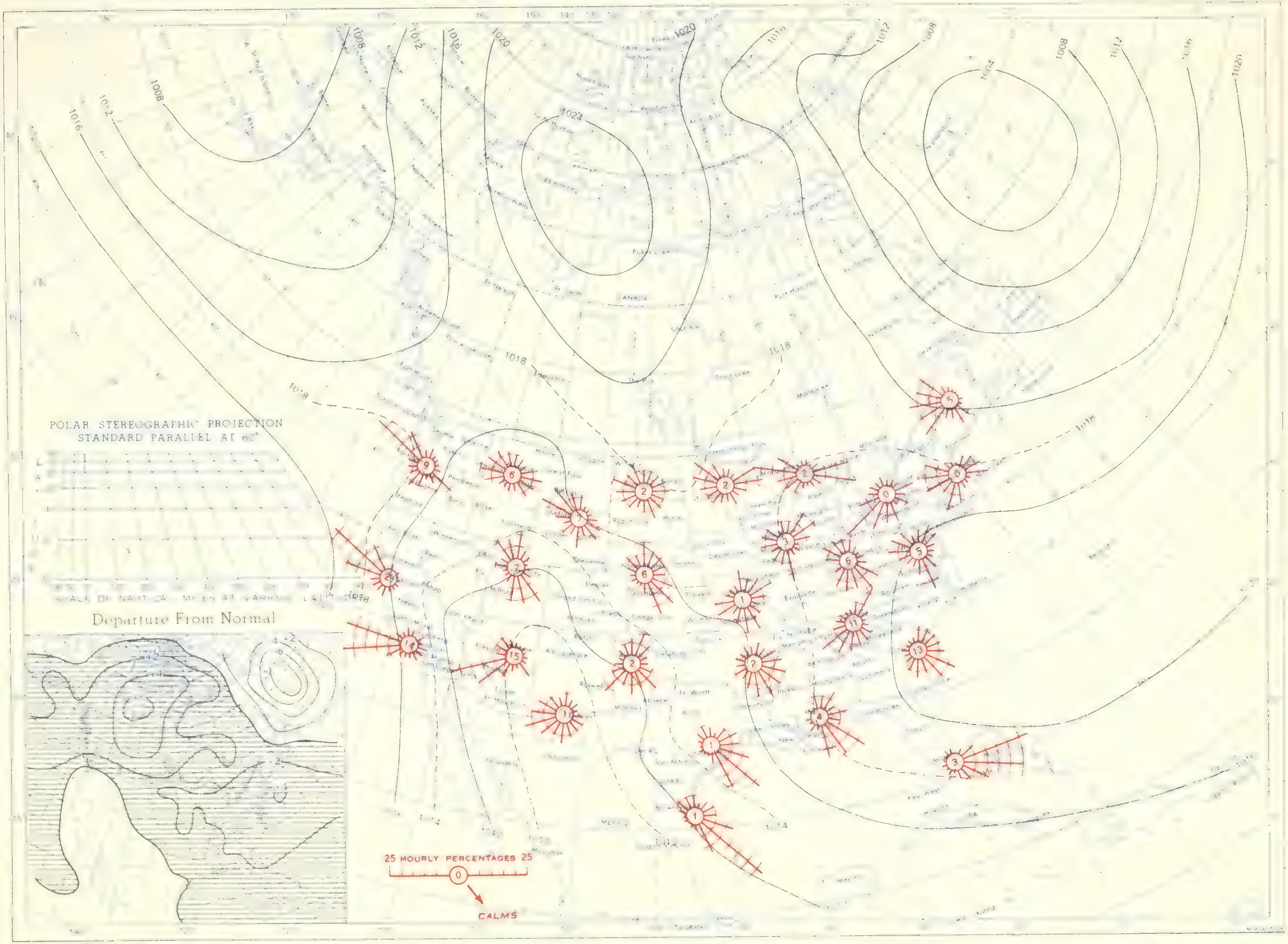
Circle indicates position of center at 7:30 a. m. E. S. T. Figure above circle indicates date, figure below, pressure to nearest millibar. Dots indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.

Chart X. Tracks of Centers of Cyclones at Sea Level, April 1957.



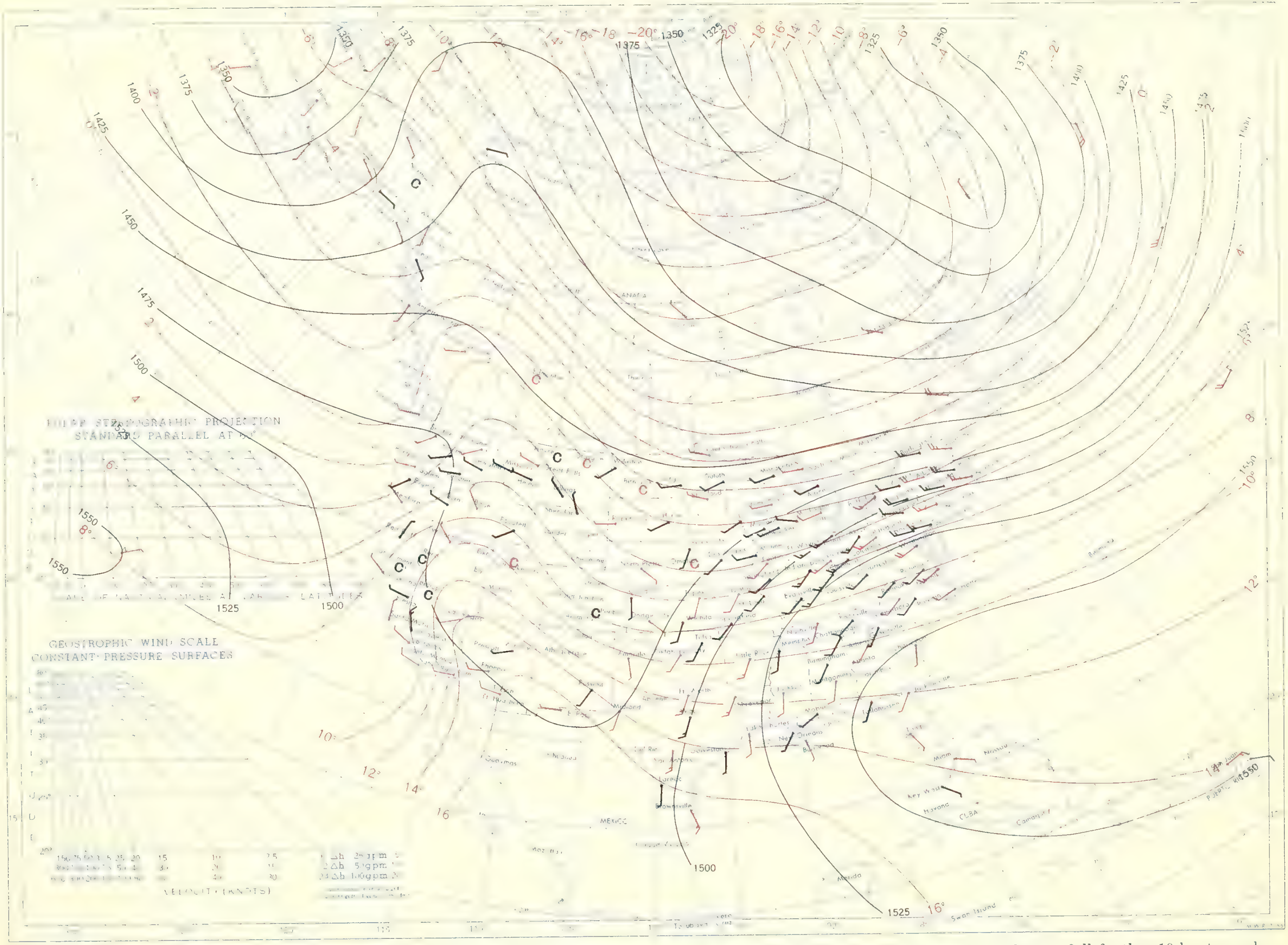
Circle indicates position of center at 7:30 a. m. E. S. T. See Chart IX for explanation of symbols.

Chart XI. Average Sea Level Pressure (mb.) and Surface Windroses, April 1957. Inset: Departure of Average Pressure (mb.) from Normal, April 1957.



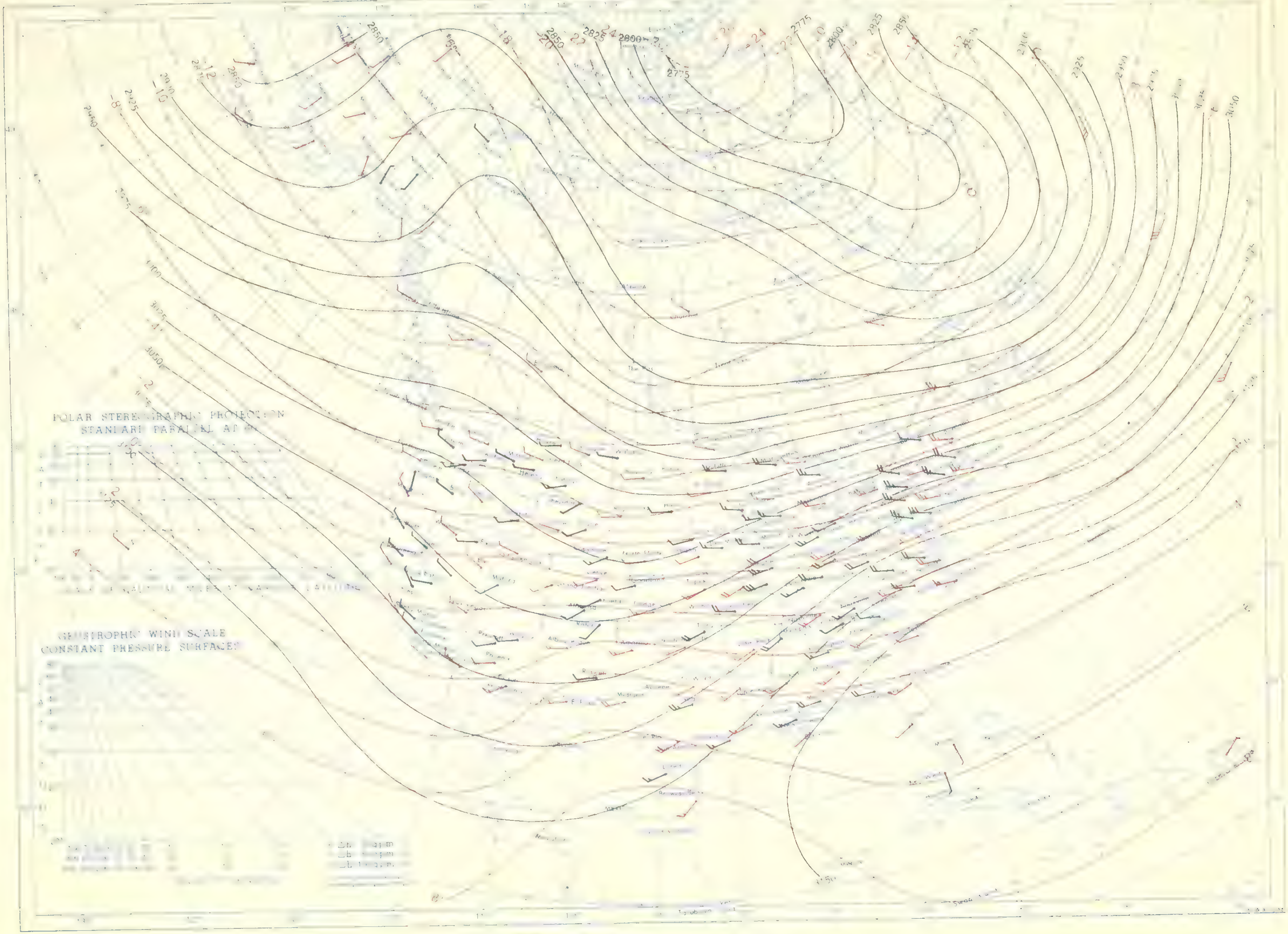
Average sea level pressures are obtained from the averages of the 7:30 a. m. and 7:30 p. m. E. S. T. readings. Windroses show percentage of time wind blew from 16 compass points or was calm during the month. Pressure normals are computed for stations having at least 10 years of record and for 10° intersections in a diamond grid based on readings from the Historical Weather Maps (1899-1939) for the 20 years of most complete data coverage prior to 1940.

Chart XII. 850-mb. Surface, 0300 GMT, April 1957. Average Height and Temperature, and Resultant Winds.



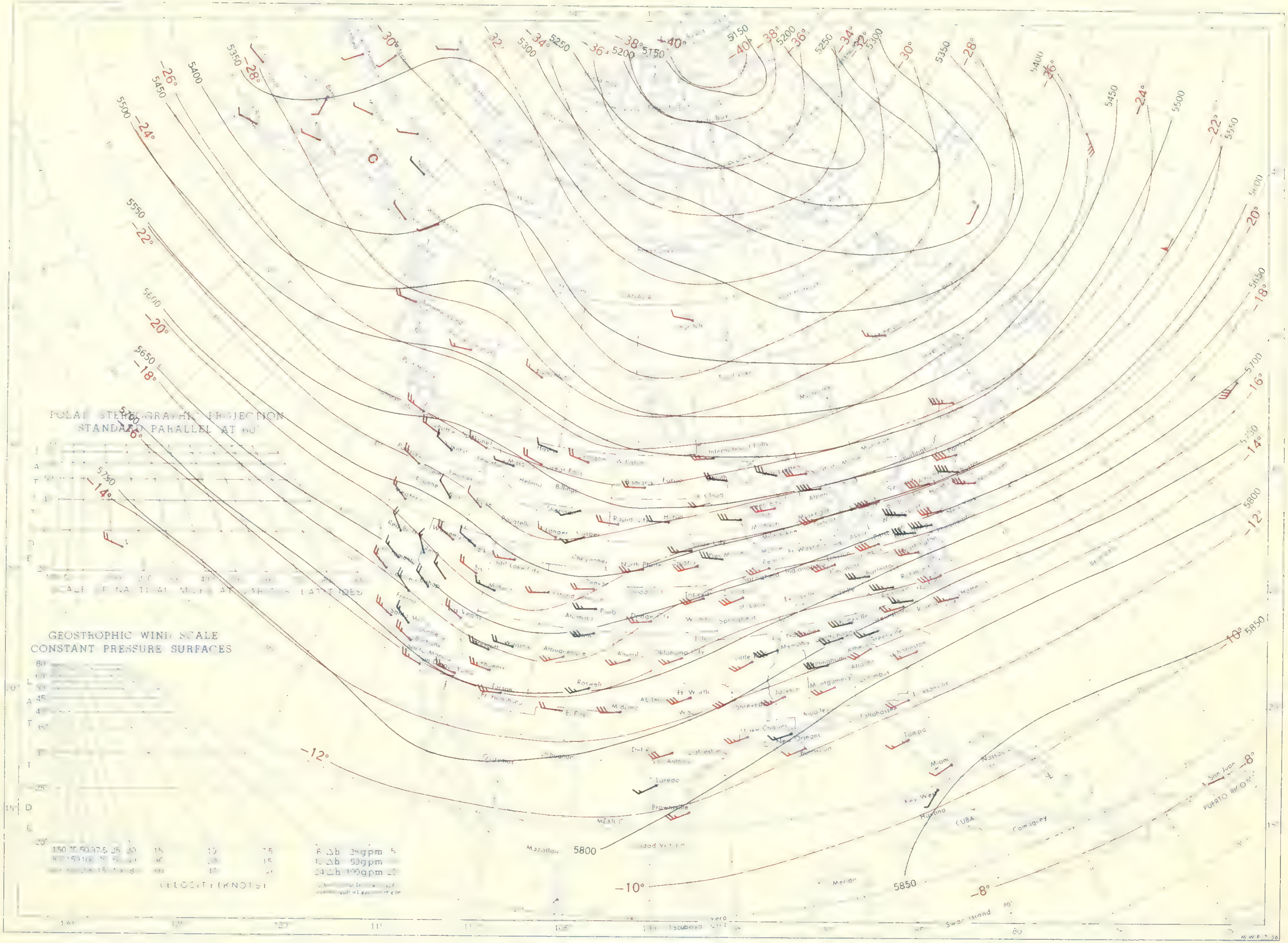
Height in geopotential meters (1 g.p.m. = 0.98 dynamic meters). Temperature in °C. Wind speed in knots; flag represents 50 knots, full feather 10 knots, and half feather 5 knots. Winds shown in red are based on rawins taken at the indicated pressure surface and time. Those in black are based on pibals taken at 2100 GMT and are for the nearest standard height level.

Chart XIII. 700-mb. Surface, 0300 GMT, April 1957. Average Height and Temperature, and Resultant Winds.



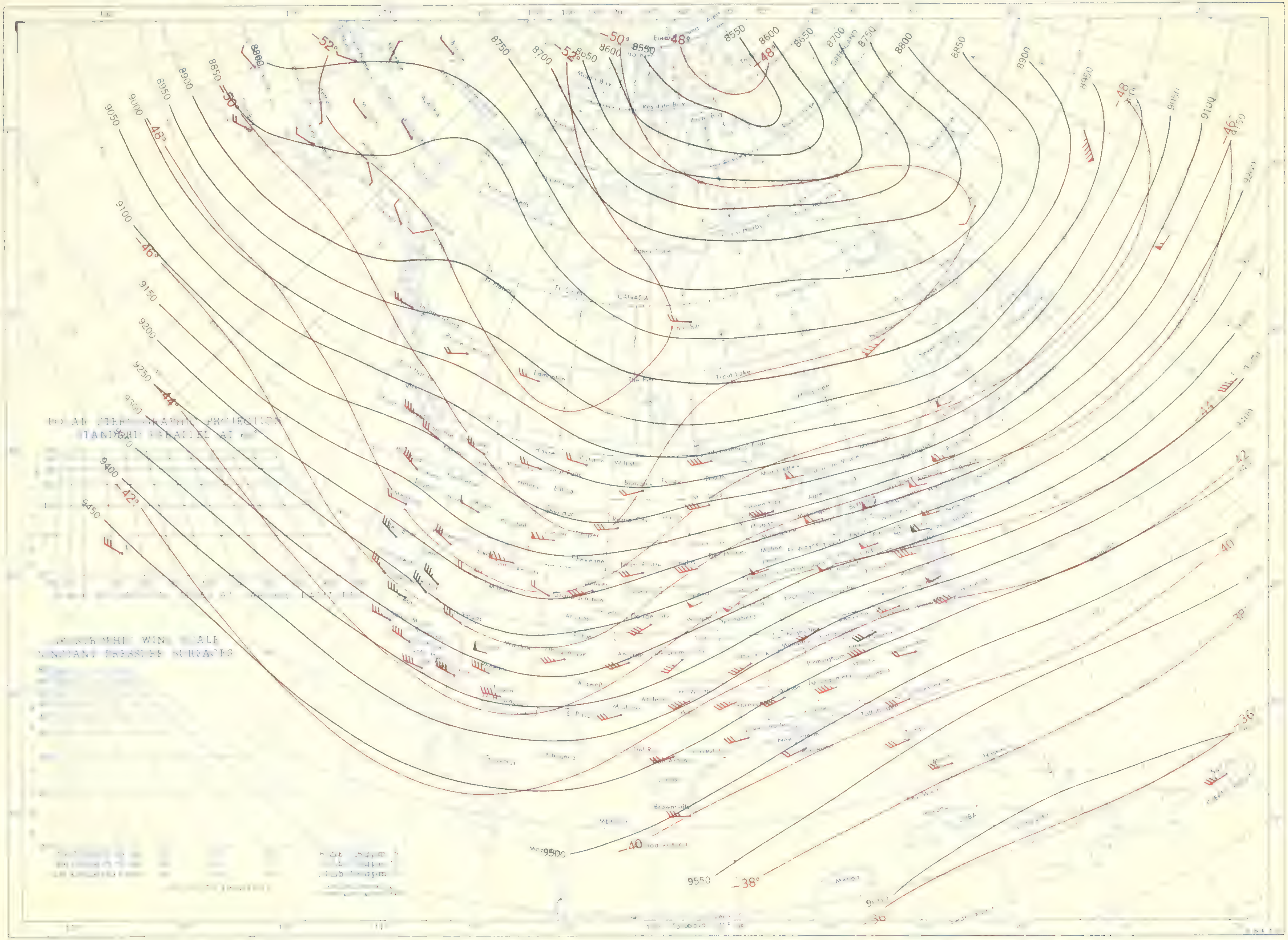
See Chart XII for explanation of map.

Chart XIV. 500-mb. Surface, 0300 GMT, April 1957. Average Height and Temperature, and Resultant Winds.



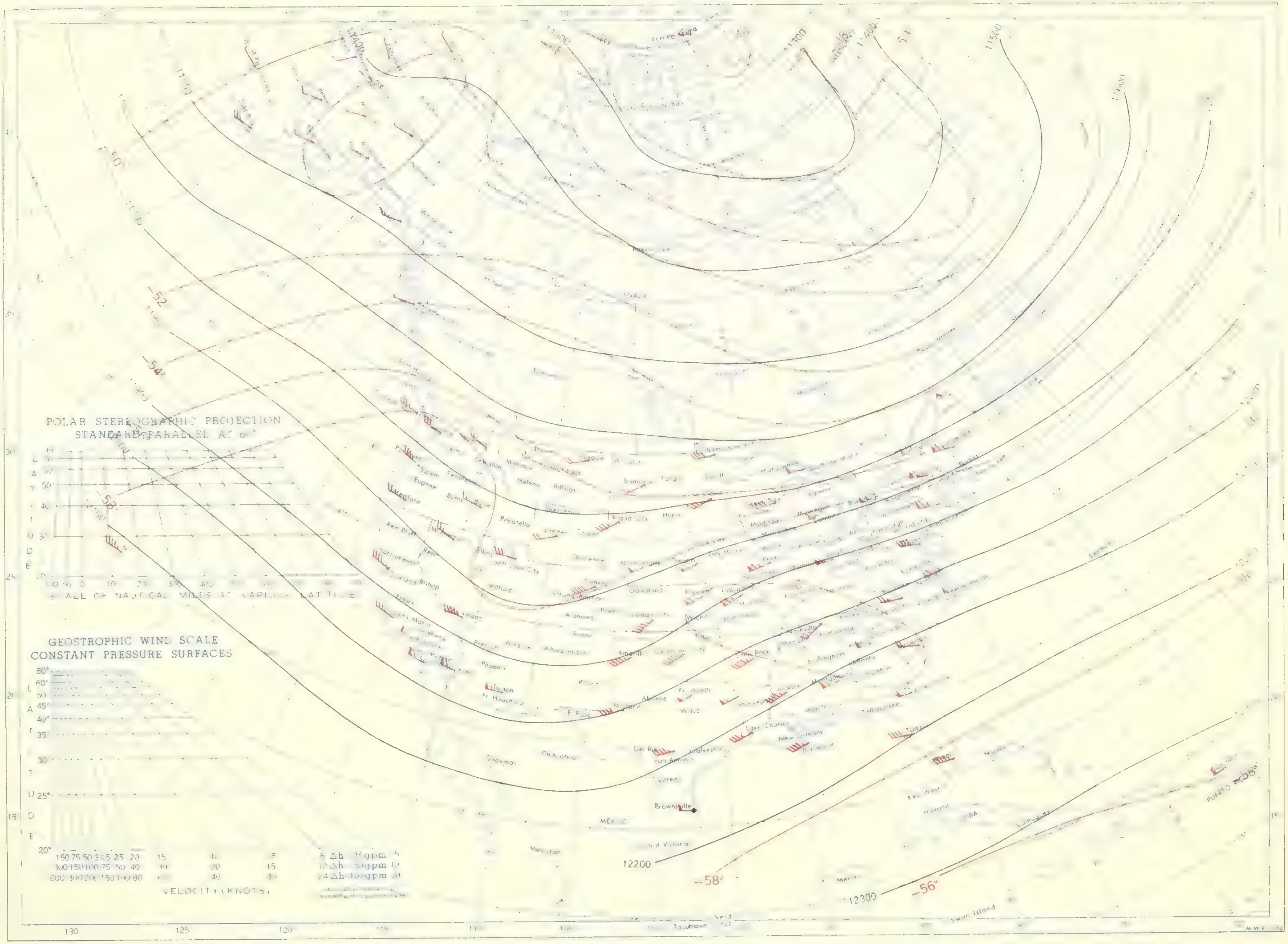
See Chart XII for explanation of map.

Chart XV. 300-mb. Surface, 0300 GMT, April 1957. Average Height and Temperature, and Resultant Winds.



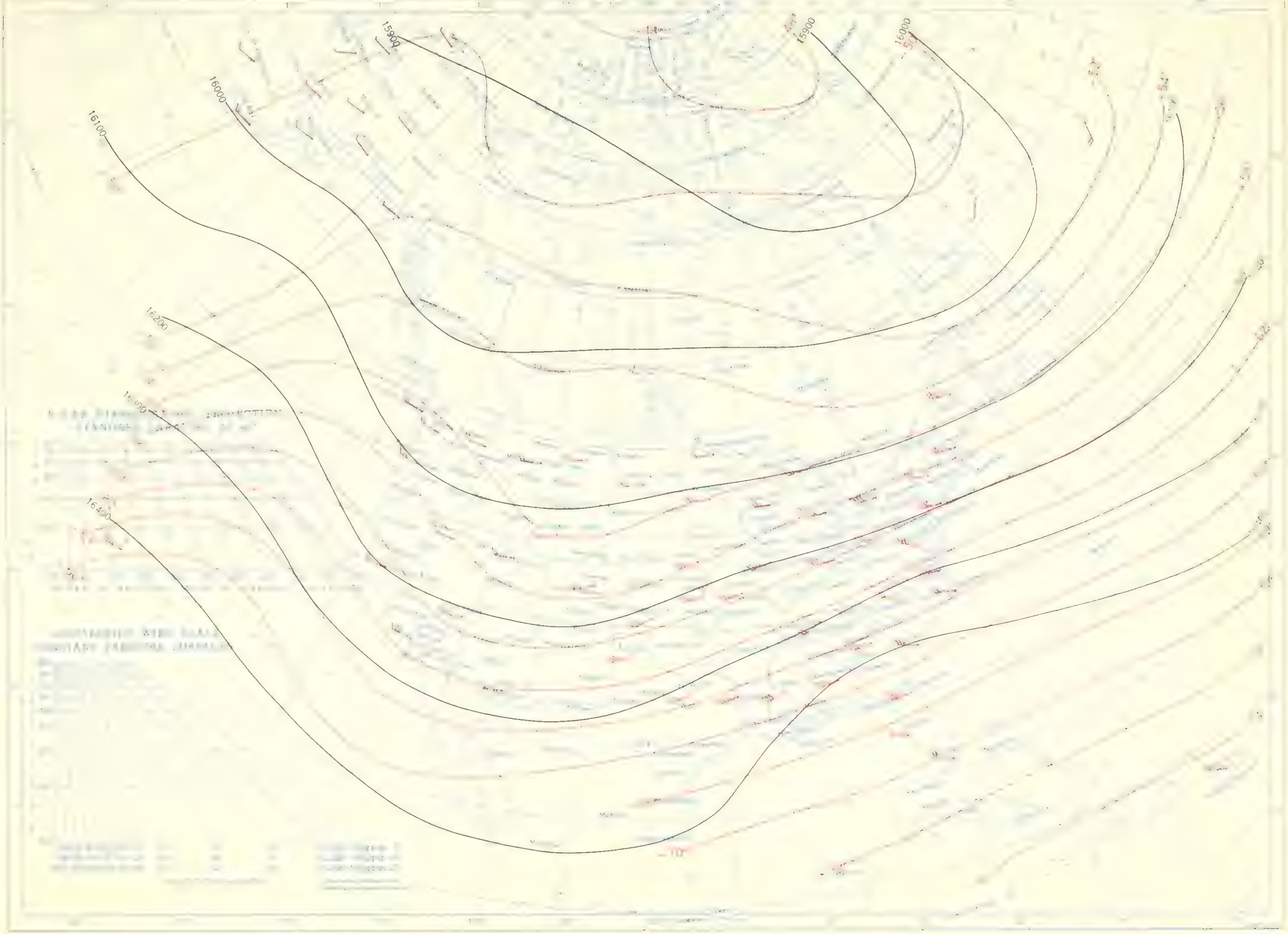
See Chart XII for explanation of map.

Chart XVI. 200-mb. Surface, 0300 GMT, April 1957. Average Height and Temperature, and Resultant Winds.



See Chart XII for explanation of map. All winds are from rawin reports.

Chart XVII. 100-mb. Surface, 0300 GMT, April 1957. Average Height and Temperature, and Resultant Winds.



See Chart XII for explanation of map. All winds are from rawin reports.

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CLIMATOLOGICAL DATA

NATIONAL SUMMARY

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MAY 1957

Volume 8 No. 5

ASHEVILLE: 1957

CONTENTS

SURFACE DATA

	Page
General Summary of Weather Conditions	157
Condensed Climatological Data - States	158
Climatological Data - Stations	159
Heating Degree Days	164
Storm Data and Unusual Weather Phenomena	165
General Summary of River and Flood Conditions	207
Flood Stage Data	212

UPPER AIR DATA

Rawinsonde Data-- 215

SOLAR RADIATION DATA

Solar Radiation Intensities------------------------------- 221

Blue Hill Data--- 222

Net Radiation-- 222

Daily Totals and Average Daily Totals by Weeks------------ 223

CHARTS I-XVII

NOTE.--This publication contains all of the climatic data formerly printed in the MONTHLY WEATHER REVIEW.

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CLIMATOLOGICAL DATA

NATIONAL SUMMARY

Volume 8 No. 5 MAY 1957

GENERAL SUMMARY OF WEATHER CONDITIONS

The weather of May 1957 was outstanding mainly for widespread, heavy precipitation and numerous severe local storms, particularly in the mid-continent area where floods, overcast skies, and wet soil seriously delayed harvesting of wheat and planting of other crops. Most of the central and lower Great Plains and middle Mississippi Basin, where serious drought prevailed during May 1956, now had adequate to excessive moisture. Areas in need of more moisture were limited mostly to sections along the northeastern coast. Temperaturewise May was about normal. Sunshine was less than normal over most of the Nation.

TEMPERATURE.--The month was slightly cooler than normal in an area which extended from Michigan and Wisconsin southwestward over most of the Great Plains and the Far Southwest, and slightly warmer than normal elsewhere. The greatest departures from normal were 4° below normal in parts of the Southwest and 4° above at a few stations in the Pacific Northwest. Elsewhere monthly averages were about normal for May with the possible exception of the north Atlantic coast where averages of 2° above normal are considered rather warm for May. Monthly extremes with few exceptions were well within the limits of former records. The highest temperature of the month was 110° at Cow Creek, Calif., on the 31st and Rio Grande City, Tex., on the 23d, and the lowest of the month was 5° at Mount Mansfield, Vt., on the 3d.

The most significant freeze occurred in the Northeast on the 17th. In New York State clover, alfalfa, and fruit suffered some damage, and in New England apples suffered rather heavy damage in some orchards from Massachusetts northward. On the same date Nantucket recorded 29.7°, the lowest temperature ever observed there in May.

PRECIPITATION.--May rainfall was well above normal over the greater portion of the country. Areas with below normal amounts included mainly an area beginning in the central Gulf region and extending northeastward through the Appalachians to the north Atlantic coast.

This month was one of the wettest Mays on record from the Mississippi Basin westward and also in parts of the Southeast. In these areas new record totals for May were reported by scattered stations including Prescott, Ariz., 1.24 inches; Pocatello, Idaho, 3.11; Pueblo, Colo., 5.43; Dallas, San Antonio, and Del Rio, Tex., 13.74, 8.22, and 10.23, respectively; and Macon, Ga., 11.77 inches.

Precipitation amounts were generous throughout most of the Great Plains and Mississippi Basin, furnishing ample to excessive moisture in virtually all sections. The greatest excesses occurred in an area extending from Oklahoma and central Texas northeastward to the lower Ohio Valley. The greatest monthly total was 23.38 inches at Hennessey, Okla., where 13.07 inches fell on the 15th. Monthly totals exceeding a foot were reported from stations in Texas, Arkansas, Missouri, Illinois, Kansas, and western portions of Kentucky and Tennessee, and totals of nearly a foot were reported from stations in Indiana and Nebraska. No station in Illinois and Arkansas measured less than 3 inches and none in Kansas, Missouri and Nebraska less than 2 inches.

In the Southeast rainfall was particularly heavy in northern Florida and portions of Georgia and South Carolina. Monthly totals ranged up to 16.48 inches at Nilton, Fla., 13.83 at Butler, Ga., and 12.01 inches at Beaufort, S. C.

In sections of the Northeast, particularly along the north Atlantic coast and in many sections of New England, dry weather continued through the first week, but rains the 14th and 15th were sufficient to relieve the fire hazard. Total rainfall for the month in southeastern Massachusetts, Rhode Island, most of Connecticut, and in coastal areas from Virginia to southern New Jersey was less than 50 percent of normal with station totals generally less than 2 inches and in some sections less than 1 inch. All these areas needed more rain at the end of the month, and some sections were experiencing drought conditions.

DESTRUCTIVE STORMS.--Severe local storms were featured by the greatest number of tornadoes ever reported for a single month. Two hundred and thirty-one of these storms touched the ground and an additional 133 funnels not touching the ground were reported. On the 20th, 34 tornadoes and 20 funnel clouds aloft were reported which may be a record for a single day. However, old records show that 52 tornadoes occurred in the Southeastern States on February 19, 1884, causing millions of dollars property damage, the loss of about a thousand lives, and perhaps twice that many injuries. One of the worst of these tornadoes in May 1957 swept through the suburbs of Kansas City, Mo., on the 20th, killing more than a score and injuring over 200 persons.

Severe thunderstorms with hail, wind, and torrential rains resulting in flash floods in the Great Plains and Mississippi Valley were responsible for additional millions of dollars of damage to crops and property.

CONDENSED CLIMATOLOGICAL SUMMARY

MAY 1957

Section	Temperature						Precipitation			
	Monthly extremes						Monthly extremes			
	Station	Highest	Date	Station	Lowest	Date	Station	Greatest	Station	Least
		°F			°F			In.		In.
Alabama	Andalusia	98	24	2 Stations	33	5+	Yates Hydro Plant	12.75	Ft Deposit 1W	1.40
Arizona	Parker	107	31	Klagetoh	17	20	Bright Angel RS	4.67	8 Stations	.00
Arkansas	3 Stations	93	17+	2 Stations	34	5	Ft. Smith Water Pl	15.45	Warren	3.39
California	Cow Creek	110	31	do	20	3+	Vollmers	12.05	12 Stations	.00
Colorado	Holly	90	29	Platoro Dam	8	16	Boulder	9.27	Conejos 3NNW	1.31
Connecticut	Hartford WB AP	90	9	Putnam	25	3	Danbury	4.60	Baltic	1.26
Delaware	Bridgeville 1NW	92	13	Georgetown 5SW	30	4	Wilmgton Ncastle WB AP	2.36	Middletown 2S	1.00
Florida	Bayport 1E	98	24	Jasper 9ESE	40	6	Nittaw 1S	16.48	Apalachicola WB City	.28
Georgia	2 Stations	97	15+	Blairsville Exp Sta	30	6	Butler	13.83	Sweet Gum	1.47
Idaho	do	94	31	2 Stations	20	1+	Grangeville	8.24	Porthill	1.16
Illinois	Cairo WB City	90	15	Stockton 1N	27	4	Grand Tower 2N	14.72	Walnut	3.02
Indiana	Brookville 1S	90	14	2 Stations	28	4+	Mt. Vernon	11.51	Elkhart	1.16
Iowa	2 Stations	88	1+	Saratoga 2E	24	4	Northwood	11.29	Lamoni CAA AP	2.51
Kansas	Jetmore	90	29	Centralia	31	5	Elk City 8SW	13.50	Tribune 1W	2.12
Kentucky	4 Stations	93	13	2 Stations	27	6	Owensboro Dam 46	12.08	Jeremiah	.94
Louisiana	Donaldsonville	96	24+	3 Stations	40	6	Minden	9.99	Basile 2W	.00
Maine	7 Stations	88	9+	Long Falls Dam	20	3	Bridgton 1NNW	4.31	Orono	1.06
Maryland	Baltimore WB City	94	26	Oakland 1SE	22	4	Bentley Springs 1WNW	6.35	Owings Ferry Landing	.31
Massachusetts	Cohasset	91	10	West Cummington	24	2	Tully Dam	6.05	New Bedford	1.16
Michigan	Newaygo Croton Dam	88	1	Kenton U. S. Forest	15	3	Grand Ledge	6.75	Houghton CAA AP	1.24
Minnesota	Farmington 3NW	89	1	Cass Lake For Exp Sta	18	4	Le Center	7.34	Int Falls WB AP	.81
Mississippi	2 Stations	96	17+	Macon 2NE	34	5	Saucier Exp Forest	11.20	Tupelo	.94
Missouri	5 Stations	90	12+	Hermitage	30	5	Granby	15.21	Unionville	2.40
Montana	Glendive	94	1	Kings Hill	18	24	NYE Mouat Mine	10.24	Joplin 23N	.11
Nebraska	2 Stations	92	7+	Walthill	27	5	Kimball	11.40	Blair	2.12
Nevada	Overton	102	29	Fish Creek Ranch	17	6	Jarbidge	6.63	2 Stations	.15
New Hampshire	Windham	90	9	Grafton	17	17	Mount Washington	6.06	Concord WB AP	1.95
New Jersey	Little Falls 1NE	95	14	High Point Park	26	3	Ridgefield	6.02	Mays Landing	.21
New Mexico	Lordsburg	98	29	Hickman	17	12	Floyd	5.64	Lulu	.00
New York	2 Stations	90	9+	2 Stations	20	5	Penn Yann	7.75	N. Y. Westerleigh Stat Is	1.27
North Carolina	do	95	25	Celo 2S	25	7	Raleigh 3W	10.06	Scotland Neck 5NE	.94
North Dakota	Grenora	88	30	2 Stations	21	4+	Tuttle	6.84	Noonan	.71
Ohio	2 Stations	93	13	Millport 2NW	22	6	Dayton WB AP	7.76	Toledo Blade	1.66
Oklahoma	Altus	93	30	Freedom 1N	36	5	Hennessey	22.38	Regnier	1.54
Oregon	3 Stations	97	27+	3 Stations	21	3+	Gold Beach RS	7.78	The Dalles	.21
Pennsylvania	do	92	13+	Madera	19	4+	New Park	4.92	York Haven	.51
Rhode Island	Providence WB AP	87	10	Kingston	29	3	Block Island WB AP	2.40	Providence WB AP	.93
South Carolina	Columbia Ft.Jackson	96	15	Eutawville	34	5	Beaufort 7SW	12.01	Pickens 5E	2.04
South Dakota	Orman Dam	92	2	Ralph	22	10	Wilmot 1ENE	8.62	Ludlow 2NW	1.36
Tennessee	3 Stations	93	12+	Mountain City 2	27	6	Newbern	13.60	Little War Gap	.56
Texas	Rio Grande City 2ESE	110	23	2 Stations	36	5+	Brazos	19.32	2 Stations	.07
Utah	St George Power Hse	95	28+	Bryce Canyon NP	17	24	Uintah	6.53	Hanksville CAA AP	.91
Vermont	3 Stations	86	9+	Mount Mansfield	5	3	Whitingham 3W	5.79	Wilder	2.09
Virginia	Fredericksburg	95	15	Monterey	25	5	Rockfish	6.72	Quantico 1S	.33
Washington	McNary Dam	100	31	Rainier Paradise RS	27	22	Disautel 9NE	5.79	Dallesport CAA AP	.24
West Virginia	Williamson	96	14	Brandonville	21	4	Philippi	4.82	Matoaka	.89
Wisconsin	Eau Claire	89	1	Gordon 2ESE	11	4	Platteville	6.93	Phelps Deerskin Dam	1.79
Wyoming	Basin	95	3	2 Stations	17	1+	Easterbrook	8.38	Arvada 3N	1.15
Puerto Rico	2 Stations	98	3+	Garzas Dam	51	12	Lares	12.24	3 Stations	.00
Hawaii	Puunene CAA AP	92	22	Mauna Loa Slope Obs.	29	10+	Paakea	16.49	2 Stations	.00

+ And also on a later date or dates.

Note: Dates in Table 1 apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for times of observations).

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure		Temperature												Precipitation							Wind					No of days (sunrise to sunset)			Sky cover, tenths (sunrise to sunset)	Possible sunshine
												No. of days							No of days		Snow, Sleet				Fastest mile							
		Ø Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F or above	Min 32° F or below	Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy		
	Ft	Mb	Mb	°F	°F	°F	°F	°F		°F				°F	%	In	In	In			In	In	M p h		M p h			0–3	4–7	8–10	0–10	%
ALABAMA																																
Birmingham	610	991.4	1016.5	82	61	71.3	1.8	90	17	38	5	1	0	60	71	2.96	-0.78	1.30	11	6	0.0	0	7.6	S	24	E	2+	4	16	11	6.5	66
Mobile	211	1007.5	1015.4	84	65	74.5	1.1	90	17	49	5	1	0	65	77	7.99	3.35	4.33	8	8	.0	0	9.6	S	--	---	--	8	15	8	5.8	--
Montgomery	198	1007.7	1015.6	84	63	73.5	1.0	91	13+	48	5+	7	0	63	74	8.29	4.83	3.66	12	9	.0	0	5.8	SE	50	W	26	5	13	13	6.4	64
ARIZONA																																
Flagstaff	6993	------	------	61	31	45.9	-4.1	75	27+	25	1	0	21	--	--	2.02	1.49	.50	8	2	.9	1	----	---	--	---	--	9	12	10	5.4	--
Phoenix	1114	970.5	1009.1	86	60	72.9	-2.6	98	27+	52	12	13	0	42	36	.43	.26	.39	3	3	.0	0	6.1	E	*24	SSW	19	18	6	7	3.5	86
Prescott	5014	843.9	1010.5	70	42	56.0	-4.9	85	31	33	22	0	0	--	--	1.24	.94	.68	9	4	T	0	10.5	SSW	50	SW	19	15	8	8	4.4	80
Tucson	2558	921.8	1008.5	86	57	71.2	-1.9	98	4	46	13	11	0	32	28	.33	.12	.17	3	1	.0	0	8.5	SE	36	E	5	20	6	5	2.7	85
Winslow	4880	848.0	1007.8	75	44	59.4	-2.6	88	28	35	22	0	0	28	37	.48	.16	.27	7	3	T	0	9.4	WSW	*35	WSW	20	13	11	7	4.4	--
Yuma	199	1004.4	1009.3	91	60	75.6	-4.8	103	26+	54	12+	16	0	37	29	.00	-.02	.00	0	0	.0	0	9.9	W	38	NW	20	23	5	3	1.8	100
ARKANSAS																																
Fort Smith	458	996.6	1013.1	81	61	71.3	1.7	90	15+	44	5	3	0	60	74	12.09	7.03	3.75	13	14	.0	0	8.3	ENE	42	W	17	4	11	16	7.1	47
Little Rock	257	1001.0	1014.0	82	63	72.4	2.6	91	17	46	5	3	0	61	70	11.58	6.73	4.55	15	14	.0	0	9.1	S	47	N	23	7	9	15	6.5	58
Texarkana	361	------	------	83	64	73.4	1.5	90	21	46	5	1	0	--	--	6.91	1.78	2.62	9	9	.0	0	8.8	SE	--	---	--	--	--	--	---	--
CALIFORNIA																																
Bakersfield	489	995.3	1013.2	80	56	68.0	-2.2	97	27	48	9	5	0	48	53	.23	-.12	.12	5	0	.0	0	6.9	NW	*23	NNW	14+	9	10	12	5.5	--
Bishop	4108	870.0	1009.5	76	43	59.8	-2.8	92	31	34	9	2	0	--	--	.47	.27	.36	7	3	.0	0	----	---	--	---	--	8	10	13	5.8	--
Blue Canyon	5280	836.4	1012.2	57	41	48.7	-3.5	75	28	30	20	0	4	--	--	10.87	8.39	5.15	14	4	22.5	7	----	---	--	---	--	9	5	17	6.5	--
Burbank	699	987.5	1013.7	72	54	62.8	-1.2	91	26	48	9	1	0	50	68	.62	.35	.46	6	0	.0	0	4.0	S	*16	WNW	14	9	12	10	5.5	--
Eureka (U)	43	1012.5	1014.9	59	50	54.8	1.9	67	9	46	15	0	0	--	--	3.42	1.60	1.31	12	1	.0	0	7.8	---	30	N	22	5	8	18	7.1	49
Fresno	331	1001.0	1012.9	77	53	65.1	-3.8	92	5+	47	15	4	0	48	58	1.56	1.28	.96	9	3	.0	0	6.8	NW	23	SW	13+	10	10	11	5.3	63
Los Angeles (U)	312	------	------	72	57	64.2	-.6	83	26	52	9+	0	0	51	67	.63	.37	.46	7	0	.0	0	6.7	---	33	SW	14	7	12	12	5.5	63
Los Angeles	99	1010.2	1014.0	70	57	63.2	1.1	75	27	52	1	0	0	53	71	.27	-.03	.13	7	0	.0	0	9.3	WSW	*36	W	14	11	10	10	5.1	--
Mt. Shasta (R)	3544	889.3	1012.5	65	40	52.4	-1.1	81	26+	31	3	0	1	--	--	5.28	3.61	2.09	11	5	.0	0	----	---	--	---	--	12	7	12	5.4	--
Oakland	3	1013.9	1014.3	68	53	60.7	2.3	88	4	48	3+	0	0	51	73	3.42	2.81	1.41	10	0	.0	0	10.5	W	*26	SSW	18	10	5	16	5.9	--
Red Bluff	341	999.7	1012.3	78	54	65.9	-2.1	97	28	46	3	4	0	47	56	1.67	.61	.64	8	5	.0	0	10.5	SSE	33	SE	13+	12	6	13	5.3	73
Sacramento	17	1011.5	1012.7	76	52	64.1	.1	95	27	46	15	2	0	49	65	1.61	1.07	.78	9	1	.0	0	11.6	SW	35	S	18	12	5	14	5.3	78
Sandberg (R)	4517	860.1	1011.9	60	43	51.5	-5.2	82	31	35	11	0	0	--	--	1.04	.79	.84	6	0	.0	0	13.8	---	*59	NNW	15	12	7	12	5.1	--
San Diego	19	1010.8	1014.0	69	58	63.2	.0	74	25	53	12	0	0	53	71	.88	.62	.42	7	0	.0	0	8.5	WSW	22	SW	20	5	14	12	6.2	54
San Francisco(U)	52	------	------	63	53	57.9	.8	78	4	50	2+	0	0	--	--	3.19	2.60	1.28	13	0	.0	0	9.9	---	27	W	22	9	7	15	6.3	48
San Francisco	8	1013.9	1014.5	65	52	58.6	2.0	83	4	46	26	0	0	50	78	3.81	3.41	1.54	11	0	.0	0	10.5	W	42	WNW	22	8	9	14	5.9	--
Santa Maria	238	1006.1	1014.9	67	48	57.9	.2	83	3+	41	15	0	0	49	75	1.03	.71	.60	7	0	.0	0	8.0	WNW	*26	WNW	15	12	7	12	5.6	--
COLORADO																																
Alamosa	7536	769.4	1012.8	60	34	47.1	-3.7	72	28	27	21	0	11	--	--	1.64	1.07	.73	12	12	.3	T	----	---	--	---	--	4	15	12	6.6	--
Colorado Springs	6173	808.7	1012.6	63	41	51.9	-3.5	77	28+	31	16	0	3	36	64	5.67	3.61	2.39	19	12	14.9	5	10.2	NNW	*35	W	24	3	11	17	7.2	--
Denver	5292	834.7	1013.3	65	43	53.9	-2.4	78	28	29	17	0	3	36	59	7.31	5.11	3.29	13	14	8.8	3	12.4	S	38	SE	11	5	11	15	6.8	53
Grand Junction	4849	855.7	1010.1	68	46	56.8	-5.3	82	28	39	16+	0	0	37	52	1.79	1.11	.47	14	9	.0	0	9.5	ESE	42	W	30	8	6	17	6.4	63
Pueblo	4639	853.7	1010.9	69	46	57.4	-1.8	82	29	36	16	0	0	41	61	5.43	3.70	2.53	13	5	.0	0	9.8	E	44	W	19	7	9	15	6.5	60
CONNECTICUT																																
Bridgeport	7	1016.2	------	70	50	59.9	2.7	85	10	38	3	0	0	--	--	2.14	-1.46	1.24	[illegible]	4	.0	0	----	---	--	---	--	12	7	12	5.7	--
Hartford	169	1010.1	1015.9	71	46	58.9	-.8	90	9	32	3	1	1	47	68	1.69	-1.97	.68	11	1	.0	0	12.3	SW	41	NW	10	10	8	13	5.5	60
Middletown (U)	133	1011.2	------	71	46	58.3	---	87	10	36	3	0	0	--	--	1.60	----	.80	9	2	.0	0	8.9	---	%43	NW	1	--	--	--	---	--
New Haven	6	1015.7	1016.3	67	48	57.7	1.0	81	1	37	3	0	0	--	--	2.75	-1.12	1.44	7	4	.0	0	7.3	---	18	N	16+	11	8	12	5.5	66
DELAWARE																																
Wilmington	78	1013.7	1017.0	74	52	62.9	.1	89	26	34	4	0	0	50	67	2.36	-1.45	1.43	8	2	.0	0	10.7	SW	--	---	--	7	12	12	5.9	--
DIST. OF COLUMBIA																																
Washington (U)	72	------	------	78	57	67.2	2.0	93	23	39	4	3	0	--	--	3.16	-.75	2.79	6	2	.0	0	7.1	---	21	NW	27	--	--	--	---	--
Wash. Nat'l. AP	14	1013.0	1017.4	77	57	67.2	2.5	92	23+	40	4	4	0	52	61	1.40	-2.58	1.11	5	3	.0	0	10.6	SSW	34	SW	26	8	16	7	5.3	66
FLORIDA																																
Apalachicola (U)	13	1013.8	1015.1	83	70	76.4	2.0	88	23+	56	6	0	0	--	--	.28	-2.55	.21	5	11	.0	0	7.8	---	28	E	8	16	12	3	3.5	84
Daytona Beach	31	1014.9	1016.5	84	66	74.8	.4	91	20	56	7	3	0	68	83	5.65	2.38	1.58	13	16	.0	0	9.3	E	*25	WSW	4	6	14	11	6.5	--
Fort Myers	15	1014.8	------	87	69	78.1	1.2	92	21+	64	8	8	0	--	--	7.97	3.68	1.88	15	17	.0	0	7.8	---	*25	WSW	3	4	17	10	6.2	--
Jacksonville	24	1014.9	1016.1	88	68	77.9	3.0	94	14+	52	6	17	0	67	75	5.25	1.82	1.82	11	8	.0	0	10.1	ESE	36	S	29	3	14	14	6.6	61
Key West (U)	9	1014.5	------	87	74	80.6	.8	90	22+	69	3+	3	0	--	--	5.83	3.01	2.32	13	14	.0	0	7.2	---	27	W	3	2	19	10	6.4	71
Lakeland (U)	214	------	------	86	69	77.5	1.0	93	21	59	6	11	0	--	--	9.68	5.09	2.92	11	16	.0	0	6.5	---	--	---	--	4	16	11	6.3	68
Miami (U)	[illegible]	------	------	83	73	78.0	.9	87	28	65	1	0	0	--	--	9.06	4.79	4.60	14	10	.0	0	11.3	---	36	NW	1	6	16	9	5.9	65
Miami	7	1014.3	1015.4	85	72	78.5	.5	89	20	66	5	0	0	71	82	10.11	4.56	7.02	14	14	.0	0	8.3	ESE	*23	ENE	1	3	14	14	6.9	--
Miami Beach	9	------	------	83	75	79.0	.6	88	16	66	31	0	0	--	--	6.69	2.76	1.92	13	--	.0	0	----	---	--	---	--	8	19	4	---	--
Orlando	106	1011.5	1015.8	87	67	76.9	.4	93	28	59	5+	12	0	68	79	8.58	4.56	3.14	16	14	.0	0	7.5	ESE	*30	NW	28+	4	15	12	6.4	--
Pensacola (U)	13	1013.0	------	82	69	75.7	1.9	89	27+	53	5	0	0	--	--	3.54	-.82	1.68	7	6	.0	0	9.8	---	20	SE	8	--	--	--	---	61
Tallahassee	64	1013.0	1015.5	85	66	75.4	1.2	92	22	49	6	8	0	65	75	8.01	4.25	1.51	15	16	.0	0	5.7	ESE	--	---	--	2	20	9	6.7	--
Tampa	19	1014.4	1015.8	86	69	77.4	.9	93	22+	59	6	5	0	68	78	7.21	3.92	2.71	12	16	.0	0	9.6	E	*35	SE	14	7	17	7	5.4	70
West Palm Beach	15	1014.4	1015.3	86	72	79.0	1.9	94	20	65	2	5	0	71	79	3.87	-1.19	.95	16	12	.0	0	9.4	ESE	*27	ENE	7	3	14	14	7.0	--
GEORGIA																																
Athens	798	987.8	1016.6	81	60	70.2	-.2	91	23	43	6	2	0	61	77	5.94	2.11	2.94	13	6	.0	0	7.9	ENE	*31	NW	15	7	12	12	6.2	--
Atlanta	975	975.9	1017.0	80	61	70.8	.8	89	22+	44	5	0	0	61	75	3.40	-.42	1.10	11	4	.0	0	8.6	ENE	35	W	19	3	17	11	6.4	55
Augusta	143	1009.8	1016.2	83	60	71.4	-.1	91	23+	40	5	7	0	63	80	5.81	2.53	2.00	13	8	.0	0	5.7	NE	*23	WSW	15	5	12	14	6.7	--
Columbus	385	1001.9	1015.9	84	62	73.0	1.0	92	13+	45	7	7	0	--	--	7.63	4.55	4.61	12	9	.0	0	----	---	--	---	--	5	15	11	6.7	--
Macon	356	1002.6	1015.9	85	63	74.3	.7	94	22+	47	5+	11	0	63	74	11.77	8.55	4.01	12	11	.0	0	8.5	ESE	40	N	23	3	16	12	6.5	59
Rome	637	993.3	------	83	58	70.2	1.0	90	17	38	7	1	0	--	--	4.07	.00	2.05	9	7	.0	0	----	---	--	---	--	7	16	8	6.1	--
Savannah	48	1014.0	1016.3	82	63	72.8	-.1	91	21+	45	5	5	0	66	83	10.08	7.17	1.98	17	14	.0	0	7.4	SE	39	N	15	6	9	16	7.1	63
Thomasville (U)	283	------	------	86	65	75.7	1.5	95	24	49	6	10	0	--	--	5.24	1.62	1.75	13	10	.0	0	----	---	--	---	--	--	--	--	---	--
IDAHO																																
Boise	2842	915.3	1010.6	69	47	58.2	.1	85	27+	39	5	0	0	46	69	2.79	1.70	.75	15	5	.0	0	9.5	NW	40	NW	2	6	9	16	6.9	52
Idaho Falls 46W (R)	4933	844.6	1010.5	65	41	52.7	.1	77	7+	31	1	0	1	--	--	4.42	3.40	.97	14	7	.0	0	7.0	---	a27	WSW	19	--	--	--	---	--
Idaho Falls 42NW (R)	4790	------	------	66	40	52.7	.7	79	7	29	22	0	3	--	--	3.00	1.96	.88	15	--	----	--	9.6	---	a36	SSW	19	--	--	--	---	--
Lewiston	1413	960.0	1011.1	72	50	60.7	1.8	90	31	43	24	1	0	--	--	3.14	1.72	1.15	15	2	.0	0	----	---	--	---	--	9	9	13	6.5	--
Pocatello	4444	858.8	1010.7	66	43	54.3	-1.0	79	28	35	5+	0	0	42	68	3.11	1.90	.69	15	8	T	0	10.0	SW	40	W	20	6	6	19	7.3	49
ILLINOIS																																
Cairo (U)	314	1002.0	------	79	60	69.6	.8	90	15	43	4	1	0	--	--	10.54	6.45	3.70	14	11	.0	0	8.6	---	37	NW	21	5	14	12	6.5	65
Chicago	610	992.9	1015.8	68	50	58.8	-.4	85	22	39	3+	0	0	47	69	3.21	-.45	1.21	11	3	.0	0	9.5	NE	32	NW	26	7	7	17	6.7	51
Moline	589	992.6	1014.8	69	50	59.6	-1.3	85	1	34	4	0	0	48	70	4.11	.67	1.20	12	8	.0	0	11.1	ENE	43	SW	14	6	7	18	7.0	47
Peoria	654	992.6	1014.9	71	52	61.1	.1	84	1	32	4	0	1	50	71	7.96	4.02	3.10	14	9	.0	0	11.8	S	38	S	14	5	7	19	7.2	51
Springfield	589	991.9	1015.2	73	53	62.9	.9	83	1+	34	4	0	0	53	72	4.61	.42	1.33	15	10	.0	0	12.1	S	40	SE	21	4	12	15	6.8	62
INDIANA																																
Evansville	383	1000.3	1016.1	77	55	65.9	.4	87	12	36	5	0	0	55	71	8.22	4.32	4.29	12	9	.0	0	9.6	NE	55	NW	18	7	8	16	6.4	51
Fort Wayne	801	985.1	1016.3	69	49	59.0	.0	85	1	33	5	0	0	49	71	3.27	-.17	.85	13	[illegible]	.0	0	12.7	ENE	57	S	21	8	4	19	6.7	59
Indianapolis	793	986.8	1016.7	72	52	62.1	.7	82	1+	35	5+	0	0	52	72	9.15	5.30	1.81	15	13	.0	0	12.3	NE	50	NW	21	7	5	19	6.8	67
South Bend	768	987.8	1016.0	69	48	58.4	.0	82	22+	33	3+	0	0	48	72	2.37	-1.47	.83	11	3	.0	0	11.9	SSW	*29	SW	8	6	6	19	7.0	--

See footnotes at end of table.

CLIMATOLOGICAL DATA

MAY 1957

State and station	Elevation ground	Pressure		Temperature								No of days				Precipitation			No. of days		Snow, Sleet		Wind					No. of days (sunrise to sunset)				
		Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F or above	Min. 32° F or below	Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max. depth on ground	Average hourly speed	Prevailing direction	Fastest mile Speed	Direction	Date	Clear	Partly cloudy	Cloudy	Sky cover, tenths (sunrise to sunset)	Possible sunshine
	Ft	Mb	Mb	°F	°F	°F	°F	°F		°F				°F	%	In.	In.	In.			In.	In.	M p. h.		M. p. h.			0–3	4–7	8–10	0–10	%
IOWA																																
Burlington	694	989.5	1015.4	71	51	60.9	-1.0	83	1	34	4	0	0	50	71	4.97	1.15	1.78	14	6	0.0	0	11.2	SSW	40	SW	14	5	11	15	6.7	57
Des Moines	948	983.1	1014.4	70	50	59.9	-1.3	82	1+	37	5	0	0	48	70	5.36	1.76	2.30	13	10	.0	0	11.9	ESE	40	W	25	4	6	21	7.5	52
Dubuque	1065	989.5	1015.3	65	47	55.8	-2.1	82	1	32	4	0	1	46	71	7.43	3.96	1.91	14	7	.0	0	----	---	--	---	--	5	6	20	7.6	--
Sioux City	1094	972.6	1013.5	70	49	59.4	-1.0	86	7	37	5	0	0	45	63	2.88	-.46	.95	10	4	.0	0	13.9	ESE	61	S	20	5	2	24	7.6	51
Waterloo	870	------	------	67	48	57.5	-2.0	84	8	32	4	0	1	--	--	4.14	.60	1.47	14	7	.0	0	13.1	---	--	---	--	--	--	--	---	--
KANSAS																																
Concordia (U)	1375	964.1	------	70	53	61.4	-1.8	83	31	41	5	0	0	--	72	5.46	1.85	1.70	15	11	.0	0	7.6	---	24	S	7+	8	6	17	6.5	60
Dodge City	2594	924.8	1011.8	70	51	60.8	-2.2	87	29	43	4+	0	0	50	72	3.74	.83	1.19	12	6	.0	0	15.9	SSE	56	SW	20	6	13	12	6.2	55
Goodland	3645	885.5	1011.5	66	43	54.5	-3.6	85	29	34	10+	0	0	46	75	6.00	3.31	1.47	14	11	.0	0	12.9	SSE	*35	W	24	4	11	16	7.0	--
Topeka	877	978.0	1013.6	73	53	62.8	-1.0	85	31	36	5	0	0	53	72	4.18	-.14	1.64	11	11	.0	0	11.7	S	40	E	16+	6	9	16	6.6	49
Wichita	1321	964.1	1012.3	73	55	63.6	-1.3	85	29	39	5	0	0	55	77	7.57	3.78	2.83	18	15	.0	0	12.3	S	34	E	16+	6	15	10	6.4	59
KENTUCKY																																
Lexington	979	981.1	1016.9	76	54	64.9	.8	89	13	31	4	0	1	54	70	4.22	.66	2.09	7	8	.0	0	10.8	S	--	---	--	7	8	16	6.6	--
Louisville	474	996.9	1016.2	77	55	66.2	.9	90	13	36	4+	1	0	54	68	5.78	1.85	2.50	12	8	.0	0	9.9	SE	57	W	21	7	8	16	6.5	70
LOUISIANA																																
Baton Rouge	64	1011.5	1014.5	86	66	76.2	2.6	92	17+	49	6	10	0	66	74	2.67	-2.25	.72	12	6	.0	0	9.6	SE	--	---	--	3	16	12	6.6	--
Lake Charles	12	1012.2	1013.3	84	68	76.3	1.8	91	24	51	6	4	0	67	79	1.59	-3.14	.86	3	4	.0	0	9.1	SSE	*28	S	22	2	23	6	6.3	--
New Orleans (U)	9	1012.2	------	85	71	77.9	1.8	90	15+	56	5	5	0	--	--	2.17	-3.26	.58	13	8	.0	0	6.5	---	23	N	4	5	22	4	5.5	64
New Orleans	3	1012.2	1014.2	85	69	76.9	2.3	91	19	56	7	3	0	67	76	1.24	-4.30	.39	9	4	.0	0	8.6	S	*23	SSE	21	9	17	5	5.0	--
Shreveport	252	1004.4	1013.4	84	65	74.5	.8	93	21	47	6	7	0	63	72	3.45	-1.10	1.52	9	9	.0	0	9.0	SSE	--	---	--	4	16	11	6.2	65
MAINE																																
Caribou	624	989.8	1013.1	61	38	49.3	.8	80	8	26	17	0	9	36	62	1.62	-1.52	.61	9	1	.5	T	11.7	NW	*37	W	24	9	7	15	6.1	--
Portland	61	1011.1	1015.0	67	42	54.5	2.2	87	9	27	17	0	4	42	65	2.28	-1.08	1.09	9	1	.0	0	10.6	W	34	NW	1	10	7	14	6.0	65
MARYLAND																																
Baltimore (U)	14	------	------	78	59	68.2	2.9	94	26	41	4	3	0	--	--	1.83	-2.18	1.11	6	--	----	--	----	---	--	---	--	--	--	--	---	--
Baltimore	146	1012.6	1017.4	76	54	64.9	2.0	93	26	34	4	2	0	53	66	.55	-3.46	.43	5	1	.0	0	8.6	SW	42	W	26	10	12	9	5.6	68
Frederick	294	------	------	75	50	62.2	-1.7	90	13	32	4	1	1	--	--	2.45	-1.15	.75	9	--	.0	0	----	---	--	---	--	--	--	--	---	--
MASSACHUSETTS																																
Blue Hill Obs.(R)	629	992.3	1015.7	69	47	56.5	1.4	88	10	32	3	0	1	--	63	3.04	-.46	1.33	13	5	.0	0	14.8	SW	37	WNW	1	9	10	12	5.6	59
Boston	15	1010.4	1014.9	69	51	59.9	2.1	89	9+	37	3	0	0	43	60	3.63	.72	1.53	12	4	.0	0	17.4	SW	*46	NW	10	10	10	11	5.5	68
Nantucket	43	1015.5	1016.1	60	46	53.0	.7	75	24	30	17	0	1	45	76	1.46	-1.45	.64	8	3	.0	0	13.1	WSW	34	NW	2+	10	10	11	5.6	66
Pittsfield	1153	973.4	------	66	43	54.5	.2	84	9	28	3	0	3	--	--	4.09	.33	1.40	13	--	----	--	----	---	--	---	--	--	--	--	---	--
Worcester	986	979.0	------	66	45	55.6	-.4	83	9+	29	3	0	1	--	--	2.82	-.54	1.21	11	5	.0	0	14.4	---	*34	W	28	7	11	13	5.9	--
MICHIGAN																																
Alpena (U)	587	994.6	------	59	42	50.4	-.5	83	22	30	3	0	3	--	65	3.79	1.16	1.50	14	5	T	T	10.3	---	30	SW	22	8	7	16	6.1	54
Detroit	619	990.5	1017.1	66	47	56.4	-1.4	82	1	33	3	0	0	44	67	2.97	-.64	1.16	12	2	.0	0	11.0	E	40	NW	23	7	6	18	7.2	45
Detroit (Willow Run)	722	987.8	1016.3	67	47	57.2	-1.0	86	1	33	3	0	0	45	67	2.25	-1.19	1.10	12	2	.0	0	12.6	SW	*31	NW	23	5	9	17	7.0	--
East Lansing (U)	856	------	------	67	47	57.0	.5	83	1+	32	3	0	1	--	--	5.17	1.42	1.87	13	6	.0	0	5.9	---	14	NE	18+	--	--	--	---	53
Escanaba (U)	594	993.2	------	58	43	50.4	.6	79	8	32	3	0	1	--	70	4.40	1.80	1.74	12	6	.0	0	11.8	---	57	NW	15	8	12	11	5.8	66
Flint	761	988.8	1016.8	64	44	54.0	-1.8	80	22+	30	5	0	2	45	71	4.75	1.36	1.65	11	6	T	0	10.2	WSW	*32	NNW	23	6	6	19	7.2	--
Grand Rapids	681	990.9	1016.2	66	46	55.9	-.4	86	1	33	3+	0	0	45	69	5.05	1.60	1.47	11	6	.0	0	12.0	E	36	SW	8	5	6	20	7.4	47
Marquette (U)	677	989.5	------	59	42	50.1	.5	84	7	28	16	0	2	--	59	2.78	.14	1.46	12	2	.2	T	8.1	---	30	SE	21	7	12	12	6.1	69
Muskegon	627	992.9	1016.5	64	45	54.6	.3	77	14+	32	16	0	1	44	67	4.35	1.53	1.25	12	2	.0	0	----	---	--	---	--	6	9	16	6.8	--
Sault Ste. Marie	721	994.6	1017.5	60	39	49.2	.3	79	7	27	3	0	4	37	66	4.72	2.17	2.11	12	3	.0	0	11.3	WNW	*32	WSW	22	9	11	11	5.8	58
MINNESOTA																																
Duluth	1409	974.6	1016.5	61	38	49.5	-.2	77	6	25	4	0	6	35	60	2.47	-.70	.81	11	4	.0	0	14.9	ENE	61	NE	20	10	7	14	5.9	62
Intern'l. Falls	1179	974.6	1016.0	66	36	51.1	.2	82	30	23	9	0	8	34	55	.81	-1.72	.34	6	2	.0	0	12.3	NE	*31	WSW	24	11	5	15	5.8	--
Minneapolis	830	982.1	1015.6	67	47	57.0	-1.5	88	1	33	4	0	0	41	60	3.13	.01	.92	11	5	.0	0	13.5	E	43	SE	20	7	6	18	6.8	53
Rochester	1017	978.0	1015.2	65	44	54.8	-2.0	83	8	26	5	0	2	44	67	4.73	1.35	1.14	13	6	.0	0	10.8	ESE	--	---	--	4	6	21	7.5	--
St. Cloud	1034	977.0	1015.1	66	41	53.6	-1.6	83	31	26	4	0	3	41	65	4.58	1.48	1.58	12	6	.0	0	8.7	NE	*44	S	7	8	8	15	6.2	--
MISSISSIPPI																																
Jackson	305	1003.1	1014.9	84	62	73.0	.7	92	21+	43	6	5	0	62	73	3.70	-.39	1.60	11	9	.0	0	7.0	SSE	30	N	23	8	11	12	5.8	65
Meridian	294	1003.2	------	85	61	73.1	1.6	93	16+	40	6	10	0	--	--	1.82	-2.17	.63	10	5	.0	0	----	---	--	---	--	8	15	8	5.5	--
Vicksburg (U)	234	1005.5	------	83	65	73.6	.7	92	21	48	5	4	0	--	--	3.75	-.47	1.38	11	9	.0	0	8.1	---	23	NE	5+	10	8	13	5.8	52
MISSOURI																																
Columbia	778	985.8	1014.3	75	54	64.4	.8	86	12	35	4	0	0	54	71	4.04	-.80	1.23	11	9	.0	0	10.0	SSE	35	SE	22	7	5	19	6.7	56
Kansas City	741	979.3	1014.0	74	57	65.6	.1	84	12	43	4+	0	0	52	65	5.04	.63	2.65	13	7	.0	0	11.7	NE	42	SW	28	5	13	13	6.5	57
St. Joseph	809	978.3	------	74	53	63.3	-1.2	84	31	36	5	0	0	--	--	3.70	-.37	1.16	10	7	.0	0	12.1	---	*32	S	7+	7	9	15	6.5	--
St. Louis (U)	465	------	------	75	58	66.2	.0	86	14	37	4	0	0	--	--	8.67	4.57	1.75	14	10	.0	0	12.5	---	36	SW	9+	11	6	14	5.7	54
St. Louis	552	994.6	1014.9	76	56	66.2	.8	87	14	36	4	0	0	54	68	6.70	2.68	2.00	14	11	.0	0	10.0	S	--	---	--	8	6	17	6.7	--
Springfield	1265	966.8	1013.8	75	56	65.5	1.9	87	15	38	5	0	0	56	75	10.54	5.52	2.62	18	16	.0	0	12.6	S	56	NW	22	6	9	16	6.8	68
MONTANA																																
Billings	3568	888.9	1012.1	67	45	56.2	.2	84	2+	35	21	0	0	43	65	3.39	1.59	1.66	14	4	.0	0	11.6	NE	38	SW	6	5	13	13	6.5	58
Butte	5530	827.0	1012.7	62	37	49.3	2.4	72	28+	28	24	0	7	38	--	2.70	.90	1.06	12	6	4.0	1	8.3	SSE	*26	ESE	8	1	9	21	7.9	--
Glasgow (U)	2277	939.0	1013.3	70	44	57.1	1.6	87	2	33	23	0	0	37	52	1.00	-.55	.65	4	2	.0	0	11.7	ESE	*30	NW	25+	11	9	11	5.5	--
Great Falls	3664	885.9	1011.6	67	46	56.4	2.6	81	2+	37	9+	0	0	37	55	2.82	.89	1.94	12	4	.0	0	11.3	E	36	S	2	7	10	14	6.3	79
Havre (U)	2488	924.1	1012.5	71	45	57.8	2.1	88	2	35	22	0	0	39	55	1.20	-.28	1.14	4	0	.0	0	8.1	---	30	N	28	9	10	12	5.6	54
Helena	3893	870.6	1011.5	67	43	55.0	2.7	79	29	33	23+	0	0	39	59	3.25	1.65	1.99	12	2	.0	0	8.5	N	39	NW	30	4	10	17	6.9	52
Kalispell	2965	------	------	70	43	56.4	4.0	81	29+	32	23	0	1	--	--	1.25	-.38	.46	9	4	.0	0	----	---	--	---	--	12	10	9	5.3	--
Miles City	2629	920.1	1012.9	70	46	58.1	1.0	88	2	37	10	0	0	44	--	1.89	.18	.92	6	2	.0	0	10.7	SE	*25	SE	18+	9	11	11	5.8	--
Missoula	3200	898.7	1012.2	69	45	56.8	3.2	83	29	36	24	0	0	42	62	3.22	1.58	1.82	11	4	.0	0	7.0	WNW	34	NE	8	6	10	15	6.7	57
NEBRASKA																																
Grand Island	1841	946.8	1012.9	67	49	57.9	-3.2	81	31	37	5	0	0	48	72	5.64	1.77	1.32	11	4	.0	0	12.2	NNE	--	---	--	6	6	19	7.0	--
Lincoln (U)	1166	------	------	70	52	61.0	-1.5	85	29	39	5	0	0	--	--	3.42	.32	1.07	8	4	.0	0	10.8	---	45	S	7	9	4	18	6.6	54
Norfolk	1544	957.3	1012.9	68	48	58.1	-1.0	84	7	36	5	0	0	46	67	4.55	.92	1.27	14	5	.0	0	----	---	--	---	--	4	5	22	7.5	--
North Platte	2779	913.6	1011.9	66	45	55.6	-3.3	83	7	34	5	0	0	47	77	7.21	4.54	2.25	12	8	.0	0	12.0	SE	66	NW	25	1	11	19	8.0	48
Omaha	978	973.9	1013.7	71	52	61.3	-1.4	84	1	39	5	0	0	50	70	5.01	2.26	1.37	11	6	.0	0	11.8	SSE	58	E	16	7	7	17	7.1	47
Omaha, N. Omaha AP	1323	965.5	------	68	50	59.2	-1.4	82	29	39	4	0	0	--	--	5.33	2.58	2.27	12	4	.0	0	----	---	--	---	--	--	--	--	---	--
Scottsbluff	3950	876.4	1011.6	65	43	54.2	-2.0	84	7	32	17	0	1	43	72	6.25	3.61	2.13	15	7	T	0	12.2	ESE	*33	NW	25	6	5	20	7.5	--
Valentine (U)	2587	921.1	------	65	45	54.9	-2.1	91	7	32	5	1	1	--	--	2.73	.07	1.12	17	7	.0	0	11.7	---	38	SE	20	2	10	19	7.8	45
NEVADA																																
Elko	5075	841.2	1011.4	64	36	50.1	-2.9	79	6	23	3	0	7	36	65	2.41	1.46	.83	15	12	T	T	7.2	WSW	*29	W	2	2	10	19	8.0	--
Ely	6257	805.6	1011.4	61	34	47.5	-4.2	74	6+	24	4	0	13	31	61	2.68	1.50	.64	19	12	3.8	1	11.1	S	43	S	2	6	7	18	7.1	56
Las Vegas	2162	943.4	1007.6	82	56	69.3	-4.8	97	31	47	24	9	0	30	27	.15	-.01	.12	3	2	.0	0	12.6	SW	*48	SW	19	13	10	8	4.3	77
Reno	4397	859.1	1012.0	68	39	53.5	-1.8	86	31	27	3	0	3	35	53	.83	.35	.21	13	6	.0	0	8.5	WNW	47	SSE	18	7	8	16	6.6	81
Winnemucca	4299	864.5	1011.8	67	39	52.9	-3.0	83	27	22	3	0	3	38	63	2.82	1.98	.97	15	8	.0	0	7.1	W	37	W	13	5	4	22	7.7	39

See footnotes at end of table.

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure: ø Station	Pressure: Sea level	Temperature: Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	No. of days: Max. 90° F or above	No. of days: Min 32° F or below	Average dew point	Average relative humidity	Precipitation: Total	Departure from normal	Greatest in 24 hours	No. of days: .01 inch or more	No. of days: With thunderstorms	Snow, Sleet: Total	Snow, Sleet: Max depth on ground	Wind: Average hourly speed	Prevailing direction	Fastest mile: Speed	Fastest mile: Direction	Fastest mile: Date	No. of days (sunrise to sunset): Clear	Partly cloudy	Cloudy	Sky cover, tenths (sunrise to sunset)	Possible sunshine
	Ft	Mb	Mb.	°F	°F	°F	°F	°F		°F				°F	%	In	In	In			In	In	M p. h.		M p h			0–3	4–7	8–10	0–10	%
NEW HAMPSHIRE																																
Concord	339	1004.7	1015.4	70	43	56.2	1.4	87	9	27	17	0	4	41	60	1.95	-1.09	0.82	10	3	0.0	0	8.2	NNW	34	NW	1	12	8	11	5.6	60
Mt. Washington	6262	804.8	------	42	27	34.7	-.6	58	23	9	3+	0	20	--	82	6.06	.74	1.58	14	3	10.7	5	30.4	W	*95	W	3	4	9	18	7.2	41
NEW JERSEY																																
Atlantic City(U)	8	1014.6	------	67	54	60.0	.9	83	1	38	4	0	0	--	--	.54	-2.44	.32	5	1	.0	0	15.3	---	35	NE	16+	11	8	12	5.3	73
Newark	11	1015.4	1016.1	74	52	62.9	1.8	90	10+	39	3+	2	0	47	61	1.87	-1.86	.91	7	3	.0	0	11.3	SW	*29	WNW	1+	11	9	11	5.3	--
Trenton (U)	56	1009.4	1016.2	73	53	62.9	1.1	88	26	36	4	0	0	--	--	1.40	-2.08	.88	4	1	.0	0	9.2	---	32	NW	26	6	15	10	5.7	60
NEW MEXICO																																
Albuquerque	5310	845.2	1008.4	75	49	61.9	-3.4	89	29	40	13	0	0	34	41	.35	-.52	.17	6	8	.0	0	9.0	ESE	45	W	20	13	11	7	4.6	74
Clayton	4969	842.9	1010.2	69	44	56.5	-3.4	82	28	36	17+	0	0	--	--	4.07	1.48	3.19	10	8	.0	0	----	---	--	---	--	7	8	16	6.8	--
Raton	6379	803.9	1011.5	65	40	52.3	-3.4	79	29	33	12+	0	0	--	--	3.81	1.64	.73	19	17	.2	T	----	---	--	---	--	6	11	14	6.7	--
Roswell	3612	889.6	1008.8	82	52	66.6	-1.5	93	19	43	6	2	0	39	46	.43	-.85	.14	5	7	.0	0	12.0	---	72	N	31	14	11	6	4.3	--
NEW YORK																																
Albany	277	1012.3	1016.0	69	45	57.0	-.5	86	9	32	17	0	1	43	63	4.94	2.14	1.57	14	3	.0	0	8.9	S	40	NW	1	11	7	13	5.7	60
Binghamton	1601	957.7	1017.5	64	44	54.1	-.8	81	26	26	3	0	4	42	68	3.14	-.73	1.40	10	2	T	T	11.5	NW	35	NW	28	7	7	17	6.7	57
Buffalo	693	989.0	1017.3	64	45	54.7	-.7	82	30	30	3	0	1	44	70	4.03	1.56	2.03	9	0	.0	0	12.0	WSW	38	W	9	7	6	18	6.9	60
New York (U)	10	1015.2	------	71	54	62.2	1.4	86	13	38	3	0	0	--	--	1.51	-2.00	.61	7	4	.0	0	13.1	---	53	NW	23	12	8	11	5.2	69
New York	19	1014.6	1016.6	73	54	63.4	2.1	87	10	40	3	0	0	46	59	2.92	-.41	1.83	9	3	.0	0	13.9	SW	42	NW	1	11	9	11	5.4	--
Rochester	543	997.5	1016.9	65	46	55.4	-1.0	83	31	32	3+	0	2	45	70	2.98	.34	1.66	9	3	T	0	12.7	SW	43	SW	23	6	7	18	6.6	60
Schenectady	217	------	------	70	48	58.6	.5	85	9	34	3	0	0	--	--	4.11	1.13	1.14	13	1	.0	0	----	---	--	---	--	--	--	--	3.6	--
Syracuse	424	995.5	1017.6	66	46	56.0	-1.7	84	26	29	3	0	2	44	67	2.88	-.02	1.13	10	2	T	T	8.8	WNW	43	NW	15	8	8	15	6.4	58
NORTH CAROLINA																																
Asheville (U)	2203	938.3	------	77	54	65.8	2.4	86	13	38	7	0	0	--	--	1.73	-1.30	.60	9	7	.0	0	6.7	---	20	NW	27	5	12	14	6.3	55
Cape Hatteras(R)	9	1016.5	1017.2	76	62	69.1	.9	83	16+	44	6+	0	0	62	79	5.81	1.88	2.24	8	3	.0	0	11.7	SW	29	N	4	4	10	17	7.1	--
Charlotte	725	989.6	1017.4	82	59	70.3	2.0	92	13+	44	5	5	0	60	74	5.29	2.31	1.19	12	9	.0	0	7.6	S	36	NW	24	3	12	16	6.7	66
Greensboro	891	986.2	1018.5	79	57	68.0	1.7	90	13	38	7	1	0	56	71	1.96	-1.68	1.03	8	6	.0	0	7.5	SW	36	NW	26	6	8	17	6.6	70
Raleigh	433	1003.7	1017.9	79	58	68.1	.8	89	24	36	5	0	0	59	76	5.86	2.46	4.40	13	8	.0	0	8.4	SSW	*23	SSW	15+	4	12	15	6.9	39
Wilmington	30	1016.0	------	81	61	71.0	1.0	90	24	44	6	1	0	--	--	3.29	-.14	.94	11	4	.0	0	11.7	---	29	NE	4	5	14	12	6.5	58
Winston-Salem	967	982.4	1017.5	79	58	68.7	2.0	90	13	40	5	1	0	56	70	5.42	1.49	2.13	10	7	.0	0	8.0	NE	*35	W	26	7	13	11	6.0	--
NORTH DAKOTA																																
Bismarck	1650	954.6	1014.3	68	43	55.1	.3	84	1	31	5	0	1	40	62	2.77	.83	.99	10	5	.0	0	13.3	E	47	NW	25	10	11	10	5.6	58
Devils Lake (U)	1471	961.7	------	66	42	54.2	1.2	82	30	32	23	0	1	--	56	1.26	-.87	.50	7	3	.0	0	9.6	---	30	NW	26	12	8	11	5.2	69
Fargo	895	981.0	1015.7	68	44	56.1	1.1	84	30	28	9	0	2	39	57	2.00	-.17	.72	9	2	.0	0	15.2	ESE	49	NW	26	12	7	12	5.3	71
Williston (U)	1877	946.8	1014.0	68	45	56.7	2.1	86	30	32	23	0	1	38	52	.90	-.76	.65	6	2	.0	0	8.6	---	29	NW	25	9	11	11	5.5	69
OHIO																																
Akron	1210	979.4	1017.6	70	48	58.7	.2	82	30	31	3	0	2	49	72	3.10	-.65	1.50	12	5	.0	0	11.1	S	--	---	--	7	7	17	6.5	--
Cincinnati Obs.	761	------	------	75	54	64.5	.9	89	13	32	4	0	1	--	--	5.53	1.99	2.05	10	11	.0	0	5.7	---	20	SW	25	--	--	--	---	68
Cincinnati	869	984.5	1016.5	75	53	64.0	1.5	89	13	33	4	0	0	51	66	5.74	2.29	2.26	11	11	.0	0	10.0	SSW	*35	SSW	18	7	4	20	6.9	--
Cleveland (U)	663	------	------	66	49	57.7	-1.4	81	8+	35	3+	0	0	--	--	3.35	.33	.64	12	--	----	--	----	---	--	---	--	--	--	--	---	--
Cleveland	787	988.7	1016.8	69	49	59.1	.0	83	30	33	6	0	0	47	68	4.60	1.87	1.38	13	4	T	0	13.9	NNE	68	SW	14	7	7	17	7.0	48
Columbus (U)	724	------	------	73	53	63.1	.9	86	13	34	4	0	0	--	--	4.44	1.21	1.48	13	10	.0	0	----	---	--	---	--	--	--	--	---	--
Columbus	815	987.1	1017.1	75	51	62.7	1.9	86	13	32	6	0	1	50	66	5.41	1.44	1.46	12	11	T	0	9.2	NNW	48	W	18	9	10	12	6.3	70
Dayton	1002	980.5	1016.8	72	51	61.7	.7	85	13	31	4	0	1	49	65	7.76	4.22	1.78	13	11	T	0	11.3	SW	47	W	18	6	7	18	6.7	64
Sandusky (U)	603	994.4	------	67	50	58.6	-.7	84	1	37	3+	0	0	--	--	5.21	1.89	2.68	14	6	.0	0	8.6	---	42	SW	22	8	8	15	5.9	57
Toledo	676	991.3	1016.8	69	47	57.9	-.3	87	1	32	3	0	1	47	70	2.19	-.76	.56	13	4	.0	0	12.3	E	45	W	23	7	6	18	6.9	52
Youngstown	1178	974.8	1017.5	70	47	58.2	-.1	82	13+	29	3	0	2	47	68	3.17	-.92	1.37	10	3	.0	0	10.3	SW	*35	SW	26	5	10	16	6.6	--
OKLAHOMA																																
Oklahoma City	1280	969.2	1012.3	74	57	65.7	-2.3	86	16	41	5	0	0	58	80	8.67	4.42	1.90	16	11	.0	0	12.5	SSE	43	W	22	5	8	18	7.0	58
Tulsa	672	988.2	1012.5	77	59	68.0	-.2	88	21	42	5	0	0	58	74	9.80	5.03	2.49	16	12	.0	0	9.7	SSE	41	NW	22	7	3	21	7.2	52
OREGON																																
Astoria	8	1014.2	1014.9	62	47	54.2	.7	69	6	39	3+	0	0	49	82	2.82	-.71	1.35	13	[illegible]	.0	0	5.9	NW	*24	NW	4	4	8	19	7.5	--
Burns (U)	4140	870.0	1011.5	66	42	53.8	-.3	83	31	33	20	0	0	39	61	1.32	.57	.27	8	4	.0	0	----	---	--	---	--	6	7	18	7.1	--
Eugene	361	1001.0	1014.5	68	47	57.8	1.4	83	29	40	3+	0	0	--	--	3.11	1.12	.79	13	1	.0	0	7.5	---	*25	WSW	6	8	8	15	6.1	--
Meacham	4050	------	------	60	42	51.1	3.1	80	31	36	20+	0	0	--	--	3.81	1.44	1.13	18	5	.0	0	----	---	--	---	--	4	6	21	7.6	--
Medford	1312	965.8	1013.2	73	46	59.7	1.0	90	28+	36	3	2	0	45	64	1.10	-.12	.33	12	6	.0	0	5.7	WNW	*31	WNW	8	10	6	15	5.6	--
Pendleton	1492	958.3	1011.7	72	51	61.5	1.7	92	31	46	24	1	0	47	64	2.21	1.24	.96	14	4	.0	0	10.1	SE	*35	W	2+	7	7	17	6.7	--
Portland	21	1008.5	1014.0	68	50	58.9	1.3	83	29	43	3	0	0	50	74	1.97	.21	.58	12	0	.0	0	6.4	WNW	26	S	2	7	6	18	6.9	36
Roseburg	505	995.3	1013.9	71	47	58.7	1.9	87	29	40	15	0	0	--	--	1.66	-.07	.65	13	0	.0	0	4.7	---	22	S	17	9	9	13	5.8	56
Salem	195	1006.8	1014.0	70	47	58.4	1.2	87	29	38	3	0	0	49	75	2.77	.84	.81	13	0	.0	0	6.1	S	*20	N	27	8	5	18	6.7	--
Sexton Summit(R)	3836	------	------	61	42	51.2	.7	79	28+	31	20	0	1	--	--	2.52	.57	.91	15	4	.9	T	----	---	--	---	--	10	6	15	5.8	--
PENNSYLVANIA																																
Allentown	376	1003.3	1017.5	72	48	59.9	-.6	88	13	31	4	0	1	47	65	2.35	-1.62	1.31	9	3	.0	0	10.6	WSW	--	---	--	9	10	12	5.6	--
Erie	732	------	------	65	46	55.3	.2	82	26	31	6	0	2	--	--	3.29	.10	1.44	8	2	T	T	11.6	---	*33	SSE	21+	7	9	15	6.5	--
Harrisburg	335	1003.4	1017.1	74	52	62.7	.3	89	23	36	4	0	0	46	59	.84	-2.86	.44	5	3	.0	0	8.2	WSW	31	NW	27	8	11	12	5.8	63
Philadelphia (U)	26	------	------	73	54	63.8	.1	89	26	39	4	0	0	--	--	1.27	-2.31	.45	7	--	.0	0	----	---	--	---	--	--	--	--	---	--
Philadelphia	10	1012.3	1017.3	75	52	63.5	.4	90	26	35	4	1	0	48	62	1.21	-2.37	.66	5	2	.0	0	10.3	WSW	56	SW	26	6	12	13	6.2	63
Pittsburgh (U)	749	------	------	75	53	63.9	1.3	86	13+	36	3+	0	0	--	--	2.72	-.77	.86	9	--	.0	--	----	---	--	---	--	--	--	--	---	57
Pittsburgh	1151	986.6	1017.3	72	50	60.9	1.1	84	13	32	4	0	1	47	64	2.72	-1.04	1.34	10	5	.0	0	9.9	WSW	*42	WSW	14	6	10	15	6.4	60
Reading (U)	266	1004.8	1016.6	74	52	63.2	.7	89	26	36	4	0	0	--	--	1.71	-1.98	.89	8	4	.0	0	9.9	---	53	NW	26	10	9	12	5.6	57
Scranton	940	983.2	1017.6	69	45	57.3	-1.6	84	10	28	3	0	2	44	61	1.44	-2.67	.98	6	2	.0	0	9.7	WSW	35	NW	15	9	10	12	5.8	67
Shippingport (U)	736	------	------	73	48	60.3	---	85	13	31	6	0	1	--	--	3.33	----	1.40	12	6	.0	0	2.5	---	*45	W	14	--	--	--	---	--
Williamsport	527	998.2	------	73	48	60.3	.1	88	13	34	3	0	0	--	--	1.93	-2.38	.72	8	--	T	T	----	---	--	---	--	9	9	13	5.7	--
RHODE ISLAND																																
Block Island	110	1011.3	1015.7	62	48	54.8	.6	71	1+	38	3	0	0	--	--	2.40	-.56	1.22	8	4	.0	0	----	---	--	---	--	13	7	11	5.1	--
Providence	55	1009.7	1015.6	69	48	58.8	2.0	87	10	36	3	0	0	43	60	.93	-2.09	.39	11	4	.0	0	13.3	SW	*33	NW	1	11	12	8	5.0	70
SOUTH CAROLINA																																
Charleston (U)	[illegible]	------	------	79	67	73.3	.4	89	20	48	4+	0	0	--	--	5.87	2.51	1.70	11	--	.0	0	9.3	---	29	W	27+	--	--	--	---	48
Charleston	41	1014.8	1016.6	81	62	71.6	.2	89	27	45	5+	0	0	64	83	9.28	5.52	3.05	10	5	.0	0	8.6	NNE	--	---	--	3	10	18	7.6	--
Columbia	217	1008.2	1016.3	83	62	72.4	.7	92	19+	41	5	8	0	63	76	6.71	3.48	2.04	9	7	.0	0	6.7	NE	*21	WSW	20+	4	14	13	6.6	52
Florence	146	1011.5	------	83	61	72.0	.7	91	26+	42	5	6	0	--	--	4.19	.41	1.57	11	5	.0	0	----	---	--	---	--	7	9	15	6.3	--
Greenville	1018	979.8	1016.6	80	60	70.2	1.7	90	16	45	[illegible]	1	0	58	72	2.66	-.73	1.08	12	7	.0	0	9.2	NE	35	N	15	4	12	15	7.2	57
Spartanburg	801	------	------	80	60	69.9	1.1	89	13+	45	6	0	0	--	--	5.42	1.97	1.89	11	8	.0	0	7.7	---	*29	WSW	19	--	--	--	---	--
SOUTH DAKOTA																																
Huron	1282	966.8	1014.1	66	46	55.5	-2.5	88	7	34	4	0	0	45	73	5.92	3.67	1.76	13	6	.0	0	12.5	SSE	37	NE	14	7	6	18	7.0	57
Rapid City	3165	899.4	1013.3	63	45	54.0	-.7	85	2+	37	5	0	0	43	70	7.05	4.00	2.46	20	7	.0	0	12.0	N	54	N	25	3	6	22	7.7	40
Sioux Falls	1420	962.4	1013.9	66	46	56.0	-2.1	86	7	31	4+	0	2	42	64	4.89	1.51	1.80	12	5	.0	0	11.9	NE	*35	SSW	7	5	6	20	7.5	--
TENNESSEE																																
Bristol	1519	963.0	------	81	55	67.8	3.6	90	13+	36	6	2	0	--	--	2.39	-1.05	.72	[illegible]	8	.0	0	----	---	--	---	--	5	15	11	5.8	--
Chattanooga	670	988.8	1016.2	82	58	69.9	2.2	89	13+	38	5	0	0	58	72	2.16	-2.00	.58	11	[illegible]	.0	0	6.8	S	28	SW	19	6	13	12	6.2	72
Knoxville	950	981.7	1016.7	81	59	69.9	2.5	90	12	39	[illegible]	1	0	57	69	3.53	-.05	1.40	12	9	.0	0	7.5	NE	43	W	19	6	13	12	6.1	70

See footnotes at end of table.

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure		Temperature								No. of days		Average dew point	Average relative humidity	Precipitation			No. of days		Snow, Sleet		Wind		Fastest mile			No. of days (sunrise to sunset)			Sky cover, tenths (sunrise to sunset)	Possible sunshine
		ø Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F or above	Min. 32° F or below			Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max. depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy		
	Ft.	Mb	Mb.	°F.	°F	°F.	°F.	°F		°F		#		°F	%	In.	In.	In.			In.	In.	M. p. h.		M. p. h.			0–3	4–7	8–10	0–10	%
TENNESSEE (Cont'd.)																																
Memphis (U)	271	------	------	80	63	71.6	1.1	91	16	46	5	2	0	--	--	5.23	1.58	1.47	12	--	----	--	----	---	--	---	--	--	--	--	---	--
Memphis	263	1000.4	1014.9	81	62	71.7	1.6	91	16	42	6	1	0	60	70	7.10	3.18	2.56	11	9	0.0	0	9.9	SSW	34	NW	22	3	10	18	7.1	50
Nashville	577	996.4	------	81	59	69.6	1.4	90	13	37	5	1	0	59	74	8.23	4.45	2.75	10	10	.0	0	7.3	S	34	NNW	17+	5	8	18	6.8	63
Oak Ridge (R)	905	983.9	------	82	58	69.7	3.7	91	13+	36	6	5	0	--	--	2.45	-1.73	1.13	9	6	.0	0	----	---	--	---	--	8	11	12	6.0	--
TEXAS																																
Abilene	1759	950.6	1010.9	78	59	68.2	-3.5	90	16	44	5	1	0	60	77	13.19	9.51	2.70	16	13	.0	0	11.6	SSE	54	W	8	6	5	20	6.8	--
Amarillo	3590	886.6	1010.6	71	50	60.7	-3.1	84	29	43	6	0	0	48	69	4.36	1.35	1.40	13	10	.0	0	12.6	S	38	SE	27	7	11	13	5.8	65
Austin	615	990.9	1012.4	82	65	73.5	-1.7	90	21+	51	5+	3	0	66	80	7.38	3.01	3.27	10	5	.0	0	9.7	SSE	*25	N	18	3	11	17	7.4	65
Brownsville	16	1007.8	1010.7	87	72	79.7	.8	94	21	59	6	7	0	71	79	2.24	-.85	.97	6	3	.0	0	16.1	SE	32	S	21+	6	15	10	5.9	55
Corpus Christi	41	1010.2	1011.1	85	71	77.8	.4	91	22+	59	6	6	0	70	80	4.82	1.41	1.74	9	7	.0	0	12.8	SE	31	SE	22	4	9	18	7.1	66
Dallas	487	994.2	1012.4	82	63	72.5	-1.2	93	21	45	5	2	0	63	75	13.74	8.77	3.78	14	11	.0	0	12.3	SSE	50	W	23	4	9	18	7.2	44
Del Rio	1091	976.6	1010.3	84	65	74.5	-2.9	95	21	55	5	5	0	64	72	10.23	7.76	3.66	15	12	.0	0	11.6	---	38	NE	10+	9	8	14	6.1	50
El Paso	3920	882.8	1008.4	82	57	69.5	-2.1	95	29	48	13	3	0	32	29	.10	-.31	.10	2	1	.0	0	13.6	WSW	45	W	20	20	7	4	2.9	88
Fort Worth	544	991.9	1012.4	80	63	71.5	-1.8	91	21	46	5	1	0	63	77	12.64	7.72	4.12	15	13	.0	0	12.0	S	*52	W	23	5	11	15	6.8	--
Galveston (U)	7	------	------	81	72	76.3	.6	85	22	57	5	0	0	--	--	.94	-2.26	.47	7	--	.0	0	14.0	---	38	NE	18	--	--	--	---	67
Galveston	5	1010.8	1013.1	81	72	76.7	.8	86	25+	58	5	0	0	69	78	.88	-2.61	.62	5	4	.0	0	14.1	SSE	--	---	--	2	20	9	6.7	--
Houston (U)	41	1007.5	------	84	70	77.1	1.2	89	21	54	6	0	0	--	--	1.99	-2.85	.93	7	5	.0	0	11.6	---	32	SE	23	3	18	10	6.4	56
Houston	50	1009.1	1012.7	84	69	76.5	1.8	90	14	53	6	1	0	67	76	1.87	-3.04	1.68	6	4	.0	0	13.8	SSE	--	---	--	2	15	14	6.8	--
Laredo	500	994.2	1009.4	92	70	80.9	-.3	105	21	61	5+	22	0	65	64	4.53	1.35	4.18	8	5	.0	0	13.5	SE	*36	NE	18	6	17	8	5.5	--
Lubbock	3243	900.1	1010.1	76	54	64.8	-3.0	88	30	44	6	0	0	52	70	6.43	3.07	1.81	14	11	.0	0	15.0	S	*40	S	15+	8	14	9	5.6	--
Midland	2854	912.3	1009.9	81	58	69.5	-3.8	92	20	46	6	1	0	51	59	4.30	2.23	1.25	6	8	.0	0	11.6	SSE	*35	NE	31	11	11	9	5.1	--
Port Arthur	16	1012.2	1013.4	84	69	76.5	2.1	89	29+	50	6	0	0	68	76	.64	-3.76	.23	7	5	.0	0	12.8	SSE	35	N	26	3	20	8	6.1	57
San Angelo	1903	944.5	1010.7	79	60	69.4	-4.2	93	21	47	5+	2	0	58	72	7.10	4.14	1.61	13	12	.0	0	11.4	S	*46	WSW	8+	8	7	16	6.1	--
San Antonio	792	986.8	1011.5	82	65	73.4	-2.6	89	24+	52	5+	0	0	65	78	8.22	4.70	4.29	9	8	.0	0	9.3	SE	35	NE	18	2	10	19	7.4	49
Victoria	110	1007.1	1011.6	84	68	76.0	-1.4	90	22	52	6	1	0	69	79	6.06	2.04	3.05	8	8	.0	0	11.9	---	*55	NNW	18	3	13	15	7.1	--
Waco	500	992.2	1011.9	82	65	73.6	-.9	91	24	48	6	4	0	65	77	7.60	3.45	3.06	11	9	.0	0	12.8	SSE	*37	WNW	11	3	10	18	7.4	--
Wichita Falls	1020	975.3	1011.5	78	60	69.1	-1.4	90	22	42	5	1	0	60	77	12.03	8.17	4.07	15	14	.0	0	10.3	SSE	*32	NNE	17	4	12	15	6.6	--
UTAH																																
Milford	5028	840.5	1010.5	68	39	53.7	-3.1	82	27+	32	21	0	1	--	--	1.19	.45	.35	13	12	.2	T	----	---	--	---	--	8	9	14	6.1	--
Salt Lake City	4220	863.2	1010.2	70	45	57.2	-1.7	83	6+	33	4	0	0	39	56	3.37	1.81	1.15	12	8	T	0	8.7	SSE	32	SE	19	6	10	15	6.7	66
VERMONT																																
Burlington	331	1001.2	1015.8	65	43	54.0	-1.4	83	9	27	5	0	3	40	62	2.95	.06	.94	9	1	T	T	7.3	SSW	34	NW	1	5	9	17	6.8	50
VIRGINIA																																
Lynchburg	947	983.3	------	77	55	66.4	1.4	90	13+	38	5	2	0	--	--	1.36	-1.73	.46	10	5	.0	0	7.7	---	24	NE	2	5	14	12	6.2	64
Norfolk	26	1016.0	1017.8	78	59	68.1	2.2	91	15	42	4	2	0	58	72	1.94	-1.51	.98	6	3	.0	0	9.7	SW	34	NE	2	5	13	13	6.5	75
Richmond	162	1011.5	1017.6	79	57	67.8	2.0	92	15	38	4+	5	0	56	69	2.75	-.89	1.22	6	6	.0	0	7.6	SSW	26	N	18	4	14	13	6.6	63
Roanoke	1174	975.5	1017.4	80	56	67.6	2.9	92	13	39	5	6	0	53	65	2.23	-1.39	1.38	9	4	.0	0	8.0	SE	--	---	--	4	13	14	6.4	--
WASHINGTON																																
Olympia	190	1006.4	1013.9	70	46	57.6	3.5	84	6+	38	3	0	0	46	69	1.42	-.24	.76	8	0	.0	0	5.5	SW	*22	SW	12+	8	6	17	6.6	--
Seattle (U)	14	------	------	69	52	60.4	3.1	82	29	49	3+	0	0	--	--	1.12	-.49	.55	6	0	.0	0	7.4	---	30	SW	18	10	6	15	6.2	53
Seattle-Tacoma	386	1000.7	1014.9	67	49	57.9	2.8	80	29+	44	3	0	0	48	73	1.17	-.47	.48	8	1	.0	0	11.3	SW	*29	SW	18	8	7	16	6.7	--
Seattle	14	1012.9	1014.0	--	--	----	---	--	--	--	--	--	--	46	64	----	----	----	--	--	----	--	6.7	S	--	---	--	--	--	--	---	--
Spokane	2357	942.8	1011.5	70	49	59.3	4.6	88	30	42	21	0	0	48	71	3.74	2.70	.74	15	5	.0	0	7.2	SSW	49	W	1	7	12	12	6.5	66
Stampede Pass (R)	3958	877.1	1014.7	56	41	48.4	3.9	79	31	34	20+	0	0	--	--	2.51	-2.23	.73	14	4	T	68	----	---	--	---	--	4	9	18	7.1	--
Tatoosh (R)	101	1011.5	1014.4	56	49	52.4	1.5	62	29	43	3	0	0	49	87	2.83	-.48	1.80	11	0	.0	0	9.3	SW	27	SE	1	4	7	20	7.6	54
Walla Walla (U)	949	975.6	1011.2	72	53	62.9	1.7	92	31	47	22	2	0	--	--	4.19	2.93	1.86	14	5	.0	0	5.4	---	20	S	17	8	8	15	6.5	61
Yakima	1061	972.2	1010.7	76	49	62.4	3.3	94	31	39	3	3	0	43	54	1.19	.72	.67	6	1	.0	0	6.1	NW	*21	NW	22	4	11	16	7.1	--
WEST VIRGINIA																																
Charleston	950	981.6	1016.8	78	53	65.3	1.6	90	13	34	4+	1	0	51	62	2.83	-.95	1.23	8	7	.0	0	6.1	SW	*35	WSW	26	7	10	14	6.3	--
Elkins	1970	------	------	74	47	60.3	2.1	84	13+	28	5	0	3	49	--	1.93	-2.32	.70	9	5	.0	0	4.7	NW	*23	NW	14	7	12	12	6.1	--
Huntington (U)	565	------	------	79	54	66.4	.7	92	13	34	4	2	0	--	--	2.76	-1.06	1.26	11	--	.0	0	----	---	--	---	--	--	--	--	---	--
Parkersburg (U)	615	------	------	77	53	64.6	1.1	90	13	33	4	1	0	--	--	4.10	.60	2.31	11	8	.0	0	5.7	---	34	W	14	11	11	9	5.1	67
WISCONSIN																																
Green Bay	689	993.2	1016.3	62	43	52.7	-1.7	82	8	30	3+	0	3	42	70	5.28	2.75	2.32	13	3	.0	0	12.6	ENE	43	S	8+	8	7	16	6.8	45
La Crosse	652	990.5	1015.1	67	48	57.2	-1.8	85	8	36	4	0	0	44	63	4.56	1.29	1.59	16	6	.0	0	9.1	E	*29	SSW	8	5	3	23	7.6	--
Madison	857	980.4	1015.8	66	45	55.3	-2.2	88	1	30	5	0	4	45	72	5.80	2.53	1.47	16	5	.0	0	12.1	ENE	42	SE	21	6	5	20	7.4	46
Milwaukee	672	991.2	1016.3	61	44	52.7	-1.6	81	1+	31	5	0	1	43	75	3.82	.84	.69	16	6	.0	0	15.8	NNE	42	SW	8	5	7	19	7.4	48
WYOMING																																
Casper	5322	834.7	1010.3	62	41	51.6	-1.5	77	2+	32	23	0	1	39	69	3.85	1.53	.80	19	11	T	0	13.5	E	*55	WSW	19	3	8	20	7.7	--
Cheyenne	6131	808.3	1011.5	58	38	48.1	-2.0	74	2+	29	16+	0	4	38	73	5.35	2.89	.82	23	12	7.7	8	14.2	SE	49	NW	20	0	13	18	8.0	31
Lander	5563	832.4	1011.2	61	42	51.4	-1.0	77	3+	32	15	0	1	39	68	6.03	3.46	1.13	18	8	2.0	2	6.7	---	30	E	3+	2	12	17	7.5	41
Sheridan	3942	881.8	1012.4	64	43	53.5	.6	82	2	33	22	0	0	43	70	3.63	.99	.84	16	7	T	0	9.6	SE	38	NW	21+	5	10	16	6.9	41
PACIFIC AREA																																
Canton Island	9	1009.1	1009.4	90	79	84.1	-.1	92	3+	75	19	18	0	76	79	4.69	1.83	1.06	16	0	.0	0	11.3	E	*26	NE	29+	1	9	21	8.4	--
Hilo	31	1015.9	1017.9	80	65	72.5	-.6	84	21+	62	2+	0	0	65	79	6.32	-2.68	1.63	22	0	.0	0	8.9	WSW	*26	ENE	18	4	11	16	7.0	34
Honolulu	7	1017.3	1017.8	83	68	75.7	-.4	86	31	64	7+	0	0	63	67	1.12	.72	.56	3	0	.0	0	10.4	ENE	30	NE	3	16	10	5	4.4	73
Koror (R)	94	1006.8	1010.5	88	76	82.2	.9	90	3+	74	1+	7	0	77	84	9.68	-4.47	2.93	19	2	.0	0	----	---	--	---	--	0	11	20	8.3	--
Lihue	115	1012.2	1017.7	83	69	75.6	1.5	85	23	61	7	0	0	66	73	.54	-1.97	.28	13	0	.0	0	9.6	NE	23	NE	17	11	16	4	4.8	81
Majuro	10	1010.5	1010.8	86	77	81.8	---	88	14+	74	4+	0	0	77	83	8.03	----	3.03	17	0	.0	0	----	---	--	---	--	1	4	26	8.5	--
Ponape (R)	120	1004.7	1010.2	88	75	81.8	.3	91	6+	72	11+	5	0	76	84	15.23	-4.43	2.30	28	1	.0	0	----	---	--	---	--	0	9	22	8.5	--
Taguac, Guam (R)	361	------	------	88	72	79.6	---	90	25	64	15	1	0	--	--	1.83	----	1.08	17	--	.0	0	----	---	--	---	--	--	--	--	---	66
Truk, Moen Is.	8	1010.2	1010.5	87	77	82.2	1.3	90	15	75	2+	1	0	77	84	11.97	-.93	3.59	18	1	.0	0	----	---	--	---	--	0	7	24	8.6	--
Wake Island	11	1015.2	1015.6	85	75	80.1	.7	87	28+	71	8	0	0	72	79	2.53	.22	1.02	22	0	.0	0	12.1	E	*26	ENE	6	5	11	15	6.7	--
Yap (R)	53	1008.5	1010.4	89	76	82.7	.4	93	9	71	10	13	0	76	79	6.16	-2.99	2.90	18	0	.0	0	----	---	--	---	--	2	7	22	8.2	--
WEST INDIES																																
San Juan, P.R. (U)	47	------	------	83	74	78.9	.2	93	4	71	18	4	0	--	--	2.19	-4.32	.58	11	0	.0	0	----	---	--	---	--	--	--	--	---	--
San Juan, P.R.	15	1013.7	1015.4	85	71	78.0	---	91	5	67	18	2	0	69	75	2.25	----	.89	16	0	.0	0	8.8	ENE	29	N	31	6	15	10	6.1	84
Swan Island	31	1010.6	------	88	79	83.5	1.4	89	5+	76	15+	0	0	--	--	.91	-3.34	.22	12	0	.0	0	----	---	--	---	--	--	--	--	6.6	--
ALASKA																																
Anchorage	92	1008.1	1013.4	58	39	48.6	2.9	71	8	27	1	1	3	35	59	.02	-.49	.02	1	0	.0	0	9.7	S	*28	S	15	6	11	14	6.2	69
Annette	110	1010.8	1014.9	57	44	50.2	1.2	75	30	36	5	3	0	42	76	5.89	1.40	1.72	17	0	.0	0	9.9	NW	*26	S	2+	5	7	19	7.4	--
Barrow	22	1023.4	1023.7	24	15	19.4	.6	36	6	-11	2	0	31	16	85	.04	-.09	.02	4	0	.3	17	14.7	ENE	43	SW	6	5	2	24	8.1	--
Barter Island	39	1020.7	1022.5	26	15	20.9	---	38	7	-4	2	0	31	18	84	.05	----	.04	2	0	.1	17	13.3	E	*35	E	2+	4	7	20	7.7	--
Bethel	10	1010.8	1012.0	53	35	44.3	4.3	68	25	23	4	0	8	35	71	1.43	.54	.70	6	0	3.0	2	11.4	S	*32	S	31	5	6	20	7.5	--
Cold Bay	90	1006.8	1010.9	45	36	40.8	1.3	62	13	25	1	0	6	36	85	.93	-.76	.35	12	0	.2	T	19.5	SE	*48	SE	30	0	2	29	9.2	--
Cordova	40	1012.5	1014.3	56	35	45.4	2.5	70	8	26	1	1	9	38	74	1.91	-4.53	.64	17	0	.0	0	6.0	E	*23	SE	8	1	8	22	8.2	--
Fairbanks	436	997.6	1014.7	59	37	48.4	1.0	74	19	25	2	3	9	36	60	.07	-.67	.03	4	0	.3	T	7.7	NE	*29	W	29	9	5	17	6.2	--
Juneau	15	1014.2	1014.8	57	39	47.9	.9	72	31	26	6	1	4	40	77	2.44	-.75	.40	18	0	.0	0	7.6	N	27	SE	3	7	1	23	7.8	35
King Salmon	44	1009.8	1011.7	57	34	45.7	2.9	68	8	24	2	0	8	36	70	.50	-.76	.29	7	0	T	T	11.8	S	*32	SSE	15	4	10	17	7.1	--
Kotzebue	10	1015.6	1016.1	41	28	34.2	4.6	52	23+	8	3	0	26	29	81	.54	.21	.21	4	0	T	18	10.6	E	*30	SE	5	8	6	17	6.3	--
McGrath	334	1000.3	1013.0	58	38	47.8	4.6	68	18+	25	3+	0	7	31	53	.82	-.12	.33	7	3	.0	3	7.0	N	*20	NNW	1+	10	8	13	5.7	--
Nome	13	1013.9	1014.2	45	32	38.2	4.5	62	25	15	1	0	16	32	77	.62	.03	.22	7	0	.7	7	10.5	NE	32	NE	14	9	7	15	6.0	46

See footnotes at end of table.

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure		Temperature												Precipitation							Wind					No. of days (sunrise to sunset)				
												No. of days							No. of days		Snow, Sleet				Fastest mile							
		Station ø	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F or above	Min. 32° F or below	Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max. depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy	Sky cover, tenths (sunrise to sunset)	Possible sunshine
	Ft.	Mb.	Mb.	°F	°F.	°F.	°F.	°F.		°F.		#		°F.	%	In.	In.	In.			In.	In.	M p. h.		M. p. h.			0–3	4–7	8–10	0–10	%
ALASKA (Cont'd.)																																
Northway	1713	950.9	1014.6	52	32	42.4	-2.4	65	30	18	13	0	13	--	--	1.21	.49	.60	11	2	0.5	10	----	---	---	---	--	1	12	18	8.0	--
St. Paul Island	22	1008.5	1009.5	41	33	36.8	1.6	52	26	24	19	0	12	34	90	1.58	.40	.45	12	0	1.5	1	----	---	---	---	--	1	6	24	8.7	--
Yakutat	28	1013.9	1015.0	53	37	44.6	1 3	66	8+	28	5	0	10	40	82	3.88	-4.04	1.52	14	0	.0	0	7.6	ESE	*35	ESE	26	1	5	25	8.5	--

Data from airport unless otherwise specified. U indicates Urban, R indicates Rural, sites.
* Data entered in column "Fastest Mile" is the fastest mile observed. This station is not equipped with automatic recording wind instrument.
+ And also on a later date or dates.
% Peak gust.
a Maximum hourly average
Number of days maximum 70° or above for Alaskan stations.
ø Station pressures apply to elevation shown in Table 10b of the annual issue of this publication.

HEATING DEGREE DAYS

(Base 65°F.)

MAY 1957

State and station	Current season		Normals July through this month
	This month	Period July through this month	
ALABAMA			
Birmingham	31	2186	2780
Mobile	7	1230	1612
Montgomery	11	1686	2137
ARIZONA			
Flagstaff	583	6906	7313
Phoenix (U)	9	1364	1492
Phoenix	7	1230	1698
Prescott	275	4307	4516
Tucson	18	1351	1776
Winslow	183	4457	4694
Yuma	0	706	951
ARKANSAS			
Ft. Smith	16	3057	3188
Little Rock	22	2727	2982
Texarkana	16	2233	2362
CALIFORNIA			
Bakersfield	31	2120	2115
Bishop	179	4098	4184
Blue Canyon	498	5466	5517
Burbank	81	1353	1786
Eureka (U)	309	4497	4350
Fresno	64	2650	2532
Los Angeles (U)	44	964	1432
Los Angeles	53	1157	1959
Mt. Shasta (R)	387	5854	5739
Oakland	130	2942	3044
Red Bluff	74	2600	2546
Sacramento (U)	73	2468	2595
Sacramento	70	2712	2815
Sandberg (R)	418	4302	4187
San Diego	53	1007	1531
San Francisco (U)	215	2787	2889
San Francisco	194	2938	3257
San Jose	112	2256	2364
Santa Maria	215	2906	2782
COLORADO			
Alamosa	549	8163	8456
Colorado Springs	400	6300	6179
Denver	333	5803	6067
Grand Junction	252	6022	5773
Pueblo	230	5374	5682
CONNECTICUT			
Bridgeport	175	5370	5858
Hartford	212	6143	6108
New Haven	228	5732	5974
DELAWARE			
Wilmington	129	4747	4904
DIST. OF COLUMBIA			
Washington (U)	68	3881	4258
Washington	66	4013	4333
FLORIDA			
Apalachicola (U)	1	791	1307
Daytona Beach	3	668	868
Fort Myers	0	297	405
Jacksonville	4	852	1243
Key West (U)	0	21	77
Miami (U)	0	144	173
Miami	0	118	178
Miami Beach	0	88	123
Orlando	0	443	650
Pensacola (U)	2	1019	1435
Tallahassee	3	1100	1519
Tampa	0	392	674
West Palm Beach	0	176	248
GEORGIA			
Athens	31	2437	2800
Atlanta	31	2240	2826
Augusta	39	1965	2138
Columbus	15	1835	2396
Macon	15	1686	2049
Rome	31	2719	3138
Savannah	20	1485	1710
IDAHO			
Boise	224	6138	5798
Lewiston	148	5820	5415
Pocatello	324	7109	6840
ILLINOIS			
Cairo (U)	37	3425	3756
Chicago	228	5811	6252
Chicago University	264	5888	
Moline	191	6104	6319
Peoria	158	5676	6046
Springfield	125	5225	5661
INDIANA			
Evansville	82	4239	4354
Ft. Wayne	209	5907	6234
Indianapolis	131	5115	5581
South Bend	228	6064	6462
IOWA			
Burlington	160	5823	6067
Des Moines	179	6170	6401
Dubuque	285	6932	7195
Keokuk (U)	86	5229	
Sioux City	209	6518	6958
KANSAS			
Concordia (U)	138	5186	5303
Dodge City	148	4962	5043
Goodland	320	6232	6309
Topeka (U)	86	4774	4906
Topeka	110	5040	5194
Wichita	103	4600	4564
KENTUCKY			
Lexington	105	4284	4964
Louisville	86	4074	4434
Pikeville (U)	57		
LOUISIANA			
Baton Rouge	5	1093	1595
Lake Charles	4	1053	1543
New Orleans (U)	2	765	1175
New Orleans	1	874	1317
Shreveport	15	1912	2117
MAINE			
Caribou	482	9826	9972
Greenville (U)	422	9162	
Portland	331	7462	7564
MARYLAND			
Baltimore (U)	64	3735	4203
Baltimore	99	4411	4782
Frederick	142	4889	4854
MASSACHUSETTS			
Blue Hill Obs. (R)	285	6475	
Boston	201	5569	5749
Nantucket	365	5679	5963
Pittsfield	329	7305	7589
MICHIGAN			
Alpena (U)	452	7818	7938
Detroit	281	6026	6344
Detroit (Willow Run)	258	6129	6414
East Lansing (U)	269	6277	
Escanaba (U)	444	8272	8491
Grand Rapids	300	6497	6996
Marquette (U)	462	8344	8340
Muskegon	321	6554	6973
S. Ste. Marie	481	9099	9251
MINNESOTA			
Duluth (U)	500	9811	9374
Duluth	475	9823	9759
Internat. Falls	424	10556	10429
Minneapolis	263	7503	7773
Rochester	318	7715	8003
St. Cloud	349	8654	8787
MISSISSIPPI			
Jackson	24	1893	2202
Meridian	21	1892	2333
Vicksburg (U)	18	1697	2000
MISSOURI			
Columbia	88	4713	5099
Kansas City	69	4562	4880
St. Joseph	106	5203	5322
St. Louis (U)	70	4237	4462
St. Louis	72	4432	4688
Springfield	57	4275	4677
MONTANA			
Billings	275	7089	6987
Glasgow	250	8701	8577
Great Falls	259	7590	7389
Havre (U)	220	8024	8088
Helena	302	8228	8053
Kalispell	259	8194	7840
Miles City	231	7612	7744
Missoula	256	7623	7697
NEBRASKA			
Grand Island	227	6145	6272
Lincoln (U)	162	5507	5833
Norfolk	234	6652	7005
North Platte	290	6651	6487
Omaha	209	5828	6128
Scottsbluff	332	6609	6760
Valentine	320	7243	6992
NEVADA			
Elko	454	7462	7152
Ely	535	7542	7243
Las Vegas	32	2403	2425
Reno	348	6156	5871
Tonopah	335	5579	5722
Winnemucca	364	6621	6258
NEW HAMPSHIRE			
Concord	284	7321	7530
Mt. Washington Obs.	933	13347	
NEW JERSEY			
Atlantic City (U)	173	4394	4717
Newark	132	4843	5241
Trenton (U)	133	4774	5057
NEW MEXICO			
Albuquerque	123	4212	4389
Clayton	260	5055	5114
Roswell	33	3180	3424
NEW YORK			
Albany	264	6759	6912
Binghamton	343	7133	7449
Buffalo	321	6221	6766
New York (U)	133	4705	5032
New York	120	4570	4979
Rochester	311	6497	6809
Schenectady	217	6333	
Syracuse	300	6437	6483
NORTH CAROLINA			
Asheville (U)	60	3524	4067
Cape Hatteras (R)	44	2139	2392
Charlotte	35	2610	3205
Greensboro	48	3403	3810
Raleigh	59	3066	3369
Wilmington	35	2103	2323
Winston-Salem	44	3280	3721
NORTH DAKOTA			
Bismarck	307	8774	8917
Devils Lake (U)	335	9593	9803
Fargo	286	8780	9173
Grand Forks	317	9407	
Pembina	238	9539	
Williston (U)	262	8706	8930
OHIO			
Akron	219	5967	6153
Cincinnati (U)	91	4013	4532
Cincinnati	113	4836	5172
Cleveland	221	5570	5960
Columbus	138	4956	5584
Dayton	152	5197	5558
Sandusky (U)	220	5615	5818
Toledo	236	6060	6334
Youngstown	234	5995	6119
OKLAHOMA			
Oklahoma City	72	3752	3644
Tulsa	36	3485	3584
OREGON			
Astoria	327	5180	4773
Burns (U)	342	11173	6759
Eugene	216	4852	4654
Meacham	429	7536	7561
Medford	188	4870	4478
Pendleton	132	5594	5153
Portland (U)	143	4326	4073
Portland	190	4851	4539
Roseburg	193	4549	
Salem	201	4776	4483
Sexton Summit (R)	428	5851	5947
PENNSYLVANIA			
Allentown	184	5610	5855
Harrisburg	137	5014	5244
Philadelphia (U)	113	4222	4523
Philadelphia	126	4642	4866
Pittsburgh (U)	118	4641	5035
Pittsburgh	173	5358	5869
Reading (U)	133	4795	5049
Scranton	264	6289	6012
Williamsport	185	5684	5873
RHODE ISLAND			
Block Island	307	5456	5747
Providence	222	5788	6067
SOUTH CAROLINA			
Charleston (U)	14	1450	1769
Charleston	29	1793	1973
Columbia	31	2020	2435
Florence	34	2005	2507
Greenville	28	2669	3060
Spartanburg	32	2640	3044
SOUTH DAKOTA			
Huron	304	7717	7822
Pierre	319	7581	
Rapid City	336	7290	7387
Sioux Falls	292	7484	7768
TENNESSEE			
Bristol	50	3554	4148
Chattanooga	37	2782	3384
Knoxville	33	2895	3590
Memphis	25	2788	3137
Nashville	45	3108	3513
TEXAS			
Abilene	36	2420	2657
Amarillo	140	4002	4345
Austin	16	1437	1713
Brownsville	0	363	617
Corpus Christi	0	691	1011
Dallas	17	2225	2272
Del Rio	2	1198	1407
El Paso	19	2229	2641
Ft. Worth	21	2374	2361
Galveston (U)	2	749	1211
Galveston	2	797	1233
Houston (U)	1	891	1276
Houston	3	995	1388
Laredo	1	654	781
Lubbock	67	3348	3587
Midland	25	2440	
TEXAS (Cont'd.)			
Port Arthur	5	1030	1517
San Angelo	30	2154	2107
San Antonio	7	1209	1579
Victoria	3	930	1126
Waco	16	1906	2025
Wichita Falls	34	2914	3025
UTAH			
Milford	347	6278	6368
Salt Lake City	238	5742	5785
VERMONT			
Burlington	350	7596	7793
VIRGINIA			
Lynchburg	69	3793	4148
Norfolk	59	2984	3454
Richmond	63	3561	3955
Roanoke	52	3791	4152
WASHINGTON			
Olympia	224	5362	5318
Seattle (U)	147	4445	4331
Seattle-Tacoma	213	5248	5120
Spokane	186	6933	6706
Stampede Pass (R)	509	8867	8711
Tatoosh Island (R)	383	5608	5394
Walla Walla (U)	109	5258	4810
Yakima	104	6247	5792
WEST VIRGINIA			
Charleston	89	4080	4409
Elkins	172	5172	5720
Huntington (U)	79	3890	4068
Parkersburg (U)	102	4395	4737
WISCONSIN			
Green Bay	385	8031	8152
La Crosse	254	7099	7576
Madison (U)	298		7221
Madison	302	7014	7335
Milwaukee	381	7064	7096
WYOMING			
Casper	408	7388	7492
Cheyenne	519	7189	7389
Lander	414	7542	8140
Sheridan	352	7524	7742
ALASKA			
Anchorage	500	10987	10450
Annette	454	7058	6775
Barrow	1408	19453	19061
Barter Island	1362		
Bethel	634	12638	12508
Cold Bay	740	9073	
Cordova	600	9518	9144
Fairbanks	506	14351	13965
Juneau	521	8787	8546
King Salmon	594	11309	
Kotzebue	947	15795	15500
McGrath	526	14399	14107
Nome	823	13668	13510
Northway	694	16310	15194
St. Paul	868	10454	10134
Yakutat	630	9011	8889

Data from airport unless otherwise specified.
U indicates Urban, R indicates Rural, sites.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
LOUISIANA Burrwood (6 miles north-northeast of), Plaquemines Parish	1	7:10 a.m.			0	0			Funnel aloft	
LOUISIANA Donaldsonville (near), Ascension Parish	1	11:19 a.m.			0	0			Funnel aloft	Reported by airline pilot.
TEXAS San Antonio (36 miles south of), Atascosa County	1	1:46 p.m.			0	0			Funnel aloft	
KANSAS Geneseo (3 miles east of), Rice County	1	5-5:05 p.m.			0	0			Funnel aloft	Funnel aloft moving northeastward observed for only short distance.
NORTH DAKOTA Wing (8 miles north of), Burleigh County	1	5:20 p.m.			0	0	3	3	Tornado, hail, and rain	Tornado seen to touch ground 4 times. $2,000 property damage by hail; $2,000 crop damage by rain. Storm moved eastward.
NORTH DAKOTA Wing area, Burleigh County	1	5:45-9 p.m.			0	0			Tornado and rain	Tornado observed at 5:45 p.m., 10 miles northeast of Wing. 4.15 inches of rain fell between 6 and 9 p.m., 15 miles east of Wing. Storm moved eastward.
KANSAS Meade (14 miles southwest of), Meade County	1	6 p.m.			0	0			Funnel aloft	Funnel formed aloft near State Lake and observed moving northeastward for only a few minutes.
ARIZONA Florence (5 miles northwest of), Pinal County	1								Hail	Hail damage to crops.
NORTH DAKOTA Kenmare (east of), Ward County	1						3		Hail	Heavy hail, nearly 2 inches in diameter; some hail still on ground next morning. Windows broken and windshields damaged.
	1									Minor storms also reported at Mobile, Ala.; and at Novice, Tex.
MISSISSIPPI Plainview community, Pearl River County	2	8:30 a.m.			0	0	1	2	Tornado	Funnel observed 6 miles east of Bogalusa, La., passing through pecan grove uprooting trees.
TEXAS Waco (15 miles north of), McLennan County	2	11:05 a.m.			0	0			Funnel aloft	Funnel observed moving southeastward.
TEXAS Waco (25 miles north of), Hill County	2	11:48 a.m.			0	0			Funnels aloft	2 funnels nearly touching ground, moving eastward.
LOUISIANA Sulphur (10 miles west of), Calcasieu Parish	2	11:57 a.m.			0	0			Funnel aloft	
TEXAS Waco (20 miles west of), McLennan County	2	1:12 p.m.			0	0			Funnel aloft	Funnel observed about 1,500 feet above ground.
TEXAS Waco (40 miles west of), Coryell County	2	1:15 p.m.			0	0			Funnel aloft	
SOUTH CAROLINA Gramling (near), Spartanburg County	2	Afternoon						5	Hail	Hailstorm over about 500 acres caused major damage to peach orchards.
OKLAHOMA Okmulgee County	2	4:30 p.m.	4	880	0	0	2	2	Funnels aloft, wind, rain, and electrical	Funnel aloft sighted 8 miles west of Beggs and again 5 miles southwest of Beggs. Winds caused light damage in area. Unconfirmed reports of funnels aloft south of Okmulgee. Storm moved southeastward.
OKLAHOMA Ardmore, Carter County	2	4:34 p.m.			0	0			Funnel aloft	Ardmore Air Force Base reported funnel 5 miles east of Base.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

MAY 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MISSISSIPPI Hattiesburg, Forrest County	2	7 p.m.			0	0	2	2	Tornado	Funnel observed dipping down and uprooting trees, destroying TV antennas, etc.
LOUISIANA Monroe (10 miles north of), Ouachita Parish	2	7:05 p.m.			0	0			Tornado	Funnel moving northeastward observed to strike open ground; some tree tops blown off.
FLORIDA White City, St. Lucie County	2	P.m.							Hail	Hailstones as large as ice cubes reported; damage very light.
NORTH DAKOTA Grant County (central portion)	2	Evening					4		Wind, rain, and hail	Bridges and culverts washed out. 3 head of cattle drowned.
	2									Minor storm also reported at Ridgetop, Tenn.
OKLAHOMA Kingston (near), Marshall County	3	10:54 a.m.			0	0			Funnel aloft	Funnel aloft reported moving northwestward.
OKLAHOMA Altus (south-southwest of), Jackson County	3	11:32 a.m.			0	0			Funnel aloft	Funnel aloft reported moving westward.
TEXAS McGregor (5 miles west of), McLennan County	3	Noon			0	0			Funnel aloft	
TEXAS Petrolia, Clay County	3	1 p.m.			0	0			Funnels aloft	2 funnels observed.
OKLAHOMA Altus (northeast of), Jackson County	3	1:10 p.m.			0	0			Funnel aloft	Funnel aloft reported moving westward.
OKLAHOMA Granite (south of), Greer County	3	1:20 p.m.			0	0			Funnel aloft	Public watched funnel aloft move southwestward.
TEXAS Vernon (6 miles north of), Wilbarger County	3	1:30 p.m.			0	0			Funnel aloft	Funnel observed moving northeastward.
OKLAHOMA Marietta, Love County	3	2:42 p.m.			0	0			Funnel aloft	Pilot reported funnel aloft.
COLORADO Bennett area, Adams County	3	Afternoon				1			Electrical	Man struck by lightning and knocked from tractor and run over by rotary hoe, when he was working on farm 2-1/2 miles northwest of Bennett. He was taken to hospital and treated for numerous puncture wounds and burns.
TEXAS Strawn, Palo Pinto County	3	4 p.m.			0	0			Funnel aloft	Funnel observed moving eastward.
GEORGIA Glynn County	3	8:05 p.m.	1	50	0	1	4	1	Tornado	10 buildings destroyed or damaged, utility lines blown down, and trees uprooted. 1 person injured slightly by flying glass. Tornado moved southeastward.
FLORIDA Davie, Broward County	3	P.m.						3	Electrical	Lightning killed 5 head of cattle.
ARIZONA Duncan (near), Greenlee County	3						1		Hail	Hail damage to crops.
	3									Minor storms also reported at Phoenix, Ariz.; near Gordon, Nebr.; and near Baytown, Tex.
MASSACHUSETTS Salisbury, Essex County	4	10:30 a.m.		3	0	0			Dust devil	Narrow funnel extending 500 feet up into clear sky jostled an automobile with surprising force and carried twigs and leaves aloft. Storm moved northwestward.
MASSACHUSETTS Fitchburg, Worcester County	4	10:50 a.m.	** 900	7	0	0	1	1	Dust devil	Accompanied by sound like freight train, funnel lifted 110-gallon oil drum about 75 feet into air. Lumber and debris also lifted and dropped over area. Storm moved southward.
WASHINGTON Eastern portion	5	6-8 p.m.					5	5	Rain and hail	Several severe thunderstorms developed along eastern slope of Cascades and in other areas of

See reference notes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons: Killed	Number of persons: Injured	Estimated damage by categories †: Property (exclusive of crops)	Estimated damage by categories †: Crops	Character of storm	Remarks
WASHINGTON (Cont'd)										eastern Washington during afternoon. Heavy rainfall from thunderstorm near Wenatchee caused flash flood at mouth of Canyon No. 2, in residential section of Wenatchee. Power- and communication lines out for several hours and 200 residences damaged. Irrigation canals washed out or filled with debris. Windows broken and some crops damaged by hail. Other thunderstorms occurred in Lincoln and Spokane Counties where hail and heavy rain damaged crops and caused serious erosion.
FLORIDA Naples, Collier County	5	P.m.			0	0	4		Wind and funnel aloft	Winds estimated at 70 m.p.h., blew down 210-foot radio tower, damaged several residences. Funnel cloud sighted.
FLORIDA Pompano Beach, Broward County	5	P.m.			0	0			Waterspout	
ARIZONA San Simon Valley and Sulphur Springs Valley	5						1		Hail	Hail damage to crops.
TENNESSEE Centerville, Hickman County	5					1			Electrical	Lightning struck woman, tearing clothing and scratching her chin and hand.
	5									Minor storms also reported at White City, Fla.; at Maryville, Mo.; and in Columbus and Tierra Amarilla vicinities, N. Mex.
IDAHO Northern counties	5-6								Electrical	Lightning strikes on several power substations in Wallace area, power outages in vicinity of Coeur d'Alene, disruption of telephone services north of Nezperce. Lightning touched off explosions in dynamite stored on construction site on Highway 10 east of Coeur d'Alene, jolting 2 pickup trucks and causing rockslides, but no injuries resulted.
MASSACHUSETTS Milton, Suffolk County	6	Noon-2 p.m.			0	0			Dust devils, waterspout, and funnels aloft	Blue Hill Observatory reported numerous funnels associated with sea breeze front, 15 to 20 total. Thin column extended to height of 600 feet. Another thick column carried much sand and dust. Another crossed Houghton's Pond as waterspout, lifting water level 2 to 3 feet with anti-cyclonic circulation.
WYOMING Thermopolis, Hot Springs County	6	Afternoon	**500	20	0	0	2	1	Whirlwind	Storm moved eastward.
WASHINGTON Spokane, Lincoln, and Whitman Counties	6	Afternoon-evening			0	0	2	5	Tornadoes, funnels aloft, and rain	2 small tornado funnels extending downward from cloud reported southwest of Gieger Field near Spokane at approximately 12:25 p.m. Funnel clouds did not reach ground. Funnel cloud extending to ground reported by airline pilot in vicinity of Harrington at 1:58 p.m.; no damage reported. Very small tornado or severe dust devil, approximately 10 miles southeast of Spokane, destroyed small farm building at about 9 p.m. Thunderstorms and heavy rain damaged crops and caused considerable soil erosion in some areas of Whitman County. Storm moved southwestward.
ARIZONA Pinal County (central portion)	6						1		Hail	Hail damage to crops.
	6									Minor storm also reported at Missoula, Mont.
TENNESSEE Washington County	6-8						1	4	Freeze	Heavy frost on 6th and 7th and light frost on 8th damaged crops, mainly strawberries.
SOUTH DAKOTA Perkins and Harding Counties	7	2 p.m.			1				Electrical	Lightning killed a rancher on horseback as he was riding on high ground near Bixby. Brush fires started in adjacent Harding County that evening.
NEBRASKA Dorchester (near), Saline County	7	Afternoon				1			Wind	Woman blown down while hanging clothes. Storm moved northward.
OREGON Central portion	7	4-6 p.m.	40-50	*10-20			5	3	Rain and electrical	Violent thunderstorms. Cloudburst over Hay Creek drainage basin. Flash flood in this creek cut across Highway 97, 15 miles north of Madras, trapping and washing away cars whose occupants barely had time to escape. 4 head of livestock drowned here, and 4 additional head killed by lightning in Bend area. Much field eorsion. Highway 97 cut at several points; 1 bridge destroyed and 175 feet of railroad bed washed out, halting rail traffic for several days over this route. A few small forest fires started by lightning. Damage from cloudburst 97 percent, remainder due to lightning.

See reference notes at end of table

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TEXAS Hudspeth and El Paso Counties	7	Late Afternoon						5	Hail	About 1,000 acres of pima cotton destroyed, 1,200 acres ordinary cotton 50 percent destroyed.
ARIZONA Duncan (near), Greenlee County	7						1		Hail	Hail damage to crops.
	7									Minor storms also reported in Boone County, Iowa; and in Deming vicinity, N. Mex.
SOUTH DAKOTA Huron (near) Beadle County	8	2:15 a.m.					4		Electrical	Lightning fire demolished farm house.
MASSACHUSETTS Hatfield, Hampshire County	8	Noon			0	0	3	1	Dust devils	Felled large part of elm tree onto house with considerable damage. Accompanied by high whistle, like a siren. Two other dust devils in area lifted tobacco bed sash during afternoon. Storms moved eastward.
WASHINGTON Walla Walla County	8	4:30 p.m.				1			Rain and electrical	Heavy rain associated with thunderstorm activity in southeastern Washington caused some property damage. Several basements flooded in Walla Walla and 1 person injured by lightning.
OREGON Scattered areas	8	Afternoon-evening					4	4	Rain, hail,, electrical	Cloudbursts in Wallowa Valley carried large quantities of debris across railways and roads, caused serious erosion in some newly-plowed barley fields, and drowned several sheep. In Medford area, heavy hail caused moderate damage in a few pear orchards, and limited amount of damage to field crops. Several lightning-caused forest fires started, but controlled with negligible losses. Lightning strikes also caused a few power-service interruptions. Cloudburst damage 30 percent, hail 68 percent, and lightning 2 percent.
TEXAS Trent (near), Taylor County	8	10:38 p.m.			0	0			Tornado	Occurred in rural area, no damage reported; moved eastward.
TEXAS Merkel (6 miles northwest of), Taylor County	8	11:15 p.m.			0	0			Funnels aloft	2 funnels observed.
	8									Minor storms also reported near Gladstone, and at Manistique and Sault Ste. Marie, Mich.; in Lovington and Roswell vicinities, N. Mex.; at Russell and Warren, Okla.; and near Estelline and Chillicothe, Tex.
IDAHO Clearwater River Basin	8-9								Rain	Near Orofino, flash flood washed out bridge across Bear Creek on road leading to Peck; erosion in fields on Camas Prairie excessive (some fields had just been seeded); creek in town of Cottonwood spilled over, flooding several basements, streets, and lawns; spasmodic power outages occurred evening of 8th.
COLORADO Denver, Adams, Arapahoe, and Weld Counties	8-12				3		°6	C	Rain and electrical	Heavy rain beginning afternoon of 8th, continuing through 9th, in Denver, Adams, Arapahoe, and Weld Counties caused high water along Platte River and its tributaries. Hardest hit were communities of Fredrick, Firestone, and Evanston, 25 miles north of Denver. In some suburban Denver areas, homes built in once dry-creek beds heavily damaged by flood waters. 3 persons drowned in basement apartment northeast of Aurora early morning of 9th. 3 to 5 inches of rain fell in 24 hours, swelling creeks and river to capacity. Homes, bridges, roads, sewer systems and communication lines destroyed or damaged. On night of 11th and again on night of 12th, heavy rains flooded same area north of Denver, adding to damage. Lightning with thunderstorm on 11th struck grange hall, 7 miles east of Brighton, setting it afire. Damage to hall estimated at $7,000. Some livestock losses reported. Denver, Adams, Arapahoe, and Weld Counties designated as disaster areas. Total damage from the 3 floods estimated in excess of $2 million.
TEXAS Waco (30 miles east-northeast of), Limestone County	9	9:15 a.m.			0	0			Funnel aloft	
NEBRASKA Burr to Syracuse, Otoe County	9	3:30-3:45 p.m.	10	100	0	0	4	1	Tornado	Several sets farm buildings damaged. Tornado moved northeastward.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons: Killed	Number of persons: Injured	Estimated damage by categories †: Property (exclusive of crops)	Estimated damage by categories †: Crops	Character of storm	Remarks
MISSOURI St. Louis and St. Charles Counties	9	3:30-4:15 p.m.	9	100-150	0	0	3	4	Tornado, wind, and rain	First reported point of contact on grounds of seminary at Florissant. At this spot, a number of trees broken in wooded area close to point of contact. Storm then struck farm 6/10 mile northeast, where shingles ripped from house, windows blown out, number of trees broken off or uprooted, several outbuildings suffered damage. At this location, enough evidence available from direction of trees in orchard and around house to determine that pattern of force was from vortex or suction. This, together with numerous eyewitness reports of sightning funnel, leaves no doubt but that it was tornado, probably not exceeding from 50 to 75 feet in diameter at point of contact with ground. Second farm, less than 1/4 mile northeast of first, suffered major damage both to house and outbuildings. Tornado continued to move in northeastward direction, apparently "skipped" or crossed open ground before striking barn on edge of Missouri River bluff. At this point, funnel seen to lift up momentarily before descending to river where it crossed an island, then moved into flat bottomland on north side of river, changed direction to more northerly course, "dumped" a heavy downpour just after river crossing and 4 miles from point where it left bluffs, struck schoolhouse. Roof of school blown off and windows broken. Since this was only building in open fields, no other damage occurred. Funnel last seen retracting back into clouds as it passed over town of Portage Des Sioux.
MISSOURI Kirksville, Adair County	9	3:45 p.m.					2	2	Hail	Hail 3/4 inch in diameter.
MISSOURI Aurora, Lawrence County	9	4:30 p.m.			1				Electrical and rain	Lightning hit and killed farmer who had sought shelter under tree.
MISSOURI Golden City, Barton County	9	4:30 p.m.					4		Electrical	Large barn hit by lightning and burned.
KANSAS Barton County (southwestern portion)	9	Late afternoon	8	*2					Hail	Hail of golf-ball size damaged crops over narrow strip 2-1/2 miles long near Pawnee Rock. Hail lay 2 inches deep and resulted in total damage to some fields. Much roof and glass damage to buildings. Storm moved eastward.
KANSAS Rice County (northern portion)	9	5:17-6 p.m.			0	0	4	4	Tornadoes, funnels aloft, hail, and wind	2 tornadoes, both small, struck in separate parts of county. First traveled path of 1-1/2 miles to within a mile of west side of Lyons and damaged 1 farm plant. The other struck 2-1/2 miles east of Little River and damaged buildings at 2 farms. 3 other funnels sighted, but remained aloft. Hail driven by high winds across northwestern part of county from Bushton to Chase, damaged strip about 4 miles wide. Crop damage from hail. Storm moved eastward.
TEXAS Abilene (28 miles southwest of), Taylor County	9	5:30 p.m.			0	0			Funnel aloft	Funnel observed moving eastward.
ILLINOIS La Harpe area, Hancock County	9	7:10 p.m.	4	200	0	0	3		Tornado	Some damage at 4 or 5 farms south and east of La Harpe. Roaring sound reported. Tornado moved northeastward.
TEXAS Atlanta area, Cass County	9	7:20 p.m.			0	0			Funnel aloft	Funnel first sighted 2 miles southwest, then passed over Atlanta.
KANSAS McPherson County	9	7:30-7:45 p.m.	3	*2-1/2			4	4	Hail and wind	Hail up to 1/2 inch in diameter driven by high winds damaged crops, roofs, screens, and automobiles in almost circular area of 3 miles in diameter around Inman. Some crops total loss. Storm moved eastward.
ARIZONA Avondale (near) Maricopa County	9						1		Hail	Hail damage to crops.
OKLAHOMA Frederick, Tillman County	10	2:16 a.m.			0	0			Tornado	Highway Patrol reported tornado southwest of Frederick moving southeastward. It remained on ground only short time. Very few clouds reported in area and there were no echoes on radar.
UTAH Nephi, Juab County	10	1-1:20 p.m.	3-4	*1-1/2			4	4	Hail and electrical	Alfalfa and fruit crops badly damaged. 6,000 turkeys killed by hail. Storm moved north-northeastward.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

MAY 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
OREGON Corvallis (southeast of), Benton County	10	2 p.m.			0	0			Funnel cloud	Tornado cloud with fully developed funnel reported by several reliable observers, appeared several miles southeast of Corvallis. No confirmed report of it touching ground at any point; no report of any damage caused by it.
INDIANA Huntington County	10	3:30 p.m.	5	*1		1	3	1	Wind	At Majenica and in parts of Lancaster and Rock Creek Townships, severe windstorm caused considerable damage. Factory roof and second floor destroyed. Corn crib knocked off its foundation. Furniture and windows broken in farmhouse east of Majenica. Storm moved northeastward.
MASSACHUSETTS Bernardston, Franklin County	10	4:35 p.m.	**300	10	0	0	2	1	Tornado, wind, and rain	Funnel observed on ground, but had no visual connection with squall clouds above, giving appearance like dust devil. Wind calm only 80 feet away from twister during passage. Very soon strong, gusty, squall winds and heavy rain followed. Damaged trees, phone and electric lines, and a roof. No hail. Storm moved east-southeastward.
TEXAS Wink (60 miles south-southwest of), Reeves County	10	4:43 p.m.			0	0			Funnel aloft	
NEW HAMPSHIRE (southeastern portion) and MASSACHUSETTS (northeastern portion)	10	5-6 p.m.			0	0	4	1	Funnels aloft, wind, electrical, and rain	Damaging squall winds felled trees and damaged buildings. Several small funnels seen at Milford, N.H., 1 dipping much of way to ground, but all short-lived. Wind damage noted there in path 1 mile north to south and 1/4 to 1/2 mile wide, occurring at about 5:20 p.m. Severe lightning, but no hail. $2,500 damage to buildings from wind and falling trees at Derry Village, N.H., at about 5:30 p.m., in area 1/4 mile square. $10,000 damage estimated in Haverhill, Mass., area mainly from trees falling on phone and electric lines. Many lines out also in Rockingham County, N.H. Automobile smashed by falling tree at Newton Junction, N.H., where 80-foot smokestack was felled. Storm moved southeastward.
TEXAS Pecos, Reeves County	10	5:30 p.m.			0	0			Funnel aloft	
NEW YORK Troy, Rensselaer County	10	Late afternoon			1	4			Wind	High winds associated with thunderstorm blew tree over on top of car, killing 1 occupant and injuring 4 others.
NEW MEXICO Farmington area, San Juan County	10	6:20 p.m.			1	0	4	1	Tornado	Damage in city confined to 1/2 block. Death occured about 17 miles northwest of Farmington when oil rig blew over. Storm moved southeastward.
TEXAS Dallas (50 miles northeast of), Hunt County	10	6:30 p.m.			0	0			Funnel aloft	Funnel visible for 7 minutes.
CONNECTICUT Hartford County	10	7-8 p.m.					3	1	Wind and electrical	High winds accompanying squall line through town of Suffield blew down tobacco curing barn and small poultry house. A few fowl killed in latter. Weather Bureau Airport Station a few miles south of affected area recorded wind gusts to 50 m.p.h., during squall. Storm moved south-southeastward.
ALABAMA Headland, Henry County	10	7:45 p.m.	Short	Narrow	0	0	3	1	Tornado (suspected)	House damaged. A neighbor saw tornado dip near his house without touching ground, to later dip and hit first-mentioned house.
MISSOURI Bismarck, St. Francois County	10	8:30 p.m.			1				Electrical	Man killed when hit by lightning.
TEXAS Robert Lee, Coke County	10	8:45 p.m.			0	0			Funnel aloft	Funnel moved east or southeastward.
TEXAS Langtry area, Val Verde County	10	9:15 p.m.	25	*20			4	1	Hail, wind, and rain	Ground entirely covered by hail, average size of hens' eggs; killed a number of livestock, damaged roofs, windows, fences, TV antennas. Strong winds damaged roofs, demolished tenant house, badly damaged trailer house. Hail fell in strips 3- to 4-hundred yards in width. Storm moved southwestward.
ARIZONA Glendale, Avondale, and Litchfield Park, Maricopa County	10						1		Hail	Hail damage to crops.

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Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons: Killed	Number of persons: Injured	Estimated damage by categories †: Property (exclusive of crops)	Estimated damage by categories †: Crops	Character of storm	Remarks
ARIZONA Pinal County (central portion)	10						1		Hail	Hail damage to crops.
	10									Minor storms also reported at Diehlstadt, Rolla, and Springfield, Mo.; in Carlsbad and vicinity and in Lea County, N. Mex.; at Heppner and Weston, Oreg.; and Emery, Utah.
CALIFORNIA Mountains north of San Francisco Bay, central Sierras, and southern mountains and coastal basin	10-11					1			Hail, rain, electrical, and funnel aloft	Moist, unstable air from ocean with low center off coast caused numerous thunderstorms. Hail fell at Bridgeport Dam, Mono County, in San Fernando Valley, and adjacent foothills of Los Angeles County, and Julian area, San Diego County. Rains, locally of cloudburst intensity, flooded some streets in southeast Los Angeles, and Coast Highway near Dana Point. Lightning struck several telephone and power poles and 2 transformers in Huntington Park, also 2 houses, slightly injuring 1 person. Funnel cloud, estimated 10 to 12 miles northeast of Hamilton Air Force Base, Marin County, observed by pilot and base weather station personnel on 10th. Lower extremity of funnel well above ground, estimated 800 feet; lasted only a few minutes; no report of damage.
TEXAS Between Seminole and Andrews	11	3:35 a.m.			0	0			Funnel aloft	
TEXAS Cotton Center (5 miles southwest of), Lamb County	11	3:41 a.m.			0	0			Funnel aloft	Funnel observed moving northeastward.
TEXAS Big Spring (7 miles west of), Howard County	11	3:55 a.m.			0	0			Funnel aloft	Funnel observed moving eastward.
TEXAS Justin, Denton County	11	4:15 a.m.			0	0			Funnels aloft	3 funnels observed moving northeastward.
ARKANSAS Prairie View community, Logan County	11	11 a.m.			0	0		1	Tornado	Funnel observed from Prairie View. Damaged barn 1 mile southeast, then went aloft to point 1/4 mile northeast, where it damaged 7 buildings and destroyed several fruit trees. Tornado moved northeastward.
TEXAS Hereford (10 miles east of), Deaf Smith County	11	1:50 p.m.			0	0			Funnel aloft	
MISSOURI Red Oak, Barton County	11	Afternoon							Electrical	Farm home and contents hit by lightning and destroyed.
INDIANA Fort Wayne (6 miles northeast of), Allen County	11	4:50 p.m.			0	0	2	1	Tornado	Unconfirmed funnel cloud briefly touching ground, damaged house under construction.
TEXAS Channing (1 mile south of), Hartley County	11	5:15 p.m.	Short	30	0	0			Tornado	Hit 7 or 8 times in open country, no damage; moved northeastward.
MISSOURI Risco and New Madrid, New Madrid County	11	5:30 p.m.			0	0	2		Funnel aloft, wind, rain, hail, and electrical	Storm moved northeastward.
ARIZONA Tempe (near), Maricopa County	11	6:30 p.m.					3		Hail and rain	Hail and rain damaged property in Tempe with additional crop damage in surrounding area. Storm moved northeastward.
IDAHO North-central areas	11	Evening							Rain, hail, and wind	Numerous power outages in vicinity of Coeur d'Alene and considerable damage to appliances; hail covered 200 acres of alfalfa to depth of 8 inches; heavy rains damaged new orchard near Council; trees felled by wind at Dixie.
ARIZONA Pinal County (central and southern portions)	11								Hail	Hail damage to crops.
UTAH Duchesne County	11				2				Hail and rain	2 deaths occurred when 2 cars collided when 1 of them slid sideways; 1/2 inch of hail on highway at time.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

MAY 1957

Place	Date	Time	Length of path miles	Width of path yards	Number of persons Killed	Number of persons Injured	Estimated damage by categories † Property (exclusive of crops)	Estimated damage by categories † Crops	Character of storm	Remarks
	11									Minor storms also reported in Camden vicinity, S.C.; and in Norton area, Tex.
NORTH CAROLINA Raleigh and vicinity, Wake County	11-12	Night					5		Rain	Small low-pressure area caused 4 to 6 inches of rain in about 12 hours in and around Raleigh. Crabtree Creek rose to its highest in about 30 years, and overflowed into low portions of several residential and business areas. Damage estimated at $58,000 reported on monthly flood report.
MISSOURI Blue Ridge, Harrison County	12	5 a. m.							Electrical	Barn and contents destroyed by lightning.
INDIANA Kingman to Ladoga, Fountain and Montgomery Counties	12	Afternoon	27	*5			1	4	Hail	Hailstorm riddled wheat fields and stripped leaves off trees. Hailstones, some as large as walnuts, covered fields and Highway 234 with slushy ice. Storm moved eastward.
OKLAHOMA Altus, Jackson County	12	4 p.m	5	*1			3	4	Hail, rain, and electrical	Hailstorm, with stones up to 1 inch in diameter, caused complete destruction to crops. Area reported to be solid with ice 12 to 18 inches deep. Small area near Olustee also received heavy damage. Heavy rains in area beat crops into ground. Hail damaged buildings as if they had been shot with buckshot. Storm moved northeastward.
TEXAS Jacksonville (7 miles southeast of), Cherokee County	12	4:05 p.m.			0	0			Funnels aloft	3 funnels observed.
TEXAS Crawford area, McLennan County	12	4:43 p.m.			0	0	3	3	Tornado	4 homes badly damaged and 150 acres of oats destroyed 4 miles north of Crawford. Storm moved eastward, dissipating west of Hillsboro.
TEXAS Rio Vista area, Johnson County	12	5-5:15 p.m.	5	*2-1/2			4	4	Hail	Roofs damaged. Storm moved northeastward.
ILLINOIS Central portion	12	5-6 p.m.			0	0	4		Hail, wind, rain, electrical, and funnels aloft	Thunderstorms caused heavy showers and scattered hail and wind damage in narrow strip from Jacksonville to Paris. Funnel clouds observed at Pisgah, Edinburg, and Paris. Lightning fire burned barn near Paris.
TEXAS Snyder (15 miles north of), Scurry County	12	5:48 p.m.			0	0			Funnel aloft	
OKLAHOMA Cooperton, Kiowa County	12	6 p.m.							Hail, wind, and rain	Hailstorm, with strong winds and heavy rain, caused extensive damage to crops, buildings, TV antennas, and utilities. 1 barn reported blown away. Storm moved northeastward.
TEXAS Dallas (8 miles southwest of), Dallas County	12	6:15 p.m.			0	0			Funnel aloft	Funnel observed moving northeastward.
TEXAS Waco (25 miles northwest of), Bosque County	12	7:40 p.m.			0	0			Funnel aloft	Funnel observed moving northeastward.
TEXAS Between Greenville and Commerce, Hunt County	12	7:50 p.m.			0	0			Funnel aloft	Funnel observed moving northeastward.
IOWA Muscatine, Scott, and Clinton Counties	12	11 p.m.					4	1	Hail, wind, and rain	Damaged structures, downed trees and utility lines, and caused local flooding.
ILLINOIS Northwestern portion	12	11 p.m.					4		Hail	Golf-ball sized hail struck Mendota and southern parts of Whiteside County. Damage to roofs and greenhouses.
IOWA Polk, Story, and Marshall Counties	12	Evening					4	1	Thunderstorm and hail	Damaged buildings and trees.
IOWA Washington County	12	Evening			0	0			Funnel aloft	Funnel cloud aloft reported by 2 truckers.
IOWA Toronto, Clinton County	12	Evening			0	0	3	1	Tornado (suspected)	Possible tornado damaged farm buildings.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

MAY 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons: Killed	Number of persons: Injured	Estimated damage by categories †: Property (exclusive of crops)	Estimated damage by categories †: Crops	Character of storm	Remarks
TEXAS Denton, Denton County	12	Evening					4		Electrical	Lightning damaged hot-water heater which caught fire, spread to 3 business houses and gutted dental office.
OKLAHOMA Carnegie (12 miles south of), Caddo County	12	Night			0	0		1	Tornado	Funnel reached down to roof-top level, taking off part of barn roof. Storm moved northeastward.
ARIZONA Avondale, Tempe, Scottsdale areas, Maricopa County	12								Hail	Hail damage to crops.
ARIZONA Pima County (southern and eastern portions)	12								Hail	Hail damage to crops.
ARIZONA Pinal County (southeastern portion)	12								Hail	Hail damage to crops.
	12									Minor storms also reported at Auxvasse, Mo.; at Blanchard and Oklahoma City, Okla.; near Big Spring, Tex.; and at Otto, Wyo.
OKLAHOMA Lebanon, Marshall County, to Durant, Bryan County	13	7 a.m.							Wind and rain	Strong winds estimated between 50 to 65 m.p.h., caused widespread damage to homes, outbuildings, TV antennas, boat docks, utilities, and trees. Heavy rain accompanied storm. Storm moved eastward.
TEXAS Bonham, Fannin County	13	7:25 a.m.	6	50-75			4	4	Wind and hail	Damaged buildings, trees, signs, and windows; crops flattened in fields. Storm moved eastward.
TEXAS Paris, Lamar County	13	8:15 a.m.	3	1,000			4		Wind	Unroofed and damaged church, houses, storage shed, business establishments; 4 small buildings destroyed. Storm moved northeastward.
TEXAS Naples, Morris County	13	10 a.m.			0	0			Funnel aloft	Funnel observed moving eastward.
IOWA Larrabee, Cherokee County	13	10 a.m.			0	0			Funnel aloft	Funnel aloft reported by motorist.
ARKANSAS Ashdown, Little River County	13	10:20 a.m.	1	75	0	1			Tornado	1 house destroyed and cotton compress, store building, and another house damaged. Tornado moved northeastward.
ARKANSAS Howard County	13	10:35 a.m.	2	200	0	1	4	3	Tornado	Considerable property damage in Mineral Springs and in Unity and Blackland communities. 4 houses damaged in Mineral Springs. Tornado moved northeastward.
ILLINOIS Springfield, Sangamon County	13	11 a.m.	Short	Narrow	0	0	2		Tornado	Path near Camp Butler National Cemetary. Tornado moved northeastward.
ARKANSAS Delight, Pike County	13	11:20 a.m.		50	0	0	4	1	Tornado	6 houses destroyed and 9 buildings damaged. Tornado moved southeastward.
KANSAS Thomas County	13	11:30 a.m.			0	0			Tornadoes, funnels aloft, and hail	2 funnel clouds observed moving northeastward about 6 miles northeast of Oakley which came to ground, traveled short path barely missing farm home. The other 3 remained aloft. Some hail fell in small areas with but little crop damage.
TEXAS Sulphur Park and Oak Grove sections, Harrison County	13	11:30 a.m.		200	0	0	3	C	Tornado	A few outbuildings destroyed, others damaged, trees and signs blown down, and corn crop damaged. Tornado moved northeastward.
ARKANSAS Arkadelphia, Clark County	13	11:45 a.m.					4	1	Wind	Considerable damage to property and trees. Storm moved northeastward.
ARKANSAS Friendship to Malvern, Hot Spring County	13	11:45-12:25 p.m.	15	880	0	0	5	1	Tornado	Storm skipped northeastward along path, touching ground in several places. Several houses damaged. Principal damage to large brick plant at Malvern.
TEXAS Longview, Gregg County	13	11:55 a.m.			0	0			Funnel aloft	Funnel observed moving northward.
IOWA Henry County	13	Morning			0	0	3	1	Tornado (suspected)	School building and farm buildings damaged.
TENNESSEE Lake County	13	A.m.					4	1	Electrical	Farm home struck by lightning, burned to ground.

See reference notes at end of table.

Place	Date	Time	Length of path, miles	Width of path yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
KANSAS Hill City (10 miles west of), Graham County	13	12:14 p.m.			0	0			Tornado and hail	Small narrow funnel cloud moving northeastward observed aloft by C.A.A., for 7 minutes. Came to ground once, then disappeared. Some occasional light hail. Minor damages.
ARKANSAS Conway to Guy, Faulkner County	13	12:50-2 p.m.	19	50-75	1	18	5	1	Tornado	Storm first struck 1-1/4 miles to southwest of Conway and moved northeastward in very narrow path across northwest section of city. 13 homes destroyed, 12 heavily damaged, and 35 damaged. 21 business buildings and 20 farm buildings damaged. Storm went aloft at north edge of Conway and touched ground again in 1 or 2 places before reaching Guy, where it again caused property damage. Property damage in Conway estimated at $250,000; at Guy $6,000. All 18 injuries and 1 death at Conway.
ARKANSAS Quitman and Heber Springs, Cleburne County	13	1 p.m.					4	1	Wind	Considerable property damage. Storm moved northeastward.
ARKANSAS Culpepper Mountain community, Van Buren County	13	1 p.m.	3	100			4	1	Wind	Several homes, barns, and outbuildings damaged and 1 chickenhouse and 7,000 chickens destroyed. Storm moved northeastward.
FLORIDA Clewiston, Hendry County	13	1:15 p.m.			0	0			Tornado	Tornado covered very small area, but damaged several buildings. Funnel cloud observed to touch ground very briefly.
NEBRASKA Lebanon (5 miles southwest of), Red Willow County	13	1:45 p.m.	Short	Narrow	0	0			Tornado	Funnel observed by many persons; touched ground for 10 minutes, but struck nothing of value; moved northeastward.
ARKANSAS Oxford (south and west of), Izard County	13	2 p.m.	2	400	0	1	4	1	Tornado	Tornado moved northeastward from 1 mile southwest of Oxford to 1 mile east of Oxford.
MISSOURI Howell and Oregon Counties	13	2:15-3:15 p.m.			0	0	3		Tornadoes, wind, and rain	Several short-lived tornado funnels, followed by heavy rains. In Howell County, tornado at 3 p.m., hit 5-1/2 miles south of West Plains, damaging several farm buildings. Another hit in White Church community south of Mountain View. Another hit 1 mile east of Couch, between Thayer and Alton. Still another hit between Job and Billmore. Storm moved northeastward.
NEBRASKA Sidney (north of), Cheyenne County	13	2:23 p.m.	Short	Narrow	0	0			Funnel aloft	Remained in clouds; moved eastward.
TENNESSEE Memphis, Shelby County	13	3:45-4 p.m.			1	6		1	Wind	Strong winds toppled 500-pound concrete block from atop 3-story building, uprooted trees, blew down structural foundation, blew out car windows and plate-glass windows, and disrupted power supply.
MONTANA Boulder, Jefferson County	13	4:15 p.m.	1	1		1	3	1	Electrical	11 power poles shattered and truck driver stunned by lightning.
MISSOURI Cape Girardeau, Cape Girardeau County	13	5 p.m.							Wind, rain, and electrical	Extensive damage to trees, windows, etc.
MISSISSIPPI Grenada, Grenada County	13	5:30 p.m.			1		3	1	Thunderstorm	Thunderstorm over Lake Grenada sunk boat and man drowned.
INDIANA Marion (12 miles west-northwest of), Grant County	13	6:08 p.m.			0	0			Funnel aloft	Funnel cloud reported, but it did not touch ground; moved northeastward.
MISSOURI Maryville (1 mile northwest of), Nodaway County	13	6:10 p.m.			0	0	2		Funnel aloft, wind, and rain	
NEBRASKA Papillion (south of), Sarpy County	13	6:45 p.m.	2	Narrow	0	0	3	1	Tornado	Tornado moved eastward.
NEBRASKA Omaha (south of), Douglas County	13	7 p.m.	Short	Narrow	0	0	2	1	Tornado	

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
FLORIDA Lakeland, Polk County	13	Evening				5	4		Rain	Heavy rains collapsed roof of skating rink.
ARIZONA Coolidge (5 miles southwest of), Pinal County	13								Hail	Hail damage to crops.
IOWA Cedar County	13								Hail	1-1/4-inch hail reported, with some building damage.
TEXAS Hico (7 miles west of), Hamilton County	13				1				Electrical	Lightning killed man as he stepped outside to check weather.
	13									Minor storms also reported near Atkins and Belle Chapel community and at Ozan, Ark.; in Buena Vista, Cerro Gordo, and Woodbury Counties, Iowa; in Great Bend and Hoisington areas, Kans.; at Cameron, Mo.; at Dyer, Nev.; at Chandler, Grant, Okmulgee, Sapulpa, and Stigler, Okla.; near Green Brier, Tenn.; and at Cody, Wyo.
CALIFORNIA Entire State	13-14				1	1			Hail, wind, electrical, and rain	Unstable air following cold front passage resulted in widespread thunderstorms, hail, and locally strong winds from Oregon border to southern California, with highest incidence in central Sierras and lower San Joaquin Valley. Heaviest thunderstorm in years at Dudley's, Mariposa County, and severe thunderstorm at Auberry, Fresno County, caused 2-1/2-hour power failure evening of 13th. Considerable fruit damaged by hail in local areas of Madera, Fresno, Kings, and Tulare Counties, and grapevines stripped by hail of golf-ball size in area southwest of Fresno. Lightning struck cable leading into tunnel at site of Haas Powerhouse project in Fresno County, setting off dynamite, killing man who was carrying it and partially deafening another. Rancher 4 miles west of Kerman, Fresno County, lost 6,100 turkeys due to hailstorm; loss estimated at $10,000. Howling winds toppled more than 50 trees in various sections of Los Angeles, 1 crushing 3 unoccupied automobiles.
TENNESSEE Cookeville, Putnam County	14	3 a.m.					4	1	Electrical	Lightning ignited poultry house, burning esimated 20,000 broilers and 600 bags of feed. Damage, including equipment, feed, and chickens, estimated at $50,000.
MISSOURI Dexter, Stoddard County	14	5:30 a.m.				1			Electrical and rain	Boy badly burned. Large barn hit by lightning and burned.
IOWA Lyon County	14	5:50 a.m.			0	0			Funnel aloft	State Police reported that Sibley radio reported funnel in vicinity of Rock Rapids.
MINNESOTA Blooming Prairie (4 miles east of), Dodge County	14	11 a.m.		200-250	0	0	2	1	Tornado (suspected) and hail	Severe thunderstorm with some hail. No funnel observed. Barn destroyed. Other buildings and machinery damaged. Witness described storm as making "terrible roar" following a calm. Storm moved northwestward.
IOWA Maquoketa, Jackson County	14	11:35 a.m.			0	0			Funnel aloft	Reported by Cedar Rapids; original source of report unknown.
COLORADO Jefferson, Denver, Arapahoe, Douglas, and Kit Carson Counties	14	Noon							Hail and rain	Thunderstorm accompanied by hail cut across southern and western parts of Metropolitan Denver, extending through Englewood, Littleton, Evergreen, Morrison, Golden, Lakewood, and southward to Castle Rock. Hailstones size of marbles piled 2 to 6 inches deep in area. Heavy rain caused flooding of homes in low places, and some roads and streets closed because of high water. Same day heavy hailstorm in Kit Carson County damaged roofs, windows, and all growing vegetation.
MISSISSIPPI Vicksburg, (north of), Warren County	14	1 p.m.			0	0			Funnel aloft	Pilot reported "twister north of Vicksburg able to circumnavigate," but no evidence of damage or reports of funnel cloud by observers on ground.
ALABAMA Muscle Shoals (near), Colbert County	14	2:30 p.m.			1				Electrical	Man killed by lightning while operating tractor in field.
OHIO Wooster, Wayne County	14	2:40 p.m.			0	3	5		Tornado (suspected) and wind	While strong thunderstorm winds did some damage throughout Wooster area, major casualties were business blocks in downtown area. Wayne County National Bank building lost its entire roof by what could easily have been tornadic action. Witnesses reported seeing roof lifted 3 to 5 feet then crash down into bank where 3 persons

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

MAY 1957

Place	Date	Time	Length of path miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
OHIO (Cont'd)										injured. Brick chimney also fell inside. Windows in air-conditioned buildings "sucked" out. Storm moved northeastward.
OHIO Cuyahoga and Lake Counties	14	3 p.m.				2	°5	C	Wind	Strong, gusty winds did structural damage to buildings, utility lines, and trees confined mainly to spots in Cleveland. Among places hit hardest were Lakewood, Berea, Painesville, Wickliffe, and Willoughby. Maximum 5-minute speed at WBAS at Cleveland 40 m.p.h., but gusts reached to 90 m.p.h. Storm moved northeastward.
CONNECTICUT Fairfield and New Haven Counties	14	3-10 p.m.					2	1	Electrical and rain	Heavy rains undermined and caused collapse of old, unoccupied building in Shelton. Lightning struck house and garage in Ansonia, but no fire damage resulted. Street flooding occurred in Danbury and nearby towns as unofficial observer reported over 2 inches of rain in less than 6 hours.
WASHINGTON Spokane County	14	4 p.m.					5	4	Rain	Heavy rain associated with thunderstorm activity occurred in Spokane area. Basements flooded, streets damaged, and power outages occurred. Section of railroad south of Spokane washed out and several highway bridges damaged. Storm moved westward.
WISCONSIN Green Bay, Brown County	14	4:30 p.m.					3	1	Rain	Localized flooding of basements and streets washed out. 1.15 inches of rain fell from 4:30 to 5:30 p.m.
WISCONSIN Plymouth-Sheboygan area, Sheboygan County	14	5 p.m.					4	1	Wind	Strong winds uprooted trees, damaged buildings, overturned 2 trucks, killed livestock, and demolished 1 barn. Storm moved eastward.
TEXAS Silverton (12 miles southwest of) Briscoe County	14	5:30 p.m.			0	0			Tornado	Hit a lake sending up spout of water, then dissipated; moved northeastward.
VIRGINIA Staunton, Weyers Cave, and Mt. Sidney, Augusta County	14	Late afternoon					4		Electrical	House and 2 barns burned by lightning. 7 large hogs killed. More than 300 telephones out of service for several hours.
PENNSYLVANIA Statewide	14	Afternoon-evening					4	1	Wind, electrical, and rain	High and turbulent winds blew down several structures and damaged homes, trees, and other property resulting in $15,000 damage. In west, heavy rain resulted in numerous washouts. Storm moved eastward. Lightning knocked power transformers and fired several buildings, causing $15,000 damage.
WEST VIRGINIA Mason, Jackson, Wood, and Ritchie Counties	14	Afternoon-evening						1	Wind	Some roofs and awnings damaged by high winds; a few antennas blown over; several houses damaged by falling trees; falling limbs and trees broke several power- and telephone lines and blocked highways.
KANSAS Thomas and Logan Counties	14	6:30-6:45 p.m.	30	*6			4	4	Hail, wind, and rain	Hail up to 1 inch in diameter fell over northern Logan and southern half of Thomas County. Damage to property especially severe at and near Winona. Hail 3 inches deep in some places. Wind and heavy rain accompanied hail. Storm moved eastward.
KANSAS Trego and Ellis Counties	14	9:20-9:30 p.m.	10	*3			5	4	Hail and wind	Heavy hail fell from near Ogallah to Ellis. Some stones 2-1/2 inches in diameter. Hail 3 inches deep. Roofs, windows, and screens damaged. Not much wind. Storm moved eastward.
KANSAS Russell County	14	11 p.m.	15				2	3	Hail and wind	Small hail, with some stones up to 1 inch in diameter fell from Russell to Dorrance. Hail not frozen hard. Intermittent damage. Part of high school roof blown off and rain damaged considerable plaster.
ALABAMA Bridgeport, Jackson County	14	Evening					4	1	Electrical	Lightning hit drawbridge which interrupted train and boat traffic and destroyed control tower of bridge.
MICHIGAN (Lower) Southern and central portions	14	Evening					4	1	Electrical, wind, and hail	Lightning and high winds caused scattered damage. Several barns destroyed by lightning or winds. 1 home and some oil tanks destroyed by lightning near Reed City. Hail occurred in a few localities.
MICHIGAN (Lower) Southern and central portions	14	Evening			0	0			Funnels aloft and waterspout	Funnels aloft reported in Berrien, Kent, Ottawa, Ionia, Clinton, Calhoun, Jackson, and Livingston Counties. Waterspout also reported in Lake Michigan, near Oceana County.
OHIO Scattered areas	14								Wind and hail	Line squall reported to have done considerable damage in towns over State, among them being Shelby, New London, Wellington, Zanesville, New Philadelphia, and Gallipolis. In Zanesville, hail fell to depth of 1/4 inch.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
	14									Minor storms also reported at Florala and Greenville, Ala.; in Buena Vista, Cherokee, and Scott Counties, Iowa; in Wichita area, Kans.; in Bourbon County, Ky.; at Sandy Spring, Md.; and in Athens and vicinity, at Bristol, Kingston, and Lexington, Tenn.
NEW JERSEY Passaic, Essex, and Hudson Counties	14-15	Midafternoon-early a.m.					4		Rain, wind, and electrical	Series of thunderstorms produced torrential rains (amounts up to 4.73 inches at Ridgefield, Bergen County), resulting in flooding of cellars, numerous street and highway washouts, and damage to stalled automobiles. Accompanying lightning set small fires in several residences and 1 theater. Wind and lightning damage disrupted power services in some communities.
MICHIGAN Ishpeming, Marquette County	15	Early morning					4	1	Wind	High winds blew down 224-foot radio station antenna.
ARIZONA Phoenix, Maricopa County	15	12:30 p.m.			0	0	3	1	Dust devil	Dust devil moving northward ripped roof off small house.
OKLAHOMA Kingfisher, Garfield, Alfalfa, Woods, Major, and Blaine Counties	15	1:30 p.m.-midnight					5	6	Hail, rain, and wind	Heavy thunderstorms developed and remained over these counties with severe hailstorms and extremely heavy rains. Hail, 1 to 2 inches in diameter, caused up to 100 percent loss to crops and extensive damage to property in Kingfisher County over area 30 miles long and up to 20 miles wide. Hail fell off and on during period and reports indicated just heavy hail fell for period of 35 minutes. Extensive destruction resulted from heavy hail over 4-square-mile area in and near Cherokee, Alfalfa County, and in another area 10 miles by 3 miles in northwestern Alfalfa County. Stones averaged 1 inch in diameter, but larger stones ranged up to 3 inches in diameter. Spotted hail damage noted in other counties also. Heavy rains fell over most of area, and bucket survey indicated 20 inches near Dover, Kingfisher County. Record floods resulted along most streams in area. Winds and heavy rains over uplands caused almost as much damage to crops and washed soils as did floods.
OKLAHOMA Kingfisher County	15	3:03 p.m.			0	0			Funnel aloft	Police and Highway Patrol sighted funnel aloft between Hennessey and Dover.
TEXAS Groom (4 miles east of), Carson County	15	3:15-4 p.m.	7		0	0	3	1	Tornado	Crossed farm and pasture lands, heavily damaged barns and outbuildings; minor damage to farm home. Tornado moved northward.
TENNESSEE Johnson City, Washington County	15	3:20 p.m.			1	3			Electrical	Lightning struck 4 teenage boys playing baseball, killing 1 and injuring the others.
WASHINGTON Spokane County	15	Afternoon					5	5	Rain	Heavy rain associated with thunderstorm activity caused considerable property damage in Spokane. 3 apartment houses damaged when flood water undermined foundations. Basements flooded and streets and bridges damaged.
OKLAHOMA Dover (6 miles southwest of), Kingfisher County	15	5:10 p.m.			0	0			Tornado	Sheriff reported tornado. Evidently hit in open country as no damage reported.
TEXAS Miami (northeast of), Roberts County	15	5:10 p.m.			0	0			Funnels aloft	2 funnels observed moving northeastward.
MARYLAND Andrews Air Force Base, Prince Georges County	15	5:15-5:30 p.m.					5	1	Wind, rain, and hail	Severe, isolated thunderstorm lashed Andrews Air Force Base with hurricane-force winds. Top of thunderstorm reported 12,000 feet high as it moved in from west. In 10 minutes it built up to 40,000 feet and raised havoc for 15 minutes. Tents set up for Armed Forces Day blown down and valuable precision instruments damaged. 1 aircraft suffered minor damage to wing tip. Navy inflatable building blown down and ripped. Rain and hail accompanied storm.
TEXAS Pampa area, Gray County	15	5:20-7:30 p.m.			0	0	3	1	Tornado	Formed at Lefors, 13 miles south of Pampa, damaged grain elevators at Pampa. Sighted near McLean at 7:30 p.m., but no damage there. Tornado moved northeastward.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

MAY 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
OKLAHOMA Dover (near), Dingfisher County	15	5:30 p.m.	Short	500	0	0	3	1	Tornado and funnels aloft	3 funnels observed, 1 touched ground momentarily and destroyed barn and damaged house. Storm moved westward.
NORTH CAROLINA Guilford and Jones Counties	15	5:30-6 p.m.						4	Hail	Damage to corn, tobacco, wheat, and other crops.
TEXAS Ashtola, Martin, and Goldston communities, Donley County	15	5:30-6:30 p.m.	10		0	1	°5	C	Tornado, rain, and hail	Schoolhouse blown away, several houses demolished, other houses, barns, and outbuildings damaged or destroyed; farming equipment damaged. Every farm within 150-square-mile area received damage of varying degree. Miles of fences out, county bridges washed out, electric and phone lines downed, trees and crops ruined. Every house at Goldston damaged. Storm moved northeastward.
OKLAHOMA Crescent (west of), Logan County	15	5:45 p.m.			0	0			Funnels aloft	Several funnels aloft reported moving north-northeastward.
MASSACHUSETTS (central and eastern portions) and NEW HAMPSHIRE and VERMONT (southern portions)	15	Late afternoon					4	1	Wind, hail, rain, and electrical	Hook or "J" echo reported by radar at Worcester, Mass., associated with hail up to 1/2 inch in diameter in Winchendon and Gardner areas and with heavy rain at Athol. No reports of damaging winds in these Massachusetts areas. Huge maple tree blown down at Peterborough, N.H., crushing automobile. House near Temple, N.H., burned after being hit by lightning. Many southern New Hampshire towns suffered power outages due to fallen trees, with heaviest damage at Richmond. Lightning knocked out power service to some Nashua area communities. Wind damage to trees and utilities occurred at East Northfield, Mass., where automobile damaged by falling tree. Trees up to 4 feet in diameter felled. In eastern Massachusetts, lightning hit several homes, with one $5,000 fire loss. Home badly damaged in Waltham by both lightning and falling trees. A few hailstones, size of quarters, fell at Waltham. Scores of towns reported fallen wires and flooded streets. In southern Vermont, pea-size hail fell and tree damage occurred in scattered areas.
TEXAS Clarendon (5 miles southwest of), Donley County	15	6:14 p.m.			0	0			Funnels aloft	Several funnels moving northeastward.
TEXAS Vigo Park, Swisher County	15	7:25 p.m.			0	0	4		Tornado	Residence blown away, several houses blown down, outbuildings and windmills damaged in nearby area. Tornado moved northeastward.
TEXAS McLean, Gray County	15	7:30 p.m.			0	0			Funnel aloft	Funnel observed moving northeastward.
TEXAS Plains area, Yoakum County	15	7:40-7:45 p.m.			0	0	4		Tornado	Blew away windmill and outhouses and damaged house roof. Dipped from low cloud almost obscured by dust, destroyed house roof and laundry building, damaged automobile dealer's building and school roof. Did not remain continuously on ground, dipped 3 times. Storm moved northwestward.
OKLAHOMA Orlando (6 miles northwest of), Logan County	15	7:50 p.m.			0	0			Funnel aloft	Ground Observer Corps reported funnel.
OKLAHOMA Waukomis, Garfield County	15	8:37 p.m.			0	0			Funnel aloft	Reported near Waukomis.
TEXAS Clarendon (8 miles southeast of), Donley County	15	8:45 p.m.			0	0			Funnel aloft	
TEXAS Silverton area, Briscoe and Floyd Counties	15	10:35 p.m.	17	300	21	80	5		Tornado	Leveled most of new residential area, homes of $20,000 and up. At least 25 homes totally destroyed, estimated 15 homes suffered major damage, about 15 others minor damage. At least 4 granaries, cotton gin, wholesale petroleum products warehouse, and many other buildings leveled. Twister first touched ground near Lone Star community (Lockney), 13 miles southwest of Silverton, where 1 person killed. Remained on ground to 4 miles northeast of Silverton. Tore down power- and phone lines, smashed and twisted cars, destroyed or damaged barns, garages, out-

See reference notes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TEXAS (Cont'd)										buildings, buses, and trucks. Silverton was one of few towns in threatened area that night with insufficient emergency warning system. There was not even a ham radio operator available to tie in with present network. Storm moved northeastward.
TEXAS Prairie View, Hale County	15	11:10 p.m.	2	20	0	0	4		Tornado	Frame farmhouse, quonset-type barn, and well machinery destroyed.
GEORGIA Chattooga, Crisp, Clarke, Elbert, Fannin, Houston, Sumter, and Upson Counties	15	P.m.				1	4	3	Electrical, hail, and wind	Severe thunderstorms and hail in several widely scattered counties. Considerable damage to young peaches by hail and 1 person injured by lightning in Upson County. House burned in Sumter County after being struck by lightning.
TEXAS Orange Grove, Jim Wells County	15			Narrow	0	0			Tornado	Touched only briefly, whipped trees, pieces of lumber, tin, debris, etc.
TEXAS Garland (northeast of), Dallas County	15				0	0			Funnel aloft	Funnel observed moving northwestward.
	15									Minor storms also reported at Dothan and Monte Sano, Ala.; in New Orleans area, La.; at Lamar, Mo.; in Guilford, Union, and Wake Counties, N.C.; and at Nowata, Okla.
COLORADO Along Continental Divide and eastward	15-16								Rain and snow	Heavy rain and snow did considerable damage in some areas. Storm started as rain on 15th, changing to wet snow and continuing through 16th. 3 to 5 inches of precipitation fell, and snow ranged 5 to 15 inches in depth with heavy runoff from rapid snow melt. Some flooding occurred along South Platte and Arkansas Rivers, damaging homes, roads, bridges, communication lines, and croplands along rivers.
OKLAHOMA Marshall (6 miles west of), Logan County	16	12:30 a.m.			0	0			Funnel aloft and rain	Funnel aloft sighted moving northeastward.
OKLAHOMA Arnett (7 miles west of), Ellis County	16	12:32 a.m.	6	200	0	0	3	1	Tornado	Tornado moving northward struck farmstead. House severely damaged, most outbuildings destroyed, machinery damaged, and new car wrecked.
MISSOURI Joplin, Jasper County	16	7:05-7:28 a.m.					2	2	Rain and electrical	2 inches of rain fell in a little less than 1 hour. Storm moved northeastward.
OKLAHOMA Harper County (northwestern portion)	16	A.m.							Hail and rain	Hailstorm, with stones large enough to dent automobiles and damage roofs and crops.
NEBRASKA Gretna (southwest of), Sarpy County	16	Noon	Short	Narrow	0	0	3	1	Tornado	Tornado moved westward.
KANSAS Cowley County	16	12:43-12:54 p.m.	5	125	0	0			Tornado and funnel aloft	1 tornado observed moving northeastward for about 7 miles midway between Arkansas City and Winfield and 7 miles west of Struther Air Field. It came to ground once in open territory. Other funnel appeared aloft only momentarily.
KANSAS Greenwood County	16	12:50 p.m.			0	0			Funnel aloft	Funnel cloud moving eastward observed aloft several miles southeast of Eureka.
KANSAS Graham County	16	3:06-3:35 p.m.			0	0			Funnels aloft	As many as 6 funnels moving northward observed by C.A.A. personnel about 5 to 10 miles northeast of Hill City. 1 large funnel watched for almost 30 minutes. 5 other small ones formed and dissipated.
OKLAHOMA Stephens and Carter Counties	16	3:30 p.m.			0	0			Funnel aloft	Funnel aloft was sighted at Alma and moved northeastward over Ratliff City and dissipated.
KANSAS Greenwood and Woodson Counties	16	3:30-4:15 p.m.	13	440	0	0			Tornado, funnels aloft, hail, wind, and rain	Tornado path extended from about 3 miles east of Severy northeastward across Fall River Reservoir to a few miles southwest of Toronto where it ended. Funnels dropped out of leading edge of storm cloud. 4 small funnels formed and dissipated. Heavy rain, some light hail, and wind also caused minor damage. Buildings on several farms destroyed by tornado. Tornado funnel, however visible until it passed over Yates Center at 4:15 p.m.

See reference notes at end of table.

Place	Date	Time	Length of path miles	Width of path yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MISSOURI Independence, Jackson County	16	Afternoon							Wind, rain, and electrical	Extensive local flooding.
KANSAS Chautauqua, Montgomery, Wilson, and Neosho Counties	16	4:18-5 p.m.	40	100-300	0	0	5	4	Tornado, funnels aloft, hail, and rain	Tornado first hit ground about 6 miles southwest of Elk City, traveled northeastward, occasionally lifting from ground. Intermittent damage path extended to 2-1/2 miles east of Earlton after passing north of Neodesha and south of Altoona. 4 small funnels observed at one time aloft in Neosho County. Hail and heavy rain caused crop losses.
KANSAS Elk County	16	4:30-4:50 p.m.	4	20	0	0	3		Tornadoes	4 small funnels moving northeastward appeared to bounce off ground, 2 caused damage 2 miles north of Grenola and the other 2 caused damage 4 miles east of town.
FLORIDA Auburndale, Polk County	16	4:45 p.m.	6	150	0	0	3		Tornado	Tornado moved westward.
MISSOURI Richmond, Ray County	16	Late afternoon							Rain, wind, hail, and electrical	4.60 inches of rain in Richmond. Local flooding. Tree limbs and power- and phone lines downed.
TEXAS Miami (12 miles northwest of), Roberts County	16	5 p.m.			0	0	3		Tornado	Destroyed garage and outhouses.
OKLAHOMA Nowata, Nowata County	16	6:35 p.m.			0	0			Funnel aloft	Funnel aloft reported moving northeastward.
KANSAS Oswego (6 miles southwest of), Labette County	16	7:20 p.m.			0	0			Funnel aloft	Funnel cloud aloft observed moving east-northeastward.
OKLAHOMA Skiatook (near), Tulsa County	16	8:55 p.m.			0	0			Funnel aloft	Police sighted funnel.
OKLAHOMA Barnsdall (5 miles southeast of), Osage County	16	9:08 p.m.			0	0			Funnel aloft	Highway Patrol sighted funnel.
OKLAHOMA Oklahoma City, Oklahoma County	16	P.m.			1				Electrical	Lightning struck and killed man driving tractor.
MISSOURI Miller County	16	Evening							Rain	4 to 5 inches of rain caused much flooding along small streams.
KANSAS Labette County	16	Night				1			Wind	Boy became intangled in broken powerline when large limb of tree fell during minor windstorm and severed line. Boy suffered shock mainly.
	16									Minor storms also reported at Preston, Idaho; in Grenada and Minter City areas, Miss.; in Dudenville, Hardin, Kirksville, and Marshall, Mo.; at Oxford, Nebr.; and at Vinita, Okla.
TENNESSEE Nashville, Davidson County	17	11 a.m.						1	Wind, electrical, and hail	Wind blew out windows, snapped tree limbs, and blew down signs. Lightning struck substation, interrupting electric power services. Hail of golf-ball size fell. Storm moved east-northeastward.
ALABAMA Courtland, Lawrence County	17	1 p.m.				1			Electrical	Man hit by lightning while operating tractor apparently killed, but revived.
OKLAHOMA Garvin County	17	2:45 p.m.			0	0			Funnel aloft	Funnel aloft reported northeast of Elmore City and again between Wynne Wood and Pauls Valley moving northeastward.
TEXAS Crosbyton (10 miles south of), Crosby County	17	3:50 p.m.			0	0			Tornado and rain	Tornado moving eastward hit in ranch area, no damage. Heavy rain.
NORTH CAROLINA Madison County	17	4 p.m.						4	Hail	Corn, tobacco, and fruit damaged.
OKLAHOMA McAlester, Pittsburg County	17	5:25 p.m.		*3	0	0		2	Wind, rain, electrical, and funnel aloft	Strong winds estimated up to 60 m.p.h., with heavy rain and lightning caused widespread damage over McAlester. Buildings damaged and some roofs blown off, trees blown over, and damage to utilities estimated at $6,000. 2 utility poles broken off. Lightning struck home and set fire to TV set. Unconfirmed reports of funnel sighted Storm moved north-northeastward.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories [1]		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
OKLAHOMA Jefferson County	17	9 p.m.	7	*5			4	4	Hail, wind, rain, and electrical	Hailstorm, with stones 1 to 3 inches in diameter, caused considerable damage to crops and property in and around Terral and Fleetwood. Storm moved eastward.
TEXAS Jacksboro, Jack County	17	10-11 p.m.					3		Wind	85-m.p.h., wind damaged trees, roofs, signs, and plate glass all over town. 1 garage blown down.
	17									Minor storms also reported at Eminence, Rolla, and Toronto, Mo.; at Chickasha and Tulsa, Okla.; and at Brownwood, Tex.
CALIFORNIA Entire State	17-19					4			Wind, rain, and hail	Storm front moving southeastward, followed by moist, unstable air brought record or near-record May rains to north and central coastal areas, widespread thunderstorms, hail, and high winds in northern mountain ranges, central Sierras, and lower San Joaquin Valley, and locally heavy rains and high winds in south. Heavy rains caused heavy damage to strawberries and cherries in Santa Clara County, and strawberries in Santa Cruz County. At Santa Cruz, rain-swollen waters of San Lorenzo River destroyed coffer dam with estimated damage of $6,000, while in nearby Soquel, Soquel Creek washed out earth-fill used as temporary crossing during bridge construction. Rainwater accumulating on roof of market in San Mateo, due to clogged drain, caused estimated $2,000 structural damage. Cloudburst sent 5-foot wall of water down Uvas Creek in Santa Clara County, washing out small coffer dam. Earthslides threatened 2 homes in Mill Valley, Marin County, and 1 street was flooded. Winds estimated up to 50 m.p.h., knocked down powerline at Ross, and a number of powerlines blown down in San Francisco. In San Lorenzo, Alameda County, 2 areas flooded with 6 to 8 inches of water. Russian River rose to crest of 13.55 feet at Guerneville, washing out beach facilities and refreshment stands prepared for summer season. Kaweah and St. John Rivers threatened to flood Visalia, Tulare County, and approaches to Dinely Bridge above Three Rivers washed out. At Lake Spaulding, 5.15 inches of rain fell in 24 hours, greatest of record for May. Rockslide derailed Western Pacific's California Zephyr in Feather River Canyon. 2 of the 3 diesel engine units plunged 150 feet to canyon floor, and 4 trainmen injured, 1 seriously. Slide again closed highway at Emerald Bay on Lake Tahoe. Locally heavy rains and high winds occurred in south. At Crestline, San Bernardino County, unofficial measurement of 5.12 inches in 10 hours reported. Strong winds lashed coast, and pleasure cruiser with 12 passengers grounded on Anacapa Island, off Oxnard; no loss of life or injuries.
ILLINOIS Extreme southern portion	18	12:10 p.m.					4		Wind and rain	Severe wind squalls and heavy rain showers affected area from Carbondale and Du Quoin and northeastward to Benton. At 1:45 p.m., windstorm also affected narrow strip along Highway 50 from Salem to Olney. Storm damage chiefly to overhead wires by broken trees. Wind gusts to 55 m.p.h., measured near Carbondale. "Roaring sound" reported from Hurst-Bush area and may have been tornado.
LOUISIANA New Iberia, (15 miles south of), Iberia Parish	18	2 p.m.			0	0			Funnel aloft	Funnel moving southeastward reported not touching ground; might have been waterspout which moved onto land.
VIRGINIA Barrenridge area, Augusta County	18	3-3:30 p.m.							Hail and wind	Fruit trees stripped, gardens cut to pieces, and paint scarred.
INDIANA Evansville, Vanderburgh County	18	3:20 p.m.				1			Wind	Several trees and powerlines blown down. Falling limb injured a child. Winds reached 55 m.p.h., from northwest. Storm moved east-northeastward.
OHIO Mt. Healthy, Hamilton County	18	Afternoon						3	Hail	During heavy thunderstorm, hail ranging up to golfball size stripped trees of foliage and did damage to peach, apple, tomato, cabbage, and bean crops.
MISSOURI Rolla, Phelps County	18	7:30 p.m.			0	0			Funnel aloft	Funnel sighted over wooded area.
ARKANSAS Pickens, Desha County	18	9 p.m.							Wind and hail	Moored crop-dusting airplane destroyed and 2 damaged also several roofs damaged by wind. Slight hail damage to young cotton.

See reference notes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TENNESSEE Union City vicinity, Obion County	18	P.m.						1	Wind, rain, and electrical	In Union City, 8 business establishments flooded with minor damage; streets flooded; 2 fires caused by short circuits due to flooding, and lightning struck and damaged transformer. In Woodland Mills area, wind destroyed several barns and damaged cotton gin, garage, and blacksmith shop.
TENNESSEE Cross Roads community, Crockett County	18	P.m.						1	Electrical	Barn, struck by lightning, destroyed, including 450 bales of hay, 2 cribs of corn, and some small implements.
NORTH CAROLINA Rutherford County	18							4	Hail	Tobacco, fruit, and other crops damaged.
	18									Minor storms also reported at Filer, Idaho; in Lyons and Marco areas, Ind.; and in Daviess County, Ky.
CALIFORNIA Fresno, Fresno County	19	8:18-8:23 a.m.	Short	Narrow	0	0			Tornado	Third tornado ever to be seen in Fresno area swung down to earth briefly at 8:18 a.m., lasting until 8:23 a.m., observed from WBAS, Fresno and by local pilot. Clouds broken, and rain showers had just ended. No unusual noise heard by observers, but occupant of 1 of damaged houses reported roaring noise. Funnel cloud was vertical when first observed, but looped just before breaking up. Tornado ripped shingles from homes and twisted cooler on roof of 1 residence. Almond tree uprooted. Tornado moved east-northeastward.
WEST VIRGINIA Tyler County	19	Afternoon							Hail	Severe hailstorms reported, but no details given.
WEST VIRGINIA Wood County	19	Afternoon							Rain and hail	Excessive rainfall caused collapse of factory roof; stock and fixtures below damaged by water. A few streets and many residential basements in Parkersburg flooded, considerable damage. 25- to 30-foot section of retaining wall at rear of Parkersburg parking lot washed away. 2 small rural bridges washed out. Some damage to fences and topsoil; some field crops and gardens hurt by heavy rain and hail.
NEBRASKA Harrison (2 miles south of), Sioux County	19	5 p.m.	Short	Narrow	0	0			Funnel aloft	Observed over sparsely settled terrain.
NEBRASKA Minatare (7 miles east of), Scotts Bluff County	19	6:30 p.m.	Short	Narrow	0	0			Tornado	Observed by Highway Patrol; moved northeastward.
NEBRASKA Gurley (1 mile west of), Cheyenne County	19	9 p.m.	2	Narrow	0	0	4	1	Tornado	Farm buildings destroyed; tornado moved northeastward.
NEBRASKA Bayard (6-1/2 miles west of), Morrill County	19	9:30-10 p.m.	Short	Narrow	0	0	4	1	Tornado and funnels aloft	Several other funnels observed in clouds.
WYOMING Meadowdale (north of), Platte County	19	Evening			0	0	2	1	Whirlwind	
TENNESSEE Pulaski, Giles County	19							1	Electrical	100-year-old rural house struck by lightning; considerable damage.
UTAH Salt Lake and Weber Counties	19								Rain	Heavy rains caused flooding of many streets and basements; several thousand dollars damage reported in Ogden and minor damage elsewhere.
	19									Minor storms also reported at Fairhope, Foley, Montgomery, and Selma and in Limestone County, Ala.; in Montgomery County, N.C.; at Old Jefferson, Tenn.; and at Hooper and Manti, Utah.
IOWA Cherokee County	20	7 a.m.					4	1	Electrical	Lightning struck and burned large barn and contents.
COLORADO Kit Carson County	20	11:10 a.m.			0	0			Tornado	Tornado reported touching ground near Bethune, moved northeastward to vicinity of Burlington, then into Kansas where it was reported seen 12 miles west and 2-1/2 miles north of Goodland.

See reference notes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
KANSAS Sherman and Rawlins Counties	20	11:10 a.m.-1:35 p.m.	100		0	0			Tornado	Tornado first sighted near Bethune, Colo., about 11:10 a.m., touching ground near Burlington, Colo., and on ground 5 miles north-northeast of Goodland at 12:40 p.m., and again 5 miles southwest of Atwood moving northeastward at 1:35 p.m, and apparently disappeared near Herndon a little later. No real damage done as tornado missed all farm buildings.
KANSAS Phillipsburg area, Phillips County	20	11:55a.m.-12:10p.m.	1	300	0	0	2	1	Tornado	Large funnel-shaped cloud formed aloft about 4 miles south of city, moving northeastward. After it had passed to north of city limits, white tail appendage broke off from main cloud and hit ground for about a mile near southeast side of city.
SOUTH DAKOTA Eastern portion	20	All day				1	3		Electrical	Widespread lightning activity caused major damage to house at Spencer, minor damage to houses at Hoven, Howard, and Hayti. Near Faulkton, a man standing in barn doorway near lightning-rod groundwire knocked to ground, necessitating hospitalization.
KANSAS Osborne, Jewell, Mitchell, Cloud, Republic, and Washington Counties	20	1-4 p.m.		300-400	0	0	5	1	Tornadoes, funnels aloft, wind and hail	During severe afternoon thunderstorm a number of damaging tornadoes and several funnels observed. Severe hailstorm occurred at Haddam and winds caused damage intermittently. Tornado at 2:05 p.m., moving north-northeastward damaged 3 homes and numerous farm buildings. Sounded like a train, 3 to 9 miles north of Burr Oak. Another tornado at 1:15 p.m., hit farm plant 3 miles north and 1/2 mile east of Downs, Osborne County, moving northeastward. Some trees, telephone lines, and shed blown down. Well-defined funnel first observed at 1:25 p.m., in Hunter area, Mitchell County, traveling northeastward. About 7 miles south of Solomon Rapids, second funnel at 1:45 p.m., developed and passed to east. North-bound funnel observed to dip to ground 4 times, the last near Solomon River. Debris "fallout" found 4 miles further north; no particular damage. Apparently this latter tornado that developed southwest of Beloit and followed an eastern course dissipated and reformed 5 miles east-northeast of Glasco at about 2:50 p.m., and cut path northeastward for 60 miles. Auxillary funnels observed along route between 2:50 and 4 p.m.; 1 about 6 miles south-southeast of Concordia over short path; second and third, 1 on either side of main funnel 1-1/2 miles east of Huscher covered paths of 1 mile and 2 miles; fourth, 7 miles east of Concordia; and fifth began about 1 mile east of main tornado and traversed path northeastward for 4 miles where it appeared to join main funnel 4 miles east of Hollis and 1 mile north of Republican River. Main funnel continued northeastward passing 3 miles southeast of Haddam and lifting about 3 miles northwest of Morrowville, Washington County. Severe hail, especially large stones of 3 to 4 inches in diameter, fell between 3:40 and 4 p.m., over 10-square-mile area south and east of Haddam. Hail large, but not frequent enough to cover ground. Damage to property $5,000, to crop $3,000 by hail.
NEBRASKA Red Cloud (northeast of), Webster County	20	1:30 p.m.	Short	Narrow	0	0	2	1	Tornado	Funnel observed moving northward; struck little of value.
NEBRASKA Upland (north of), Franklin County	20	1:30-2:30 p.m.					1	3	Hail	Hailstones 1/2 to 1-1/4 inches in diameter. Ground covered at center of storm.
COLORADO Bent County	20	1:40 p.m.			0	0			Funnel aloft	Tornado cloud seen 10 miles north of Las Animas at 1:40 p.m., by airline pilot. It was traveling about 1,500 feet above ground and remained aloft.
NORTH CAROLINA Greene County	20	2 p.m.						4	Hail	5 square miles damaged, mostly tobacco.
NEBRASKA Broken Bow (northeast of), Custer County	20	2:13-2:20 p.m.	Short	Narrow	0	0	2	1	Tornado	Funnel observed moving northeastward; struck little of value.
NEBRASKA Guide Rock (east of), Webster County	20	2:20 p.m.	Short	Narrow	0	0			Tornado	Observed by Highway Patrol; moved northeastward.
NEBRASKA McCook-Indianola areas, Red Willow County	20	2:30 p.m.	6	*1	0	0	3	4	Hail, wind, and funnel aloft	Funnel cloud observed by radar in this storm. Property damage by wind, crop by hail. Storm moved northeastward.

See reference notes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
NEBRASKA Holstein (north of), Adams County	20	2:30-2:45 p.m.	9	*6			1	5	Hail	Stones 3/8 inch in diameter. Ground covered 5 inches in center of storm. Storm moved northeastward.
SOUTH DAKOTA Rockerville (near), Pennington County	20	3 p.m.			0	0	3		Tornado	Barn destroyed, nearby objects not disturbed. No funnel cloud observed.
NEBRASKA Farnam (near), Dawson County	20	3-4 p.m.	8-10	*2-3			3	4	Hail	Hailstones 3/4 to 1-1/2 inches in diameter. Storm moved northeastward.
TENNESSEE Henry County	20	3-4 p.m.						1	Electrical, rain, and wind	Lightning ignited 2 houses, 1 in Paris the other about 3 miles east of Paris, burning both to ground. Limbs blown from trees, and power- and phone lines damaged by high winds in county. Accompanying heavy rains severely damaged county roads and washed-out several bridges.
NEBRASKA South of Hebron to Malcolm, Thayer to Lancaster Counties	20	3-5 p.m.	70	Narrow	0	0	5	2	Tornado	15 sets of farm buildings destroyed or badly damaged. Storm probably moved into State from Kansas, moving north-northeastward.
KANSAS Topeka (9 miles northwest of), Shawnee County	20	Early afternoon			1				Electrical	Lightning struck man working in nursery field. Only a few drops of rain fell.
NORTH CAROLINA Hertford County	20	3:15 p.m.						4	Hail	Cotton and corn damaged over 2 square miles.
NEBRASKA Roseland (near), Adams County	20	Afternoon	Short	Narrow	0	0			Funnel aloft	Did not reach ground.
NEBRASKA Anselmo (3-1/2 miles west of), Custer County	20	Afternoon		Narrow	0	0	3	1	Tornado	Most of path over sparsely settled country.
MISSOURI Sullivan, Franklin County	20	Afternoon							Hail	Hail damaged 3 parked aircraft.
MISSOURI Rolla, Phelps County	20	Afternoon							Hail, rain, and wind	Large hail, some size of hens' eggs. Roofs and greenhouses damaged.
MISSOURI Maysville, De Kalb County	20	Late afternoon	8	200	0	0			Tornado, rain, and wind	Heavy rains, up to 2.50 inches. Buildings damaged on 8 farms.
KANSAS Cedar Vale (south and west of), Chautauqua County	20	4-4:30 p.m.	3	*3				3	Hail	Hail pelted 9-square-mile area. Stones ranged from 1/2 to 1 inch in size, but barely covered ground.
NEBRASKA Daykin (5 to 6 miles southwest of), Jefferson County	20	4:16 p.m.			0	0			Funnel aloft	Observed by radar.
NEBRASKA Endicott (near), Jefferson County	20	4:30 p.m.	4-5	*4-5			1	4	Hail	Hailstones 2 to 3-1/2 inches in diameter. Storm moved northeastward.
OKLAHOMA Oklahoma City, Oklahoma County	20	4:30 p.m.			0	0			Funnel aloft	Funnel aloft reported in a severe thunderstorm over north edge of city, moving northeastward.
OKLAHOMA Pawnee, Pawnee County	20	5 p.m	1/2	100	0	0			Tornado, wind, hail, rain, and electrical	Small tornado damaged roof of house and broke electrical lines north of Pawnee. Several farmsteads in area damaged by winds. Storm moved northeastward.
NEBRASKA Adams (2 miles west to 6 miles north of), Gage County	20	5 p.m.			0	0	4	3	Tornado and hail	Storm moved north-northeastward. Tornado moved over narrow, 7-mile long path. Hail damaged area wider. Property damaged by tornado, crop by hail.
NEBRASKA Doniphan to Phillips, Hall and Hamilton Counties	20	5:08 p.m.	12	Narrow	0	0	4	1	Tornado	Tornado moved north-northeastward.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons: Killed	Number of persons: Injured	Estimated damage by categories †: Property (exclusive of crops)	Estimated damage by categories †: Crops	Character of storm	Remarks
NEBRASKA Wood River (near), Hall County	20	5:10 p.m.	Short	Narrow	0	0			Funnel aloft	Observed by radar.
OKLAHOMA Hominy, Osage County	20	5:45 p.m.			0	0	4	1	Tornado (suspected)	Warehouse destroyed and equipment stored inside damaged. Iron girders twisted. Storm moved northeastward.
NEBRASKA Lincoln (southwest of), Lancaster County	20	5:45-5:56 p.m.	10	Narrow	0	0			Funnel aloft	Did not reach ground; moved north-northeastward.
KANSAS Greenwood, Lyon, Osage, Franklin, Miami, and Johnson Counties	20	5:45-7:37 p.m.			0	0	6	4	Tornadoes, hail, and funnels aloft	Severe thunderstorm developed south of Emporia and moved northeastward to southern Kansas City, Mo., from about 5:30 to 8 p.m. A number of funnel clouds and tornadoes were spawned by this thunderstorm cell. At Hartford, 14 miles southeast of Emporia, tornado at 5:45 p.m., followed short, east-southeastward path through town, damaging trees, roofs, and windows with damage of $300. Funnel cloud aloft sighted southeast of Quenemo, Osage County, about 6 p.m., had a white appearance. Funnel observed aloft about 2 miles west of Madison, Greenwood County, at 6:15 p.m., had well-defined "elephant trunk" appearance; struck ground near junction of 2 branches of Verdigris River, 1-1/2 miles northwest of Madison and moved northeastward. Trees, old sheds, and minor roof damage done. Had roar louder than jet plane. Main tornado of this storm struck ground about 2 miles southwest of Williamsburg, Franklin County, about 6:15 p.m., and followed northeastern course of 71 miles to about 2 miles northeast of Knobtown, Mo. Kansas part of path approximately 57 miles. Tornado passed out of Kansas 1 mile southwest of Martin City, Mo., at 7:37 p.m. Another tornado left damage path of about 7 miles adjacent to and parallel with main path from 1 mile northeast of Williamsburg to about 3 miles northeast of Homewood. 3 funnels observed east of Ottawa in addition to main tornado. 1 funnel sighted aloft and heard as it passed northeastward over Overland Park and Fairway. Main tornado on ground virtually all the length of path. Noise of tornado terrific and could be heard at least 5 minutes in advance. Debris carried to height of 30,000 feet and to many miles from damage path. Cloud was well-defined funnel variously described from light to dark, and which became larger and narrower near its termination. Destruction indicated great intensity of storm. Damage to property estimated at $1,000,000, to crops $10,000.
OKLAHOMA Norman (northwest of), Cleveland County	20	6 p.m.			0	0			Funnel aloft	Highway Patrol reported funnel aloft.
OKLAHOMA Lincoln County	20	6 p.m.			0	0			Tornado	Tornado traveled northeastward several miles across southeastern Lincoln County, causing extensive damage to at least 8 farmsteads in Prague area. Many homes damaged, outbuildings destroyed, and trees and fences blown down.
MISSOURI Grant City, Worth County	20	6:30 p.m.							Wind, rain, and hail	Damage to gardens, trailer home, roofs, and windows.
OKLAHOMA Sapulpa (area), Creek County	20	7 p.m.			0	0		1	Tornado	Tornado moved south and east of Sapulpa. Several outbuildings blown away and cow killed.
OKLAHOMA Nowata (7 miles west of), Nowata County	20	7 p.m.			0	0			Tornado	Tornado dipped to ground. 500 yards of fence ripped up and oil tank blown into gully.
OKLAHOMA Broken Arrow, McCurtain County	20	7:30 p.m.	3	500	0	0	5	1	Tornado and funnels aloft	Tornado formed over and bounced diagonally across City. About 200 homes received variable damage to complete destruction, outbuildings destroyed, and cars and trees were blown over. 2 other funnels reported with main tornado. Storm moved northeastward.
MISSOURI Jackson and Ray Counties	20	7:37-8:30 p.m.	15	200-300	33	170	6		Tornado, wind, rain, hail, and electrical	Tornado first spotted at 6:15 p.m., near Williamsburg, Kans. It was tracked by radar, and reported by persons observing storm along its entire track. Crossed Kansas-Missouri border just north of southwestern corner of Jackson County, at 7:37 p.m. From there it hit Martin City, Ruskin Heights, and near Knobtown. Speed of motion calculated at from 31.4 to as much as 46.9 m.p.h., at various times along its path. Some indications

See reference notes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MISSOURI (Contd)										tornado lifted near Knobtown, then either came back down, or another funnel formed near Sibley then moved into Ray County across river. Witnesses at Hardin and Richmond told of seeing tornado and considerable damage to property done at Richmond about 8:30 p.m. Debris from Hickman Mills found later at Ottumwa, Iowa, and at many points in north-central Missouri.
OKLAHOMA Beggs (3 miles southwest of), Okmulgee County	20	8:04 p.m.			0	0			Tornado (suspected)	Ground Observer Corps reported tornado on ground; moved northeastward.
MISSOURI Hardin, Ray County	20	8:45-9 p.m.			0	0			Tornado	Witnesses heard "freight-train roar". 40-acre field littered with debris from Grandview-Ruskin Heights storm. Tornado moved northeastward.
MISSOURI Ash Grove, Greene County	20	9 p.m.							Wind, rain, and hail	Heavy rain and hail size of pecans. Hail damaged roofs. Oat and barley fields and gardens ruined.
MISSOURI Sibley area, Jackson County	20	9:15-9:30 p.m.				2			Wind and rain	5 houses damaged in and near Sibley. Storm moved northeastward.
MISSOURI Stark City and Sweetwater, Newton County	20	9:55 p.m.							Wind, rain, hail, and electrical	Storm first hit Sweetwater at 9:55 p.m., destroying garage and damaging home and store. It then moved to Stark City at 10 p.m. Many windows broken and trees and lights downed. Storm moved northeastward.
OKLAHOMA Chelsea, Rogers County	20	10:30 p.m.			0	0			Tornado (suspected), wind, and rain	Several farmsteads in area had extensive damage 1 house lifted and twisted, and many outbuildings destroyed. Widespread wind damage to roofs and trees reported. Storm moved northeastward.
OKLAHOMA Mayes and Delaware Counties	20	11 p.m.		200	0	1		2	Tornado and funnels aloft	Funnel aloft passed northeastward over Pryor, struck farmstead 3 miles southwest of Spavinaw, moved through city, and struck several more farmsteads northeast of city. First farmstead had $40,000 damage to home and all outbuildings blown away. Extensive damage and destruction resulted all along tornado's path. 1 injury resulted in Spavinaw when house destroyed. This same storm is believed to have moved into Delaware County and damaged at least 3 farmsteads in Deerlick community, 4 miles northeast of Jay. Reports of funnels numerous throughout 2-county area.
OKLAHOMA Nowata (south of), Nowata County	20	11:30 p.m.			0	0			Funnel aloft	Funnel sighted.
MASSACHUSETTS Coastal and eastern areas	20	P.m.					4	1	Wind	Northeast storm caused abnormally high-tide surge along coast. Damage heaviest along south shore, where many small boats and yacht-club installations smashed, including one 36-foot cabin cruiser. Winds inflicted minor damage to interior towns in eastern Massachusetts by felling trees, limbs, and wires.
OKLAHOMA Tulsa, Tulsa County	20	P.m.			0	0			Tornado	Sheriff deputies reported funnel aloft and unconfirmed report indicated it dipped to ground, however, no damage noted.
OKLAHOMA Tulsa County	20	P.m.			0	0			Funnels aloft, rain, hail, and electrical	Police reported several funnels aloft during severe thunderstorm at Collinsville. Unconfirmed reports received of funnels sighted in Skiatook area.
OKLAHOMA Centralia (west of), Craig County	20	P.m.			0	0		1	Tornado (suspected)	Extensive damage to outbuildings and home on ranch.
OKLAHOMA Vinita area, Craig County	20	P.m.			0	0			Tornado (suspected), wind, and hail	3 barns damaged on farm northeast of Vinita. 1 had roof lifted off. Some wind and hail damage noted in Vinita.
OKLAHOMA Herd, Osage County	20	P.m.			0	0			Funnels aloft	Observer reported 2 funnels.
IOWA Scattered locations	20	Evening					5	1	Wind	Damaged buildings, downed utility lines, and damaged automobiles.
NEBRASKA Antelope County (northeastern portion)	20	Evening					3	3	Hail	Drifts up to 8 inches deep.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
	20									Minor storms also reported at Gower, Kirksville, Springfield, and Wheaton, Mo.; near Calloway, and Lexington, and at Falls City, Nebr.; at Hominy, Perry, Stillwater, and Talala, Okla.
MISSOURI Neosho, Newton County	20-21	Night							Rain, hail, wind, and electrical	4.93 inches of rain fell from 9:30 p.m., on 20th to 8 a.m., 21st. Hail size of golf balls fell about 9:45 p.m. Much damage to local greenhouse. Many streets, roads, and homes flooded.
	20-21									Minor storm also reported in Jasper and Lawrence Counties, Mo.
MISSOURI Laclede County	20-23								Rain	Much flooding of lowlands.
MISSOURI Waynesville, Pulaski County	21	11:30 a.m. -1:20 p.m.					4		Electrical, wind, and rain	Lightning hit poultry house 3 miles east of Waynesville and killed 5,200 turkeys. Some trees downed and trailer house upset by wind. Damage to farm buildings estimated at $9,200. Storm moved northeastward.
MINNESOTA Staples (6 miles northeast of), Cass County	21	1 p.m.	4-1/4	100-300	0	0	4	1	Tornado	Funnel cloud observed. Struck farm, demolishing barn and garage. Windows in house blown out. Swath 1 mile in length cut through stand of pine trees. Tornado moved northward.
IOWA Marion, Poweshiek, and Iowa Counties	21	1-2 p.m.					3	3	Hail	Hail up to 1-1/2 inches in diameter covered ground, damaging early crops and destroyed poultry.
MINNESOTA Harris-Rush City area, Chisago County	21	2 p.m.	9	100	0	2	4	1	Tornado	Funnel cloud witnessed by several persons, also photographed. Struck 9 individual farms, beginning 1 mile east of Harris and ending 1 mile north-northeast of Rush City. Child snatched from mother's arms as they tried to escape storm and hurled both through the air. 1 house destroyed, 4 others damaged. 8 barns blown over and destroyed as were numerous outbuildings. Trees up to 24 inches in diameter twisted off and uprooted. Storm moved north-northeastward.
MISSOURI Rolla, Phelps County	21	2:10-3:40 p.m.					4	4	Hail and rain	Hail hit area 13x2 miles. Almost covered ground in places. Largest stones 3 inches in diameter. Storm moved northeastward.
MISSOURI Dent County	21	3 p.m.	12	440-880	0	1	4	3	Tornado, hail, wind, and rain	Storm first struck on Highway 19, just north of Standing Rock. Highway blocked by fallen trees. Tornado cut northeastward path through timber, then rose shortly after crossing Highway 19. Next damage 2 miles east of Doss, where home completely destroyed. Storm moved to near junction of Highways 32 and 72, hitting several farm buildings and houses along way. 1 child hurt by flying glass. All others had sought shelter in basements or storm cellars. Heavy hail fell in northeastern corner of Dent County. Damage to livestock about $800.
MISSOURI Taney and Douglas Counties	21	3:15-3:27 p.m.	11	500-1,000	0	0	5	3	Tornado	Tornado apparently first hit in northeastern corner of Taney County, near Brownbranch. Then moved northeastward, making several short "zigzags," passing near Squires, and lifting 2-1/2 miles northeast of Girdner. Tornado covered 10 miles in about 12 minutes. All persons in path able to escape injury by going to basements or storm cellars, including rural school teacher and 11 children, who all went in teacher's car to nearby farm-home storm cellar. Many reported hearing noise like dozens of railroad cars, or low-flying planes.
MISSOURI Reynolds, Washington, and St. Francois Counties	21	3:45-4:15 p.m.	8	300-400	8	50	7		Tornado, wind, rain, hail, and electrical	Tornado apparently hit in vicinity of Centerville, Reynolds County, damaging several buildings. It then came down again in vicinity of Belgrade, Washington County, where 20 buildings destroyed, and several damaged. It then moved almost due east along Highway 8, destroying 1 house at Leadwood. Full impact of storm hit Desloge and Cantwell, St. Francois County. Several large buildings, including churches, school buildings, and many homes demolished. After leaving Cantwell, tornado apparently lifted, and then hit again in vicinity of Fairview and French Village. Witnesses told of seeing funnel form and disappear several times.
MISSOURI Carter, Wayne, Reynolds, Washington, St. Francois, and Ste. Genevieve Counties	21	3:53-4:10 p.m.		400-500	7	50-75			Tornado, funnels aloft, wind, rain, and hail	Tornado hit Fremont just before 4 p.m., then moved to Van Buren, and then toward Piedmont, Wayne County. Town of Fremont left devastated, with only 7 homes intact. In Van Buren, damage severe but not as complete as in Fremont. Large hail reported at Van Buren at 4 p.m. Exact path of storm difficult to reconstruct, since some of area

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons: Killed	Number of persons: Injured	Estimated damage by categories †: Property (exclusive of crops)	Estimated damage by categories †: Crops	Character of storm	Remarks
MISSOURI (Cont'd)										sparsely inhabited, and reports of more than 1 funnel involved. Some evidence that this storm, or funnel clouds which developed in same "family" of funnels, went from Piedmont, Wayne County, to Centerville, Reynolds County; Belgrade, Washington County; and Desloge and Cantwell, St. Francois County; and eventually into Illinois near Ste. Genevieve. Heavy damage to homes, buildings, and timber. Storm moved east-northeastward.
ILLINOIS Monroe and St. Clair Counties	21	3:50 p.m.	25	150	0	0	5		Tornado and hail	Intermittent path from south of Columbia to Belleville and Scott Air Force Base. Damage apparently most severe near Columbia. Heavy hail in parts of Belleville. Storm moved east-northeastward.
MISSOURI Marble Hill, Bollinger County	21	4:45 p.m.-late evening			0	0			Wind, rain, and funnels aloft	Possible funnels aloft. Heavy rain. Roofs of farm buildings damaged and trees uprooted.
ILLINOIS Claremont, Richland County	21	5 p.m.	4	150	0	0	4		Tornado	Path seems to have been fairly continuous, affecting several farmsteads. Storm moved east-northeastward.
MISSOURI Jackson (5 miles west of), Cape Girardeau County	21	5-5:30 p.m.	5	500	0	0	4		Tornado	Tornado began just north of Highway 34, west of Jackson in Byrds Creek area, then moved northeastward 5 miles, making numerous "dips." Buildings on 12 farms damaged.
IOWA Cedar, Muscatine, and Scott Counties	21	5-6:30 p.m.	10	100	0	0	5	1	Tornadoes	1 or more tornadoes destroyed several farm buildings. Storm moved northeastward.
MISSOURI Millersville and Bufordville, Cape Girardeau County	21	5:30 p.m.	3	440	0	0	4		Tornado	Houses and barns demolished in storm path. Trees uprooted. Tornado moved northeastward.
MISSOURI Monticello area, Lewis County	21	5:30-5:31 p.m.		440	0	2	5		Tornado, wind, and rain	Storm hit 6 miles southwest of Monticello, damaging barn, then apparently skipped and hit northwestern Monticello, then skipped to about 6 miles northeast, where it destroyed some buildings in Benjamin. No one actually saw funnel, but observers heard "terrible roaring."
ILLINOIS Jackson and Union Counties	21	6:07 p.m.	9	200	0	0	5	5	Tornado	Tornado apparently lifted and struck again near Makanda. Heavy damage at Alto Pass where high school wrecked. Heavy damage to valuable peach orchards. Tornado moved east-northeastward.
ILLINOIS Gallatin and Pope Counties	21	7 p.m.			0	0	4		Wind, rain, and funnel aloft	Series of heavy wind and rain squalls caused scattered damage to several communities during evening. Funnel cloud sighted at Herod, possibly continuation of Alto Pass tornado.
MISSOURI Fredricktown area, Madison County	21	7-9 p.m.			0	0	2		Hail, rain, wind, and funnel aloft	Pea-sized hail at Fredricktown at 7:45 p.m. From 4:20 p.m., 21st through night of 22d, over 6 inches of rain fell, causing local flooding on Saline Creek. Funnel cloud reported northeast of Fredricktown. It either remained aloft, or failed to touch down at any inhabited point.
ILLINOIS Colmar, McDonough County	21	7:40 p.m.	10	120	0	0	5		Tornado	Houses destroyed at southeast edge of Colmar and several farmsteads damaged. Tornado moved east-northeastward.
INDIANA Indianapolis, Marion County	21	8 p.m.				1	3	1	Wind	Wind broke windows, tore down trees, and knocked out electrical services. Injury occurred as result of flying glass.
INDIANA Paradise, Warrick County	21	8:03 p.m.			0	2	4	1	Tornado and electrical	Tornado cloud observed and debris showed evidence of tornado. Lightning nearly continuous and brilliant. 1 home destroyed; 2 occupants injured. House picked up, spun around and carried 150 feet, roof carried 500 feet.
ARKANSAS Faulkner, Lonoke, White, and Jackson Counties	21	8-11 p.m.					5	4	Wind, rain, and electrical	Severe thunderstorms with high, gusty, surface winds over wide area during evening. Considerable property damage principally due to wind with some damage from heavy rain and lightning. Airplane and hangar destroyed near Cabot, Lonoke County. Storm moved northeastward.
ARKANSAS Mississippi County	21	10:30-11 p.m.					4	5	Wind and rain	Widespread damage over county. Of the $125,000 damage to crops, $100,000 attributed to wind and $25,000 to rain.
MISSOURI Portageville area, Peniscot County	21	11 p.m.							Wind and rain	Powerlines and trees downed, roof blown off seed company building, and plate-glass windows broken.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
ARKANSAS Jonesboro, Craighead County	21	11-11:30 p.m.	1	800		1	5	1	Wind	Principal damage on campus of Arkansas State College at Jonesboro, where several buildings damaged, including extensive damage in adjacent student-housing area. Also considerable damage to residental property.
MISSOURI Dunklin and Pemiscot Counties	21	11:45 p.m.			0	0			Tornado and funnels aloft	Tornado damage reported in eastern edge of Kennett, southwest of Arbyrd, where 1-mile long strip damaged, and in Gobler Deering area many buildings demolished. Funnels aloft also reported north and south of Malden at 11:30 p.m. 18 persons and 4 dogs crowded into storm cellar 5 feet in diameter in Kennett. Storm moved northeastward.
KENTUCKY Jefferson County	21	P.m.					3		Wind	Winds with gusts to 77 m.p.h., struck parts of county. Trees and powerlines knocked down and home badly damaged.
KENTUCKY Hardin County	21	P.m.					4		Wind	Screen and marquee of outdoor theater blown down and home badly damaged.
OKLAHOMA Wright City, Garvin, and Broken Bow, areas, McCurtain County	21	P.m.			0	0			Wind, rain, hail, and electrical	High winds, large hail, and heavy rain damaged buildings, homes, cars, trees, utilities, etc. Most of hail reported west of Garvin. Storm was hardest seen in area in 15 years. Storm moved northeastward.
INDIANA Logansport, Lafayette, Terre Haute, Seymour, Delphi, and Portland, in Cass, Tippecanoe, Vigo, Jackson, Carroll, and Jay Counties	21	Evening					4	1	Wind, rain, and electrical	Severe thunderstorms struck scattered areas. Winds damaged trees which fell on cars and utility lines. Television antennas blown down. Heavy rain and lightning responsible for some damage.
INDIANA Sullivan County	21	Evening					4	1	Wind	Barn blown down and dwelling damaged on farm between Farmersburg and Fairbanks and also on farm northeast of Carlisle. Minor damage occurred in other communities of county.
INDIANA Danville (4 miles north of), Hendricks County	21	Evening	1				4	1	Wind	Several farm buildings damaged. Falling trees wrecked property.
INDIANA Greenwood, Johnson County	21	Evening					4	1	Wind, rain, and electrical	Wind knocked down trees and utility lines. Heavy rain flooded streets and basements. Lightning damaged electric lines. Property damage by wind $10,000, by rain $10,000, by lightning $10,000.
MISSOURI Newburg, Phelps County	21								Rain, wind, hail and electrical	Local flooding. Extensive damage to homes and business properties.
TENNESSEE Weakley County	21								Wind, electrical and rain	In Mt. Pelia community, 2 barns blown down, killing a cow and a mule. In county, 15-20 power transformers struck by lightning and damaged and many fields flooded. Storm moved eastward.
	21									Minor storms also reported in Poinsett County, Ark.; at Bloomington and Jefferson and near Greenfield, Ind.; near St. Paul Park, Minn.; near Danby and at Auxvasse and Mountain View, Mo.; and south of Wisner, Neb.
ARKANSAS Sevier County	21-22	9:30 p.m. 21st - 2:30 a.m. 22d					4	4	Wind and hail	Storm covered entire southern portion of county. Property damage $6,000 due to wind and $5,000 to hail. Crop damage $10,000 due to wind and $8,000 to hail. Crops damaged included strawberries, peaches, hay, small grains, and seed crops.
ARKANSAS Greene and Clay Counties	21-22	10 p.m. 21st- 2 a.m. 22d					4		Wind	Widespread wind damage in Greene County to north of Paragould and in southeastern Clay County in vicinity of Rector. Storm moved northeastward.
TENNESSEE Churchton Community, Dyer County	21-22	P.m. 21st-a.m. 22d						1	Wind	Heavy outdoor signs blown over, store twisted on its foundation, porch blown off house, windows knocked out, a garage lifted from its foundation, and barn almost totally demolished.
TENNESSEE Lake County	21-22								Rain and wind	Heavy rains on top of already wet soils resulted in severe flash flooding on 22d. Crop damage heavy. 5,000 acres of cotton ruined, remaining 15,000 acres damaged; 6,000 acres of soybeans ruined, remaining 18,000 acres damaged; most of 10,000 acres of corn will have to be replanted; 60 percent of barley, 25 percent of wheat, and 70 percent of truck crops ruined. Many yards and streets flooded at Ridgely and Tiptonville.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

MAY 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TENNESSEE (Cont'd)										Winds on 21st blew down several TV antennas and damaged trees.
MISSOURI Noel and Pineville, McDonald County	21-22								Rain and electrical	Roads, streets, basements, and bottomlands flooded.
	21-22									Minor storm also reported at Siloam Springs, Tenn.
TENNESSEE Obion County	21-23	6 p.m.21st -a.m.23d							Rain and electrical	Heavy rains on already wet soils resulted in severe flash flooding on 23d. County Agent reported cotton one-third destroyed, corn one-half to be replanted, soybeans one-third to one-fourth destroyed and wheat and oat yields reduced 50 percent due to lodging and scalding. 3 families evacuated from their homes in Walnut Log area, and flooding of streets and highways reported across county. During evening of 21st, lightning struck home at Kenton, doing minor damage. At about midnight on 22d, 7 powerlines at Union City damaged by lightning.
ILLINOIS Extreme southern portion	21-23								Rain	Following tornadoes and windstorms of 21st, very heavy rains developed during night and continued through night of May 22 and 23. 6 to 8 inches of rain fell from Carbondale southwestward and southward and from Carbondale east to Harrisburg and Shawneetown. Harrisburg received 9.60 inches. Flooding general throughout area, with Harrisburg and Marion hardest hit.
INDIANA Rising Sun, Dearborn County	22	12:30 a.m.					4	1	Wind	Severe thunderstorm brought strong winds which unroofed several buildings.
TENNESSEE Christmasville Community, Carroll County	22	Early a.m.						1	Electrical	Lightning struck farm home and 4 small outbuildings, causing extensive damage. Buildings did not ignite.
TENNESSEE Gibson County (northwestern portion)	22	Early a.m.						1	Wind	Several large trees blown down between Dyer and and Yorkville. West of Rutherford, 3 barns blown down, 2 houses twisted on their foundations, and several large trees blown down. Just west of Kenton, several trees uprooted.
TENNESSEE Bolivar, Hardeman County	22	Early a.m				1			Electrical and hail	5-year old girl suffered second degree burns when lightning struck and ignited her bed. Hail fell in portions of county, heavily damaging crops and gardens.
TENNESSEE Tipton County	22	4:30-6:30 a.m.					5		Rain	Heavy rains on 22d on top of already wet soils caused localized flash floods. Crops severely damaged and low roads inundated.
TENNESSEE Memphis, Shelby County	22	5 a.m.						1	Wind	Huge oak tree over 300 years old blown down, damaging home and garage. Another nearby large tree blown down, wrecking garage and damaging car.
OKLAHOMA Southwestern, central, north-central areas, and entire northeastern quarter.	22	5 a.m.-noon				4			Wind, hail, rain, and electrical	Severe squall line that triggered several tornadoes and funnels aloft moved rapidly across State, with winds reported up to 70 m.p.h., heavy rain, and spotted hail. Widespread damage resulted throughout area to buildings, windows, trees, TV, antennas, utility lines, etc. 1 person injured near Chandler, Lincoln County when his truck blown into ditch. 2 persons slightly injured by flying glass when window blown out at Yale, Payne County. Near Bixby, strong wind resulted in woman breaking an arm. Lightning struck 3 homes in widely separated areas. Heavy hail damaged crops and buildings in 4-square mile area near Nardin and similar area near Newkirk, Kay County. In Tulsa, 5 planes among widespread damage over city. Storm moved northeastward.
TEXAS Vernon (southwest of), Wilbarger County	22	5:40 a.m.			0	0			Funnel aloft	
OKLAHOMA Chattanooga, Comanche County	22	6 a.m.			0	0			Tornado	Public reported tornado, however, no reports of damage received.
OKLAHOMA Mountain View to Alfalfa and Eakly, Kiowa, Washita, and Caddo Counties	22	6:15 a.m	15		0	0	4	4	Tornado	Tornado believed to have passed over Mountain View, sucking out several plate-glass windows into street. Tornado first reported on ground 5 miles northeast of Mountain View. Considerable damage to roofs, barns, outbuildings, and 150 chickens lost when 3 chickenhouses blown away at Alfalfa. In Eakly, couple narrowly missed

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
OKLAHOMA (cont'd)										being injured when their home nearly destroyed. Many farms along path received extensive damage. Storm moved northeastward.
OKLAHOMA Ponca City, Kay County	22	6:38 a.m.	2	25	0	0	2	1	Tornado	Tornado hit farm, but only destroyed trailer, and uprooted tree on another farm as it traveled eastward mostly through open country.
OKLAHOMA Luther area, Oklahoma County	22	8 a.m.	2	50	0	0	4	1	Tornado	Tornado moving northeastward struck farm 1 mile southwest of Luther. All buildings severely damaged and 4,000 of 5,000 young chickens killed in demolished chickenhouse. Outbuildings damaged in Luther and trees and utility lines knocked down.
OKLAHOMA Perry, Noble County	22	8 a.m.	Short	100	0	0	3	1	Tornado	Funnel sighted southwest of Perry dipped down momentarily over Perry and damaged 1-block area. Buildings, signs, fences, and automobiles damaged. Tornado moved northeastward.
OKLAHOMA Yale (6 miles north of), Payne County	22	8:58 a.m.			0	0		1	Tornado	Civil Defense reported tornado moving northeastward.
SOUTH CAROLINA Charleston (near), Charleston County	22	8:58 a.m.			0	0			Waterspout	Waterspout moved inland.
OKLAHOMA Norman area, Cleveland County	22	9:30 a.m.			0	0			Funnels aloft	Police sighted funnel 10 miles southwest which moved aloft over Norman. 20 minutes later 2 funnels sighted southwest which moved south of Norman. Funnels moved northeastward.
OKLAHOMA Muskogee, Muskogee County	22	10 a.m.			0	0			Funnel aloft	Funnel aloft reported over northern edge of Muskogee.
OKLAHOMA Wagoner, Wagoner County	22	10 a.m.			0	0			Funnels aloft	2 funnels aloft sighted.
KANSAS Labette, Cherokee, and Crawford Counties	22	9:30-11:30 a.m.			0	0			Hail, wind, rain, electrical, and funnel aloft	Severe thunderstorm over extreme southeastern counties brought deluges of rain to some localities, several spot hailstorms, severe winds, and tornado. Greenhouse at Parsons had 1,000 panes of glass broken. At Pittsburg, business houses flooded when water topped street curbs. Also 3 places suffered minor damage from lightning. Tornado funnel sighted west of Columbus and dipped to within 200 feet of ground. Storm moved eastward.
MISSOURI Marionville, Aurora, and Verona, Lawrence County	22	11 a.m.-noon	20						Wind, rain, and electrical	Extensive damage to power- and phone lines, windows, trees, cars, etc. All phone lines cut at Marionville, and power interrupted in all 3 towns. Storm moved east-northeastward.
KENTUCKY Carroll County	22	A.m.	3/4	400	0	0	4	3	Tornado and hail	Damage apparently caused by tornado, although funnel cloud not observed. "Noise like a bunch of freight trains" heard. Area hit about 4 miles southwest of Carrollton. Storm destroyed frame house, demolished 4 barns and other buildings. Trees twisted off and utility poles downed. Hail general over county and some damage done to tobacco beds, gardens, and strawberry crop. Storm moved northeastward.
KENTUCKY Pulaski County	22	A.m.					4	3	Wind	Church building extensively damaged, several barns and a few homes and garages damaged. Power- and phone lines disrupted all over county by falling trees. Trees in young apple orchard uprooted.
OKLAHOMA Tryon (near), Lincoln County	22	A.m.			0	0		1	Tornado (suspected)	Garage lifted and demolished and barn unroofed.
OKLAHOMA Mountain Park (6 miles west of), Kiowa County	22	A.m.			0	0			Tornado	Tornado moved house off foundation and destroyed outbuildings. Another home damaged in area.
OKLAHOMA Yukon (5 miles southeast of), Canadian County	22	A.m.			0	0	3	1	Tornado (suspected)	Farmstead badly damaged.
TEXAS Sulphur Springs and vicinity, Hopkins County	22	A.m.			0	0			Funnel aloft	
MISSOURI Monett, Barry County	22	Late a.m.							Wind, rain, and hail	Wind reported up to 85 m.p.h. Many fallen trees blocked streets and roads. Several trees fell

† See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

MAY 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons: Killed	Number of persons: Injured	Estimated damage by categories †: Property (exclusive of crops)	Estimated damage by categories †: Crops	Character of storm	Remarks
MISSOURI (Cont'd)										on roofs of homes. Extensive damage to homes, trees, etc. Drive-in theatre screen blown down. Storm lasted 10 minutes
MISSOURI Fair Grove, Greene County	22	Morning							Rain	Unofficial report of 8.50 inches of rain, measured in small, plastic gage. Not considered too reliable. Other reports in Fair Grove area of 3.00 inches of rain in 30 minutes. Many roads washed out, with water pouring across Highway 65 near Fair Grove.
MISSOURI Aurora, Lawrence County	22	Noon							Wind, rain, and electrical	Many trees and wires downed and cars and roofs of buildings damaged.
MISSOURI Marshfield, Webster County	22	Noon							Wind, rain, hail, and electrical	Wires and trees downed, plate-glass windows broken, and roofs damaged by falling limbs.
MISSOURI Springfield, Greene County	22	Noon			0	1			Tornado (suspected), wind, and rain	Area from southeastern Springfield to Lake Springfield to Marshfield experienced "tornadic-type" weather, with small objects like boxes, signs, etc., blown about. Many phone lines and trees downed.
MISSOURI Barry County	22	Noon							Wind, rain, and electrical	Damage near Corsicana and Macedonia to homes, farm buildings, and trees.
OKLAHOMA Kellyville, Creek County	22	12:05 p.m.			0	0			Funnel aloft	Ground Observer Corps reported funnel aloft.
MISSOURI Cole and Camden Counties	22	1:15-2:15 p.m.							Wind, rain, hail, and electrical	Hail reported over 10-square mile area south and east of Jefferson City about 1:45 p.m. Wind hit gusts of 55 m.p.h., at Jefferson City Airport. Heavy rain and brief gusts to 60 m.p.h., reported from Bagnell Dam at about 12:45 p.m. Camdenton had heavy rain, with local flooding about same time. Storm moved east-northeastward.
MISSOURI Eveningshade and Houston, Texas County	22	1:20-2 p.m.							Wind and rain	Homes and barns damaged. Many trees downed.
MISSOURI Steelville, Crawford County	22	1:59 p.m.			0	0			Funnel aloft	Funnel observed from fire tower in Indian Trail Park, and by traveler on Highway 19 between Steelville and Dent County line. It was "sucking" leaves off trees, but apparently did not touch ground.
OKLAHOMA Ottawa County	22	2:01 p.m.			0	0			Funnel aloft	Residents of Commerce watched funnel aloft northeast toward Quapaw where it was also sighted.
OKLAHOMA Okemah to Schulter and Morris, Okfuskee and Okmulgee Counties	22	2:30 p.m.			0	0			Funnel aloft	Rope-like funnel followed along 30-mile route. Funnel moved northeastward.
MISSOURI Caledonia, Washington County	22	2:30 p.m.		8	0	0			Tornado	7 barns and 5 houses damaged. Tornado moved northeastward.
MISSOURI Farmington, St. Francois County	22	3:25 p.m.			0	0			Funnel aloft	Funnel moved east-northeastward.
MISSOURI Troy, Lincoln County	22	3:30-4:30 p.m.					2	2	Rain	1 inch of rain in little less than 1 hour. Sky got so dark that car lights had to be turned on.
MISSOURI St. Louis and St. Charles Counties	22	3:45-4:05 p.m.	5-1/2	600	0	1	5		Wind, rain, electrical, and funnel aloft	In St. Louis, man injured by falling tree, roofs of 500 homes damaged, heavy rain accompanying storm flooded basements. Funnel aloft observed near St. Charles Airport. It dissipated and did no apparent damage. Storm moved northeastward.
GEORGIA Stephens and Hart Counties	22	Mid-afternoon					3	2	Wind, rain, and hail	High winds and heavy rains struck Toccoa at 3:15 p.m., causing widespread damage to roofs, trees, utility lines. Strong winds and hail caused minor damage in Hart County at about same time.
TEXAS Vernon (1 mile south of), Wilbarger County	22	Afternoon			0	0			Funnel aloft	
MISSOURI Cape Girardeau County	22	Late afternoon							Rain and wind	Very heavy rains, 3 to 5 inches, flooded lowlands and basements.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons: Killed	Number of persons: Injured	Estimated damage by categories †: Property (exclusive of crops)	Estimated damage by categories †: Crops	Character of storm	Remarks
OKLAHOMA Muskogee, Muskogee County	22	5-7 p.m.						1	Electrical	Lightning struck 2 homes at 5 p.m., damaging structure on 1 and TV set in another. Third strike at 7 p.m., set 3-car garage on fire and destroyed structure and 2 cars.
MISSOURI Pemiscot County	22	6 p.m.							Wind, rain, and electrical	Severe lightning. Heavy rains caused flooding. Trees and lines downed.
MISSOURI Republic, Greene County	22	6:30 p.m.			0	0			Funnel aloft	Good correlation with Springfield radar echoes.
TEXAS Waco (5 miles east of), McLennan County	22	6:45 p.m.			0	0			Funnel aloft	Funnel observed moving northeastward.
TEXAS Prairie Hill (15 miles west of), McLennan County	22	6:50 p.m.			0	0			Funnel aloft	
TEXAS Hubbard (10 miles southwest of), Hill County	22	7:23 p.m.			0	0			Funnel aloft	
OKLAHOMA Muldrow, Sequoyah County	22	8:30 p.m.			0	0			Tornadoes	Ground Observer Corps reported 2 tornadoes, 1 and 2 miles south of Muldrow. No damage reports received.
TEXAS Malone (5 miles west of), Hill County	22	9 p.m.	4	200	0	4	5		Tornado	Immediately following heavy rainstorm, tornado severely damaged 3 farm homes; destroyed 4 others; damaged outbuildings, 1 truck, and farm machinery and equipment; and tore down all phone poles along its route. Tornado moved northeastward.
TEXAS Ennis (14 miles southwest of), Ellis County	22	10:15 p.m.	2	200	0	0	4		Tornado	Tornado moved northeastward.
MISSOURI Cape Girardeau, Cape Girardeau County	22	10:55-11 p.m.			0	0	2		Funnel aloft, wind, rain, and electrical	Witnesses say they heard "roaring" noise.
INDIANA La Porte (5 miles south of), La Porte County	22	11:02 p.m.			0	0			Funnel aloft	Tornado aloft moving northeastward reported.
INDIANA New Carlisle (east of) St. Joseph County	22	11:18 p.m.			0	0			Funnel aloft	Tornado aloft moving eastward reported.
INDIANA New Carlisle (4 miles south of) St. Joseph County	22	11:20 p.m.			0	0			Funnel aloft	Funnel cloud close to ground reported.
MISSOURI Mississippi County (southeastern tip)	22	11:55 p.m.		3-4	0	0			Tornado (suspected)	25 houses and barns badly damaged. 8-room house lifted off its foundation, leaving 19 members of family inside, unhurt. Storm moved northeastward.
	22									Minor storms also reported in Colbert and Lauderdale Counties, Ala.; at Fayetteville, Ark.; at Evansville, Ind.; in Davies and Laurel Counties, Ky.; in Cheboyan and Muskegon Counties, Mich.; at Billings, Campbell, Eldon, Humansville, Mansfield, New Madrid, Piedmont, Pomona, Rolla, Stark City, Sweetwater, and West Plains, Mo.; near Brownsville, at Columbia, Dyersburg, and Watertown, Tenn.; and near Hagansport, Tex.
TENNESSEE Dyer County	22-23	12:30 a.m. 22d-6:30 a.m. 23d						6	Rain	Heavy rains on already wet ground, 7.22 inches of rain at Newbern on May 22 and 23, resulted in flash floods in central and western parts of county during evening of 22d and on 23d. Serious damage to agricultural interests includes the following: 7,000 acres of cotton, 15,000 acres of soybeans, and 20,000 acres of corn. On 23d, 15 families evacuated from their homes at Lenox, 3 families northeast of Dyersburg, and some in Dyersburg. Some houses reported flooded in Newbern. Transportation impeded as roads and railroad beds washed out. At Hurricane Hill community, flash-flood waters uprooted power pole, snapping electric wires which electrocuted 2 cows.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

MAY 1957

Place	Date	Time	Length of path miles	Width of path yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
CALIFORNIA Northern and central Sierras, lower Sacramento Valley, southern mountains, and southeastern desert area	22-23								Hail and rain	Small storm developing in southern Nevada and southeastern California on 22d caused numerous thunderstorms and hail in northern and central Sierras and lower Sacramento Valley, and rain showers in southern mountains and in southeastern desert areas. Hail size of marbles fell in Sacramento evening of 22d, and brief hailstorm in northern districts of San Bernardino occurred on morning of 23d. Heavy rains in Redlands caused flooding of 2 street intersections.
TENNESSEE Crockett County	22-23								Rain	Flash floods damaged 10 to 15 percent of cotton crop in county.
TENNESSEE Lauderdale County	22-23							6	Rain	Heavy rains on 22d and 23d on top of already well wet soil resulted in severe flash flooding, causing extensive crop damage.
INDIANA Howe (north of), Lagrange County	23	12:25 a.m.			0	0			Funnels aloft	State Police reported several funnel-shaped clouds.
ILLINOIS Christopher, Franklin County	23	2:45 a.m.				4	4		Electrical	Injuries in residence fire started by lightning.
TEXAS Sulphur Springs, Hopkins County	23	10:45 a.m.	7	1,000			5	1	Wind and rain	Small buildings, compress, trees, roofs, and signs damaged. TV antennas toppled and many roofs stripped. Automobiles damaged by falling trees. Entire county affected, Sulphur Springs received most damage. Storm moved northeastward.
TEXAS Quinlan, Lone Oak, Dunn's Creek communities, Hunt County	23	Late a.m.-2 p.m.						5	Wind and hail	Damaged homes, small buildings, 3 churches, TV aerials, and windows; sheds toppled to ground; grain and cotton destroyed. Area north and northeast of Quinlan hardest hit. Trees uprooted and roofs ripped off. Hail broke all rain gages. Worst crop loss in Quinlan history.
TEXAS San Saba (8 miles north of), San Saba County	23	12:50 p.m.			0	0			Funnel aloft	
TEXAS Quinlan, Hunt County	23	2:30 p.m.			0	0			Funnel aloft	
TEXAS Whitehouse, Smith County	23	3:15-3:30 p.m.			0	0			Funnel aloft	
TEXAS Mt. Pleasant, Titus County	23	3:30 p.m.		60	0	0	3		Tornado	Powerlines, trees, and TV antennas damaged. Storm moved eastward.
TEXAS Gladewater Gregg County	23	3:45 p.m.			0	0			Funnel aloft	
TEXAS Longview, Gregg County	23	3:50-4:15 p.m.	10						Wind	Gusts to 80 m.p.h., recorded at Gregg County Airport. Storm moved south-southeastward.
ARKANSAS McNeil to College Hill Church, Columbia County	23	4:30-5 p.m.	6-1/2	880	0	0	4	1	Tornado and hail	Roofs damaged, garages and small buildings destroyed. No hail damage reported. Storm moved northward.
LOUISIANA Shreveport, (20 miles north of), Bossier Parish	23	5 p.m.	1/4	150	0	1	4	2	Tornado	3 homes damaged, trees uprooted, and derrick blown over.
ARKANSAS Dierks, Howard County	23	5:30 p.m.	1/2	440	0	0		1	Tornado	Damage confined to City of Dierks. Tornado moved northeastward.
LOUISIANA Hosston (near), DeSoto Parish	23	7 p.m.			0	0	2	1	Tornado	
ARKANSAS Monticello, Drew County	23	7:30 p.m.	6	25	0	0	5	4	Tornado	Storm path northeastward from point 3 miles southwest of center of Monticello to a point 3 miles northeast. Extensive property damage. Crop damage included peaches and tomatoes.
PENNSYLVANIA Central and east-central portions	23	Evening				3	4	1	Wind, rain, and electrical	In Centre County, roof of elementary school partially blown off, exposing contents to torrents of rain, causing $15,000 damage. 2 persons struck by lightning in Lehighton and another in

See reference notes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
PENNSYLVANIA										Pocono area. Considerable damage inflected by high winds on trees and utility lines. Storm moved eastward.
MISSOURI Perryville, Perry County	23				0	0			Tornado	
TEXAS Winters (near), Runnels County	23					2			Wind	
UTAH Weber and Davis Counties	23						3		Hail and rain	Some flooding of canyon homes, orchards, and fields reported; hail covered ground 4 to 5 inches deep at Ogden.
	23									Minor storms also reported at Conway, Ark.; at Hayti and Stockton, Mo.; and at Marshall and Tyler, Tex.
CONNECTICUT New Haven and Fairfield Counties	23-24	10 p.m. 23d- 2 a.m. 24th					4	3	Electrical, wind, and hail	Electrical storm with wind gusts clocked unofficially at 67 m.p.h., and considerable hail damage in New Haven and suburbs to north and northwest. 3 acres of truck crops wiped out by hail size of golf balls in Hamden. Loss estimated at $3,000. Lightning struck 2 factories and 2 homes in Ansonia, Shelton, and North Haven with total fire damage estimated at $6,500. Many trees blown down or split by lightning in New Haven, blocking numerous streets with debris for several hours. Overnight power failures to 5,000 users. Store windows and greenhouse sash shattered by wind in Hamden. Storm moved east-southeastward.
	23-24									Minor storm also reported in Essex County, N.J.
RHODE ISLAND Southwestern portion	24	1-2 a.m.					3	1	Electrical	Home at Westerly struck by lightning with extensive fire damage resulting to second floor. Storm moved eastward.
NEW MEXICO Roosevelt and Curry County	24	4 a.m.	40	35	0	0	5	5	Tornado and hail	Storm evidently started in west-central Roosevelt County and moved northeastward leaving State southeast of Hollene. Funnel aloft much of time, striking ground at intervals between Grier and Hollene and damaging or destroying several sets of farm buildings. $100,000 hail damage to crops.
OKLAHOMA Panama, Le Flore County	24	10 a.m.				1			Electrical	Lightning knocked railroad dispatcher unconscious.
OKLAHOMA Willow Springs, Bryan County	24	10:40 a.m.			0	0	4	1	Tornado (suspected)	20 boat stalls and several boats twisted and left in splinters.
TEXAS Parmer, Deaf Smith, and Potter Counties	24	10:45 a.m.		34	0	0	°3	C	Tornado	First touched ground about 5 miles south of Bovina, damaged farm property and orchard. Lifted west of Hubb, came down northeast of Hubb, crossed fields past Friona and into Black community. Passed through Deaf Smith County, on past Bushland in Potter County. Tornado moved northeastward.
TEXAS Maple, Bailey County	24	11 a.m.			0	0			Funnel aloft	
TEXAS Lazbuddie, Parmer County	24	11:15 a.m.			0	0			Funnel aloft	
TEXAS Between Farwell and Friona, Parmer County	24	11:15-11:20 a.m.			0	0			Funnel aloft	
TEXAS Wildorado (20 miles northwest of), Oldham County	24	11:17 a.m.			0	0			Funnel aloft	Funnel observed moving northeastward.
TEXAS Enochs (4 miles north of), Bailey County	24	11:20 a.m.		500	0	0	3		Tornado	Hit in open country. Damage only to rural Electric Association poles and wires. Tornado moved northeastward.
TEXAS Hereford area, Deaf Smith County	24	11:30 a.m.			0	0			Tornado	One of series of tornadoes around noon, struck along line in Hereford area; no damage. Tornado moved northeastward.
UTAH Salt Lake City, Salt Lake County	24	12:15-12:25 p.m.			0	0			Funnel aloft	Observed by CAA employee. No evidence that funnel ever touched ground.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TEXAS Olton area, Lamb County	24	12:35-12:45 p.m.		200	0	10	°5	C	Tornado	Estimated 77 homes in Olton area destroyed, grain company building badly damaged. Funnel first sighted near Maples community about 11 a.m., moved to Sudan where it touched ground in cemetery; lifted and came down at Olton. Tornado moved northeastward.
TEXAS Halfway (5 miles northwest of), Hale County	24	1-2 p.m.			0	0			Tornado	Tore up houses, barns, and trailers and killed livestock. Continuation of Olton tornado; moved northeastward.
TEXAS Tahoka, Slaton, Wilson, Ralls, Robertson, and Savage; Lynn, Lubbock, and Crosby Counties	24	1-2 p.m.		200	0	1	°5	C	Tornado	Many homes destroyed or heavily damaged in each community; public buildings, warehouses, farm equipment, livestock, 1 church, fences, trees, and power- and phone lines damaged. Tornado moved northeastward.
TEXAS Kress (5 miles south of), Swisher County	24	1:10 p.m.			0	0	3		Tornado	Tornado moved eastward.
TEXAS Dimmitt area, Castro County	24	1:18 p.m.			0	0			Funnel aloft	
TEXAS Canyon area, Randall County	24	1:25 p.m.			0	0			Funnel aloft	
TEXAS Bushland area, Potter County	24	1:20 p.m.	1/4	50	0	0	4		Tornado	Damage occurred all on 1 farm. Tornado lifted, came down again in open country west of Cliffside at 1:54 p.m., no damage; lifted, came down again 7 miles north of Amarillo Airport in open country, no damage. Lifted for last time at 2:47 p.m. Tornado moved northeastward.
TEXAS Kress (south of), Swisher County	24	1:46 p.m.			0	0			Funnel aloft	
TEXAS Amarillo (near), Potter County	24	1:57 p.m.			0	0			Funnel aloft	
TEXAS Between Hale Center and Cotton Center, Hale County	24	2 p.m.			0	0	4		Tornado	Southwest of Plainview, 3 homes destroyed, others damaged.
TEXAS Plainview and Midland areas, Hale and Midland Counties	24	2:10 p.m.			0	0			Funnels aloft	7 funnels sighted within 25 miles of Plainview and at least a dozen around Midland.
TEXAS Acuff area, Lubbock County	24	2:35 p.m.			0	0			Funnels aloft	3 funnels observed.
TEXAS Lenorah, Martin County	24	2:45 p.m.			0	0	3	1	Tornado	Damaged 5 houses and several farm buildings in area; moved east-northeastward.
TEXAS Vernon (6 miles north of), Wilbarger County	24	3:52 p.m.			0	0			Funnel aloft	
COLORADO Weld County	24	Afternoon			0	0			Tornadoes	Several small tornado funnels sighted north of Greeley in Carr, Pierce, and Ault vicinity. 2 reached ground near Pierce; one 4 miles east leveled vacant farmhouse, haystacks, and farm machinery; the other 1 mile west destroyed abandoned farmhouse.
TEXAS Hereford, Deaf Smith County	24	Afternoon			0	0			Funnel aloft	
WYOMING Goshen County	24	Afternoon-evening			0	0	4	1	Tornadoes and funnels aloft	Several funnel clouds and tornadoes moving northeastward. Farm buildings damaged near Yoder and house trailer destroyed south of Torrington.
OKLAHOMA Tillman County	24	4:30 p.m.	12	1,000	0	0	4		Tornado, funnels aloft, rain, and hail	Tornado and 2 funnels aloft moved north-northeastward 3 miles south of Davidson to 3 miles south of Frederick. Several farmsteads along route had extensive damage. Utility lines and poles knocked down.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons: Killed	Number of persons: Injured	Estimated damage by categories †: Property (exclusive of crops)	Estimated damage by categories †: Crops	Character of storm	Remarks
TENNESSEE Cairo and Crockett Mills communities, Crockett County	24	5 p m.					4		Wind and electrical	1 house and an automobile damaged at Crockett Mills; chickenhouse, pumphouse, and other minor buildings damaged at Cairo.
KANSAS Herndon (near), Rawlins County	24	5 p.m.	8	*3			3	4	Hail	Hailstones ranging in size from 1 2 to 2-1/2 inches in diameter fell. Much damage to good wheat. Hail covered ground 2 inches deep. Storm moved northeastward.
KANSAS Belle Plaine (3 miles southwest of), Sumner County	24	5:05 p.m.			0	0			Tornado	Funnel cloud sighted. It dipped once and drew back up into main cloud.
OKLAHOMA Comanche and Cotton Counties	24	5:30 p.m.	22	880	4	5			Tornadoes, hail, and rain	Tornado moved northeastward from Apheatone, Cotton County, to just south of Lawton, Comanche County. Observers reported sighting 3 funnels on ground at same time. At least 12 homes destroyed and many farmsteads destroyed or damaged along path. 4 persons killed when 2 homes destroyed. 1 person seriously injured when his house demolished. 4 other persons received minor injuries from flying debris. Up to 70 head of cattle and a number of chickens killed. At least 5 cars completely demolished. Fences rolled into 50 foot in diameter balls. Heavy hail, with stones that weighed up to 2 pounds, fell and heavy rain up to 5 inches caused flooding in area.
TEXAS Midland (10 miles northeast of), Midland County	24	5:41 p.m.			0	0			Funnel aloft	Funnel observed moving northeastward.
OKLAHOMA Wynne Wood to Wanette and McComb, Garvin and Pottawatomie Counties	24	6-7:45 p.m.	48	440	0	0	5		Tornado	Tornado formed southwest of Wynne Wood, moved north-northeastward, dipped down and destroyed barn, moved over Wynne Wood at tree-top level and caused damage to new oil refinery, cracking unit which lost 30 to 40 tons of catalyst. Next hit was Walker school area, southeast of Pauls Valley, where school, 5 houses, and many outbuildings damaged or destroyed. Tornado then moved mostly aloft through open country, as little evidence noted until 2 segments of cyclonic-moving clouds came together just north of South Canadian River and south of Wanette and formed single funnel which broke trees in its path to Wanette. Tornado hit Wanette at 7:10 p.m. Observers noted 2 funnels aloft with tornado, warm rain ahead and behind tornado, and hot air as if from an oven just ahead and behind tornado. Many frame buildings, homes, and outbuildings damaged or destroyed in Wanette. Path of storm from Wanette was north and looked as if bulldozers had smashed trees preparatory to building new road. Several farmsteads in path heavily damaged to completely destroyed. Last damage noted was several barns destroyed 6 miles northwest of McComb. Funnel believed sighted aloft west of Tecumseh and Shawnee. 5 persons badly burned when accumulated gas exploded as lamp was lit in storm cellar in Wanette.
NEBRASKA Alliance (north of), Box Butte County	24	6-8:30 p.m.	4	*3			1	4	Hail	Stones about 1/2 inch in diameter; ground covered to depth of 3/4 inch. Storm moved southeastward.
TEXAS Midland (10 miles north-northwest of), Midland County	24	6:28 p.m.	2		0	0			Tornado	Moved eastward through pasture land.
NEBRASKA Grant (11 miles west-northwest of), Perkins County	24	7:30 p.m.	Short	Narrow	0	0	3	2	Tornado	
OKLAHOMA Wild Life Refuge, Comanche County	24	8 p.m.			0	0			Tornado	Tornado sighted in mountains.
OKLAHOMA Henryetta area, Okmulgee County	24	8 p.m.			0	0			Funnel aloft	Funnel aloft sighted 8 miles west to 4 miles north of Henryetta moving northeastward.
MISSOURI Joplin, Jasper County	24	8 p.m.-late evening			0	0			Rain, wind, hail, electrical, and funnels aloft	3.11 inches of rain in Joplin from 8 to 8:30 p.m. Joplin CAA reported surface winds gusting to 55 m.p.h. Several funnels aloft reported, but apparently did not touch ground. Storm moved east-northeastward.

See reference notes at end of table.

Place	Date	Time	Length of path miles	Width of path yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TEXAS Abilene (10 miles north of), Taylor County	24	8:14 p.m.			0	0			Funnel aloft	
TEXAS Seymour (northwest of), Baylor County	24	8:15 p.m.			0	0			Funnel aloft	
TEXAS Fort Phantom Lake vicinity	24	8:27 p.m.			0	0			Funnel aloft	Funnel observed moving eastward.
TEXAS Seymour (10 miles southwest of), Baylor County	24	8:30 p.m.			0	0	3	3	Tornado	Tornado moved southwestward.
OKLAHOMA Moore area, Cleveland County	24	9:25 p.m.			0	0	2	1	Tornado	Public reported funnel. Windows and tree limbs broken.
OKLAHOMA Tulsa, Tulsa County	24	9:30 p.m.					5	1	Electrical	Lightning struck Public Service plant, burning insulation on switching equipment and circuit breakers over much of huge plant. Heavy rain fell at time. 2 men overcome by smoke.
OKLAHOMA Ottawa County	24	10 p.m.	1	1,000	0	0	4	1	Tornado	Damage resulted in Quapaw and mining company derrick destroyed east of Picher. Tornado moved northeastward.
OKLAHOMA Duncan area, Stephens County	24	10:20 p.m.			0	0		1	Tornado	Tornado hit 1-1/2 miles southwest of Duncan, moved northeastward into city and cut 12-block-long path of broken trees and TV antennas. $5,700 trailer house nearly a total loss where tornado first hit.
OKLAHOMA Okmulgee and Muskogee Counties	24	10:25-11:10 p.m.			0	0			Tornadoes	Ground Observer Corps reported tornado at Morris, Okmulgee County; no damage reports received. Similar report received from Boynton, Muskogee County at 11:10 p.m.
OKLAHOMA Midwest City, Oklahoma County	24	10:57 p.m.			0	0			Funnel aloft	Unconfirmed tornado reported 2 miles east of Tinker Air Force Base. Highway Patrol reported funnel aloft in area.
OKLAHOMA Henryetta (12 miles southeast of), Okmulgee County	24	11:43 p.m.			0	0			Tornado	Highway Patrol reported tornado; no damage reports received.
OKLAHOMA Eufaula (9 miles north of), McIntosh County	24	11:45 p.m.			0	0			Tornado	Tornado reported; no damage reports received.
OKLAHOMA Anadarko, Caddo County	24	P.m.			0	0			Funnels aloft	Observer spotted 2 funnels aloft just after dark; 1 passed west and the other south of city.
OKLAHOMA Marlow area, Stephens County	24	P.m.			0	0			Tornado and rain	Tornado hit in Denton community, just west of Marlow, where destruction extensive to residences, barns, and outbuildings on several farmsteads. Heavy rains of about 7 inches in 1 hour reported. 1 farm had barn and brooder house destroyed, 100 turkeys killed, and 2x4-inch boards blown through house. Bus picked up on highway and blown into ditch, however, the 20 passengers uninjured.
OKLAHOMA Grady County (southeastern portion)	24	P.m.				2	6	1	Electrical	Lightning struck 180-foot specially-built, oil-drilling rig, ignited leaking gas, and resulting flames shot 100 feet into the air. Derrick and equipment completely destroyed. 2 men blistered by heat.
OKLAHOMA Chickasha, Grady County	24	P.m.				1	2	1	Electrical	Occupant suffered shock when lightning struck home.
OKLAHOMA Purcell area, McClain County	24	P.m.			0	0			Tornado (suspected) and electrical	Roof of barn blown off, outbuildings damaged, and several trees uprooted on farm southwest of Purcell. Lightning burned farm home, chickenhouse, and chickens north of Purcell.
OKLAHOMA Turley, Tulsa County	24	P.m.			0	0			Funnel aloft	Funnel aloft reported moving northeastward.
MISSOURI Newton County	24	Evening							Wind, rain, and electrical	Much flooding of lowlands and roads. Farm buildings damaged by high winds north of Neosho.

See reference notes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
COLORADO Otero and Kit Carson Counties	24				0	0			Tornadoes, rain and hail	Small tornado struck farm 5 miles northwest of La Junta, picked up outbuilding and set it down again in middle of field. Same afternoon small twister demolished brooder house on farm 9 miles north of Burlington. Heavy rain accompanied by hail same afternoon and evening, washed out 2 fills on Rock Island tracks east of Burlington.
TENNESSEE Johnson City, Washington County	24							1	Rain and electrical	Heavy rains resulted in wet cables, knocking out service to 700 telephones and caused minor flooding. Several power transformers struck by lightning and put temporarily out of service.
TEXAS Shallowater area, Lubbock County	24				0	0			Funnel aloft	
	24									Minor storms also reported at Framingham, Mass.; near Bovina, Miss.; near Eustis and at North Platte, Nebr.; in Haywood County, N.C.; and at Frisco, Oklahoma City, and Tonkawa, Okla.
OKLAHOMA Coleman, Johnston County	25	12:05 a.m.	1	200	0	0	4	1	Tornadoes	2 funnels sighted moving northeastward. Roof of new school partially blown off and extensive damage resulted to homes, outbuildings, trees, etc.
OKLAHOMA Lehigh (near), Coal County	25	12:10 a.m.			0	0		1	Tornado (suspected)	House and barn damaged and sheds splintered on farm.
OKLAHOMA Pontotoc and Hughes Counties	25	12:15 a.m.	12	150	0	0	3		Tornado	Tornado moved northeastward from 5 miles southeast of Allen, Pontotoc County, to Atwood, Hughes County. Extensive damage resulted to farmsteads along path and several homes and places of business damaged in Allen. Outbuildings and trees blown down in Atwood.
ARKANSAS Kibler, Sebastian County	25	1:30 a.m.			0	0			Funnel aloft	Funnel moving northeastward observed by control tower personnel at Ft. Smith Airport. Did not touch ground.
MISSOURI Lamar, Barton County	25	2 a.m.							Rain, wind, and electrical	Frequent thunderstorms; 2 to 3 inches of rain. Nursing home hit by lightning.
OKLAHOMA Tishomingo (northwest of), Johnston County	25	5:30 a.m.			0	0			Funnel aloft	Highway Patrol reported funnel aloft moving northward.
ARKANSAS Hot Springs, Garland County	25	6 a.m.			0	0	2		Tornadoes	2 funnels observed moving northward; only scattered light damage.
OKLAHOMA Antlers, Pushmataha County	25	A.m.							Electrical	Lightning struck transformer which burned fuses at 2 businesses and caused extensive damage to contents of home.
MISSOURI Springfield, Greene County	25	12:30 p.m.							Wind	Estimated gusts to 80 m.p.h., in southeastern part of city. Trees and lines downed.
MASSACHUSETTS South Weymouth and Waltham, Suffolk County	25	1:45 p.m.		10	0	0	2	1	Dust devils	Funnel damaged construction shed and clothes on a line. Another dust devil, with no damage, reported at Waltham.
SOUTH DAKOTA Jerauld County	25	2 p.m.			0	0			Funnel cloud	Observed briefly about 5 miles south of Wessington Springs moving northeastward.
TEXAS Lipan (9 miles east of), Hood County	25	2 p.m.			0	0			Tornado	Touched ground only briefly on ranch; moved eastward.
ARKANSAS El Dorado, Drew County	25	2:01-2:12 p.m.				5	4	1	Wind and rain	Considerable property damage by wind. 5 persons injured when wind broke large plate-glass window in store. Storm moved northeastward.
IOWA Clay County	25	2:25 p.m.							Hail	Hail 1/2 to 3/4 inch in diameter.
SOUTH DAKOTA Grover (near), Codington County	25	2:45 p.m.			0	0			Tornado	Funnel observed.
IOWA Chickasaw County	25	3-4 p.m.			0	0	4	3	Tornado (suspected)	Farm buildings and crops damaged in Fredericksburg area.
MINNESOTA Maple Lake, Wright County	25	3:38 p.m.	3/4	20	0	0	4	1	Tornado (suspected)	Flattened barn and uprooted trees. Observer reported hearing roaring noise, but no funnel observed. Storm moved northeastward.
IOWA Shelby County	25	4:10 p.m.			0	0			Funnel aloft	Reported 1-1/2 to 2 miles west of Harlan.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
WISCONSIN Bloomington-Fennimore area Grant County	25	4:30 p.m.	20	400	0	0	4	1	Tornado	Some persons reported 2 or 3 funnels. Tornado first moved northwestward then curved to northeastward on skipping path.
INDIANA Grandview, Spencer County	25	4:35 p.m.	5				4	1	Wind	Many trees blown down which damaged houses, electric lines, and cars. Roads blocked for several hours.
MINNESOTA Ivanhoe (6 miles north of), Lincoln County	25	5 p.m.	5	2,000	0	0	4	4	Rain and hail	Heavy rain flooded crops and eroded soil; estimated damage to property $15,000, to crops $10,000. Accompanying hail did $1500 damage to property, $500 to crops. Storm moved westward.
TEXAS Lometa, Lampasas County	25	6:15 p.m.	1/2	50	0	0	2	1	Tornado and rain	1 garage roof blown off. Excessive rain. Storm moved eastward.
IOWA Montgomery County	25	11:15 p.m.	4	1,000	0	0	4	1	Tornado	Farm buildings and grandstand damaged at and near Stanton. Tornado moved southeastward.
KENTUCKY Jefferson County	25	P.m.				3	5		Wind	Scores of trees downed. Several buildings damaged. Several cars damaged by falling trees. Large sign at automobile agency crashed down on 3 automobiles. Powerlines blown over. In Louisville, most damage to mature ornamental trees in parks and parkways, with resultant damage to utility lines.
TENNESSEE Live Oak, Henry County	25	P.m.						1	Wind	Trees and outbuildings blown down, part of house roof blown off and roofs blown from barn, shed, and chickenhouse.
MINNESOTA Bingham Lake, Cottonwood County	25				0	0			Funnel aloft	Funnel cloud reported. No damage observed.
	25									Minor storms also reported in Daviess County, Ky.; at Yazoo City, Miss.; at Fredericktown, Mo.; at Cyril, Okla.; near Appleby and Wolsey, S. Dak.; and near Westmoreland and Red Boiling Springs, Tenn.
TENNESSEE Flat Gap community, Jefferson County	26	10 a.m.						1	Wind and electrical	End of milkhouse blown away and one-half of barn roof and of large chickenhouse lifted and moved a foot. On nearby farm, cow struck by lightning and a smokehouse blown over.
LOUISIANA Baton Rouge Airport (6-1/2 miles east of), East Baton Rouge Parish	26	1:40 p.m.	** 175	50	0	0	3	1	Funnel aloft and wind	Funnel did not completely touch ground, but attendant winds damaged restaurant. Storm moved eastward.
MARYLAND Emmitsburg, Frederick County	26	3-3:30 p.m.	1						Hail and wind	Hail as large as 2 to 2-1/2 inches in diameter hit sections of Emmitsburg, breaking a number of windows and doing great damage to gardens. Apple and peach orchards just northwest of Emmitsburg severely damaged. On northeast side of Emmitsburg, silos blown over, barley flattened, and other crops damaged. Powerlines knocked out.
PENNSYLVANIA Southeastern portion	26	5-8 p.m.				1	5	5	Wind, electrical, hail, and rain	High winds blew off several house roofs, manufacturing-plant roof in York, and blew down barn, restaurant, several cinder-block walls, and trees and utility lines throughout area. In Lebanon section, 3 house trailers and home blown off foundations. At Philadelphia International Airport, small plane blown over and badly damaged. Lightning knocked out electric services for several hours. Hail occurred in widely separated areas, resulting in undetermined amount of damage to fruit. Heavy rain caused serious erosion in York County and smashed grain crops to ground, resulting in $50,000 damage. Storm moved southeastward.
NEW MEXICO Clovis, Curry County	26	6:45 p.m.			0	0			Funnel aloft	Funnel cloud aloft sighted moving northward.
ALABAMA Montgomery, Montgomery County	26	7 p.m.					4	1	Wind	Severe wind widespread over most of city. 8 airplanes damaged at Maxwell Field, drive-in movie screen blown down, and other scattered minor damage.
NEW JERSEY Gloucester, Camden, Burlington, Mercer, and Middlesex Counties	26	7-9 p.m.					4		Wind, rain, and electrical	Thunderstorms accompanying cold-front passage moved rapidly across area. Duration brief, but intensity severe in communities affected. Strong winds downed trees and powerlines and caused minor building damage. Lightning interrupted power services, particularly in Camden County, and set fire to several buildings. About 1/2 inch of rain in 30 minutes slowed highway traffic. Storm moved northeastward.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
	26									Minor storms also reported at Taneytown, Md.; at St. Clair, Mo.; in Greensboro and vicinity, N.C.; in Halls Mill community and near Johnson City, Tenn.; near Beyersville and Lockhart, Tex.; at Bellows Falls, Vt.; and in Marion and Waynesboro areas, Va.
VIRGINIA Old Well to Madisonville, Charlotte County	27	8:20-8:30 a.m.	8	800	0	0	4	4	Tornado, hail, and rain	Damage to property from tornado estimated at $5,000; crop damage principally from hail which ranged in size from 1/2 to 1 inch in diameter. Storm moved northeastward.
VIRGINIA Prince Edward County	27	9-9:30 a.m.		600			4	4	Hail and wind	Property damage chiefly from wind. Crop damage from hail estimated at $5,000 and from wind $3,000. Principal crop damage to small grains and tobacco. Storm traveled northeastward across county, damaging small areas at intervals of approximately every 5 or 6 miles.
VIRGINIA Dundas area, Lunenburg County	27	10-10:20 a.m.	1	200	0	0	4		Tornado	1 dwelling, 3 tobacco barns, machinery sheds, brooder houses, and some farm equipment destroyed. Storm moved eastward.
RHODE ISLAND Providence County	27	3-4 p.m.					4	1	Electrical and rain	Storm damage centered in Providence and nearby suburbs. 2 homes struck by lightning, with considerable damage resulting from fire. Barn near Providence destroyed by lightning-caused fire, with loss of building and equipment set at $1,500. Street flooding from heavy rains forced traffic to halt at many points in Providence. Rainfall south of city very light by comparison. Storm moved eastward.
NEBRASKA Deuel County (northeastern portion)	27	Afternoon	2	*1			1	4	Hail	
NEW MEXICO Quay County (southern portion)	27	5:30 p.m.			0	0			Tornado	Funnel cloud moving eastward sighted about 12 miles north of Ragland struck ground in open country.
OKLAHOMA Cimarron and Texas Counties	27	P.m.							Hail, wind, and rain	Wind-whipped small hail and heavy rain which caused 20 to near 100 percent crop damage at scattered points in western Texas and eastern Cimarron Counties.
	27									Minor storms also reported in Russell County, Kans.; at Duxbury, East Milton, and Marshfield, Mass.; and in Cravin, Lenoir, and Martin Counties, N.C.
CALIFORNIA Siskiyou Mountains, northern Sierras, and lower San Joaquin Valley	27-29								Wind, hail, and electrical	Low pressure trough in northern and central California caused thunderstorms and locally strong winds. Hail fell at Lake Spaulding, Nevada County, and at Vinton, Plumas County. Many lightning strikes occurred in Fresno County, starting roof fire in Fresno, small blaze in Sierras, and burned several acres of grain and grass near Riverdale and Huron.
WYOMING Riverton, Fremont County	28	1 p.m.	1	10	0	0	2	1	Whirlwind	
MISSOURI Mt. Vernon, Lawrence County	28	4 p.m.			0	0			Funnel aloft	Funnel aloft observed moving northeastward.
KANSAS Lincoln County (southwestern portion)	28	5-5:30 p.m.	15	*1			4	5	Hail	Hailstones ranging in size up to 3 inches in diameter covered ground to depth of 5 inches. Storm moved northeastward.
KANSAS Barton, Russell, Ellsworth, Stafford, and Pawnee Counties	28	8:30-11:30 p.m.			0	0			Hail, electrical, and funnels aloft	Heavy hail, with stones varying in size up to that of baseballs, hit numerous small areas over Barton, Pawnee, Russell, and Stafford Counties. Wheat and other crops beaten into ground and many fields total loss. Roofs, cars, windows, etc., badly damaged. 1 home had 5 inches of hail on second floor. Drifts of hail in some places 3 feet deep. 4 funnel clouds aloft sighted, 2 near Ellsworth, 1 near Kanopolis, and 1 between Great Bend and Hoisington about 9:30 p.m. Lightning followed TV wire into house and blasted hole in wall, ruined TV set, and damaged wall on opposite side of room.
	28									Minor storms also reported at Norton, Kans.; at Bartlesville, Okla.; and near Clearmont, Wyo.
IOWA Everly (4 miles south of), Clay County	29	11:50 a.m.			0	0	3	1	Tornado	Several small farm buildings damaged. Tornado moved eastward.

See reference notes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
IOWA Hancock County	29	1:30 p.m.			0	0			Tornado	Reported near Garner.
NEBRASKA North Platte (5 miles south of), Lincoln County	29	1:55-2:53 p.m.	Short	Narrow	0	0			Funnel aloft	Reported by RAWARC; moved northeastward.
COLORADO Larimer and Weld Counties	29	Afternoon			0	0	2	1	Tornadoes	Damage to buildings on farm near Waverly, 10 miles north of Fort Collins. Tornado appeared to come from Owl Canyon, 15 miles northwest of Fort Collins and is closest one to mountains that Weather Bureau forecasters in Colorado can remember. Same afternoon, 2 small tornadoes seen, 1 southeast of Greeley and the other west of Nunn, both came down in open country, no damage reported.
FLORIDA Sarasota, Sarasota County	29	3 p.m.			0	0			Funnel aloft	
NEBRASKA Huntley (southeast of), Harlan County	29	3 p.m.	4-5	*1-2			1	4	Hail	Storm moved southward.
NEBRASKA Pawnee City, Pawnee County	29	3-5 p.m.	10	*2			1	4	Hail	Hailstones 3/4 inch in diameter. Storm moved east-northeastward.
NEBRASKA Geneva (near), Fillmore County	29	3:40 p.m.	Short	Narrow	0	0			Funnel aloft	Reported by RAWARC.
NEBRASKA Syracuse (southeast of), Otoe County	29	3:45-4:30 p.m.	6	*2			2	4	Hail	Hailstones 1/4 to 1/2 inch in diameter. Storm moved southeastward.
IOWA Barnum, Webster County	29	4 p.m.			0	0			Tornado	Funnel cloud touched ground.
NEBRASKA Cook (near), Johnson County	29	4-4:30 p.m.	6-8	*6-8			2	3	Hail	Largest stones size of golf balls. Storm moved eastward.
NEBRASKA Cambridge (near), Furnas County	29	4:15-4:30 p.m.	10-12	*1				4	Hail	Hailstones up to 2 inches in diameter. Storm moved southeastward. Considerable property damage.
NEW MEXICO Hobbs, Lea County	29	4:45 p.m.	10	*1	0	0	°5	C	Funnel aloft and hail	Funnel cloud observed moving northward, but no evidence it touched ground. Major damage from hail to roofs, windows, and cars. Hailstones up to 3-3/4 inches in diameter reported.
KANSAS Rawlins and Decatur Counties	29	5-7 p.m.	25	2				4	Hail	Hail covered narrow strip from southwest of Atwood to north-central Decatur County. Stones up to 3-1/2 inches in diameter covered ground to depth of 4 inches. Heavy losses of very promising crops. Storm moved east-northeastward.
KANSAS Phillipsburg area, Phillips County	29	5:30 p.m.	2	1			3	3	Hail	Considerable damage resulted from hailstones averaging 1-1/2 inches in diameter, but some as much as 3 inches in diameter.
LOUISIANA Raceland (8 miles east of), La Fourche Parish	29	5:35 p.m.			0	0			Funnel aloft	Pilot reported funnel in that area and radar showed rain also, but none of surrounding stations reported any rain; area unpopulated, mostly swampland.
KANSAS Russell and Ellsworth Counties	29	6-8 p.m.	15	5	0	0	5	6	Hail, tornado, and winds	Much crop damage over northern Ellsworth County from heavy hail, with stones mostly 3/4 inch in diameter but driven by high wind. Small tornado caused some damage 9 miles northwest of Ellsworth. High winds damaged buildings in scattered localities over Russell County. Most of listed damage was from hail. Storm moved northeastward.
TENNESSEE Chattanooga area, Hamilton County	29	7:20 p.m.						1	Rain and electrical	Flash floods in Tifonia-Wauhatchie area caused water damage to several homes. 1 family forced to evacuate. Lightning caused extensive damage to powerlines.
OKLAHOMA Arnett (14 miles west of), Ellis County	29	8:15 p.m.			0	0			Tornado	Highway Patrol reported tornado moving northeastward. Evidently traveled over open country as no damage reported.
OKLAHOMA Ponca City (6 miles west of), Kay County	29	11:37 p.m.			0	0			Tornado	Filter Center reported tornado on ground; moved northward.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
FLORIDA Tarpon Springs, Pinellas County	29	P.m.			1	1			Electrical	1 person killed by lightning, another injured, while loading watermelons in field.
FLORIDA Captiva, Lee County	29	P.m.			0	0			Waterspout	
GEORGIA Southern and central portions	29	P.m.					3	4	Electrical, hail, and rain	Severe thunderstorms with hail, heavy rains, and high winds hit several central and southern counties, including Pike, Randolph, Berrien, Colquitt, Ware, Brantly, Appling, Tattnall, and Wayne. Considerable damage to young crops by hail. Waycross had wind and water damage from flash floods, following heavy rains. Barn destroyed by lightning in Pike County.
	29									Minor storms also reported in Hillsborough and Madison Counties, Fla.; in Bremer and Cass Counties, Iowa; near Ellinwood, Kans.; at Nevada, Pomona, and Winona, Mo.; near Edgar and Trenton, Nebr.; at Durant, Muskogee, and Tahlequah, Okla.; and at Armour, S. Dak.
IOWA Marshall and Benton Counties	29-30	Most of day					4		Rain	Caused local flooding on Iowa and Cedar Rivers and tributaries.
KANSAS Olivet (near), Osage County	30	10:50 a.m.			0	0			Funnel aloft	Funnel aloft moving eastward observed by a number of persons.
NEW MEXICO Santa Fe (20 miles south of), Santa Fe County	30	12:20 p.m.			0	0			Tornado	Moved southeastward in open country; no damage.
NEW MEXICO Corona (7 miles northwest of), Torrance County	30	1:45 p.m.			0	0			Tornado	Moved southeastward in open country; no damage.
TEXAS Dell City, Hudspeth County	30	1:45 p.m.		*1				4	Hail	1,000 to 2,000 acres of crops, nearly one-half in cotton, damaged or destroyed.
NEW MEXICO Corona (8 miles southeast of), Lincoln County	30	2 p.m.			0	0			Tornado	Moved northwestward in open country; no damage.
IOWA Panama, Shelby County	30	2:35 p.m.			0	0			Tornado	Reported to Omaha Weather Bureau; occurred at Panama.
COLORADO Larimer, Weld, and Washington Counties	30	Afternoon			0	0	3	1	Tornadoes	In and near Windsor, several thousand dollars damage done to schools, farm buildings, etc. Other small tornadoes sighted near Loveland, Akron, and Otis, but no damage reported.
WYOMING Greybull area, Big Horn County	30	Afternoon			0	0			Funnels aloft	1 funnel aloft 6 miles northwest and one 20 miles west of Greybull.
OKLAHOMA Manitou, Tillman County	30	3 p.m.	10	*5	0	0		5	Hail, wind, rain, and funnels aloft	Severe hailstorm, with stones up to 1-1/2 inches in diameter reported 3 inches deep on ground. Crop loss ranged from 50 to 100 percent. Damage to buildings, automobiles, etc., light. Other spotted areas reported crop damage due to hail. 2 funnels aloft reported in area. Storm moved northward.
KANSAS Thomas County	30	3:35 p.m.			0	0			Tornado and funnel aloft	2 funnel clouds observed north of Colby; 1 about 4 miles north moving northward touched ground; second funnel only 1-1/2 miles north, traveling slowly eastward, did not touch ground.
IOWA Beaver (10 miles northwest of), Greene County	30	3:36 p.m.			0	0			Funnel aloft	Reported to Des Moines Weather Bureau.
OKLAHOMA Eldorado, Jackson County	30	4 p.m.	6	*4					Hail, wind, and rain	Hailstorm caused 25 to 75 percent damage to crops in area. Wind and heavy rain also damaged crops and fields.
OKLAHOMA Ardmore, Carter County	30	4 p.m.						1	Electrical and rain	Lightning struck home causing structural damage. Rain which measured 1.50 inches in less than 1 hour caused some flooding.
OKLAHOMA Elmore City (3 miles east of), Garvin County	30	4:15 p.m.			0	0			Tornado	Ground Observer Corps reported tornado moving eastward.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

MAY 1957

Place	Date	Time	Length of path miles	Width of path yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
IOWA Earling (near), Shelby County	30	4:37 p.m.			0	0			Tornado	Reported by Ground Observer Corps, descending rapidly toward ground.
NEW MEXICO Eunice, Lea County	30	4:39-7:39 p.m.			0	0			Tornadoes	3 separate funnels observed at 4:39 p.m., 7 p.m., and 7:39 p.m.; moved east-southeastward over open country; no damage.
IOWA Carroll (12 miles northwest of), Carroll County	30	4:50 p.m.			0	0			Tornado	Reported by radio station.
IOWA Nevada (15 miles north of), Story County	30	4:50 p.m.			0	0			Tornado	Funnel cloud reported to have occasionally touched ground.
GEORGIA Thomas County	30	6:40 p.m.			0	0	2	2	Funnel aloft, hail, and rain	Tornado funnel sighted aloft south of Thomasville, but apparently did not touch ground. Heavy rains in parts of county and hail in northeast section.
KANSAS Butler County (northern portion)	30	6:42 p.m.			0	0			Funnel aloft	Funnel aloft reported.
TEXAS Decatur (near), Wise County	30	8:10 p.m.			0	0			Funnel aloft	
TEXAS Kermit, Wink, and Monahans, Winkler and Ward Counties	30	8:30-9 p.m.	25-30				5	1	Wind	Damaged many homes, public buildings, and business houses. Gust clocked at 98 m.p.h., at Wink. Warehouse disintegrated, another unroofed. Property damage at Wink $10,000, at Monahans $350,000. Storm moved southeastward.
FLORIDA Boynton Inlet, Palm Beach County	30	P.m.			0	0			Waterspout	
GEORGIA Brooks County	30	P.m.					1	4	Hail	Hailstones 1/2 to 3/4 inch in diameter covered ground and caused almost complete destruction of crops over 8-mile belt in southern Brooks County. Tobacco, corn, cotton, watermelons, and cantaloupes suffered greatest damage.
COLORADO Rye (3 miles south of), Pueblo County	30								Hail	Destructive hailstorm ruined first crop of alfalfa, and damaged growing crops.
SOUTH DAKOTA Harding (near), Harding County	30								Hail and rain	4 inches of small hail. Damage to fences and crops from locally heavy high water.
	30									Minor storms also reported at Corrales, N. Mex.; at Edmond and Lawton, Okla.; in Eastover section and Laurens, Spartanburg, and Union Counties, S. C.; and at Redmond, Utah.
KANSAS Lamar (near), Ottawa County	31	11:35 a.m.			0	0			Funnels aloft	2 funnels aloft observed.
TEXAS Dallas, Dallas County	31	11:45 a.m.			2				Electrical and rain	Lightning struck and killed 2 boys.
KANSAS Medicine Lodge (28 miles southwest of), Barber County	31	11:55 a.m.-12:20 p.m.	5	150	0	0			Tornado	Tornado hit ground in open pastureland; moved northeastward.
IOWA Greene County	31	1:19 p.m.			0	0			Funnel aloft	Reported near Jefferson.
WISCONSIN La Crosse (25 miles southeast of), La Crosse County	31	1:30 p.m.			0	0			Funnel aloft	
KANSAS Glasco (west of), Cloud County	31	2:06 p.m.			0	0			Funnel aloft	Funnel aloft reported.
INDIANA Vallonia, Jackson County	31	2:15 p.m.					4	C	Wind, rain, and electrical	High winds felled trees which damaged buildings and utility lines. Heavy rains flooded basements and streets. Lightning caused minor damage. Loss may be prorated: $20,000 by wind, $5,000 by rain, and $5,000 by lightning.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path miles	Width of path yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
NEW MEXICO Albuquerque (20 miles south-southwest of), Bernalillo County	31	2:15 p.m.			0	0			Tornado	Small funnel moving eastward over open country; no damage; observed from WBAS Albuquerque.
NEW MEXICO Loving, Eddy County	31	2:27 p.m.			0	0			Tornado (suspected)	Report of tornado moving westward unconfirmed.
KANSAS Goodland (10 miles west of), Sherman County	31	2:35 p.m.			0	0			Tornado	Tornado touched ground briefly before dissipating.
KANSAS Goodland (north of), Sherman County	31	2:55 p.m.			0	0			Funnel aloft	Funnel cloud sighted aloft.
KANSAS Wallace County	31	3:06 p.m.			0	0			Funnel aloft	Funnel aloft reported between Sharon Springs and Weskan.
KANSAS Kingman County (south-central portion)	31	3:15 p.m.			0	0			Funnel aloft	Funnel cloud observed, apparently did not come to ground.
MISSOURI Lafayette and Jackson Counties	31	3:30-4:30 p.m.			0	0			Funnels aloft	Funnels aloft reported near Odessa, Lee's Summitt, Raytown, and Buckner.
KANSAS Sumner County	31	3:35 p.m.			0	0			Funnels aloft	3 incipient funnels aloft observed to descend from clouds and then recede shortly between Conway Springs and Viola.
KANSAS Goodland (13 miles northwest of), Sherman County	31	3:44 p.m.			0	0			Tornado	Tornado on ground.
MISSOURI Forest City, Holt County	31	4:01 p.m.			0	0			Funnel aloft	
KANSAS Highland (2-1/2 miles south of), Doniphan County	31	4:03 p.m.			0	0			Funnel aloft	Funnel cloud close to ground.
WISCONSIN Northfield, Jackson County	31	4:29 p.m.			0	0			Funnel aloft	
MISSOURI Butler, Bates County	31	4:30 p.m.			0	0			Funnel aloft	
KANSAS Rawlins County (northeastern portion)	31	5-6 p.m.	6	*6			1	4	Hail	Heavy hail fell. Stones varied in size from 1/2 to 2-1/2 inches. Ground covered to depth of 2 inches. Storm moved northeastward.
KANSAS Strong City (15 miles northwest of), Chase County	31	5:15 p.m.			0	0			Funnel aloft	Funnel cloud suspended half the distance from cloud to ground moving northeastward, but soon broke up. May have been more than 1 funnel.
KANSAS Ottawa (15 miles southwest of), Franklin County	31	5:42 p.m.			0	0			Funnel aloft	Funnel cloud aloft observed for several minutes Movement slowly northward.
INDIANA Lebanon, Boone County	31	8:30-9 p.m.					4	C	Electrical and rain	Lightning caused burning of lumber yard. Several inches of rain filled basements and streets and washed out roads. Damage attributed to lightning $30,000 and rain $10,000.
FLORIDA Vero Beach, Indian River County	31	P.m.			1				Electrical	Man killed by lightning while fishing in Sebastian Inlet.
MINNESOTA East-central portion	31	P.m.			1	4	4	1	Electrical, wind, and funnel aloft	Lightning struck overhead irrigation system, killing 1 and injuring 4 persons near Willow River. At Crystal Airport, near Minneapolis, 2 hangar units damaged, including 6 light aircraft. Property damaged estimated at $13,000. Unconfirmed funnel cloud sighted near Milaca. No damage reported. Storm moved southeastward.
	31									Minor storm also reported in central Vermont.

See reference notes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

MAY 1957

Place	Date	Time	Length of path, miles	Width of path yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		

* Miles instead of yards.
** Yards instead of miles.
° Includes crop damage.
C Crop damage.
† Storm damages are placed in categories varying from 1 to 9 as follows:

1	Less than $50
2	$50 to $500
3	$500 to $5,000
4	$5,000 to $50,000
5	$50,000 to $500,000
6	$500,000 to $5,000,000
7	$5,000,000 to $50,000,000
8	$50,000,000 to $500,000,000
9	$500,000,000 to $5,000,000,000.

GENERAL SUMMARY OF RIVER AND FLOOD CONDITIONS

MAY 1957

The most important flooding during May were the floods in Texas, Oklahoma, Arkansas, and south-central Kansas. The floods were record-breaking in the Cimarron and Washita Rivers in Oklahoma. Major flooding occurred along the Arkansas River throughout its entire course in Arkansas. At Dardanelle, Ark., the flood was the second highest for the period of record. In Texas, the floods were less than record except in isolated cases. More than 4,000 persons were evacuated from unprotected lowlands on the West Fork of the Trinity above Fort Worth and along creeks in Fort Worth, Texas. In south-central Kansas, record-breaking floods occurred on the Ninnescah River and Beaver Creek.

ST. LAWRENCE DRAINAGE

Lake Michigan.--Minor flooding occurred on the Red Cedar in Michigan on the 20th and 21st. Only minor damage was reported.

Lake Ontario.--The rise of May 19 and 20 in Canaseraga Creek produced flooding of 3 to 4 feet over the Groveland - Mt. Morris, N. Y., road for several days. No damage was reported from the flooding as crops had as yet not been planted.

The rise of the 20th to 22d on Oatka Creek at Garbutt, N. Y., produced minor damage to hay standing in fields near the mouth of the creek.

ATLANTIC SLOPE DRAINAGE

Locally heavy rain in eastern North Carolina on the 11th and 12th caused local flooding on the Neuse River at Smithfield, N. C., on the 13th and 14th, and on Crabtree Creek which flows through Raleigh into the Neuse. Some of the heavy rainfall amounts recorded were: Raleigh, N. C., 4.33 inches; Neuse, N. C., 4.31 inches, and Smithfield, N. C., 1.78 inches. Amounts elsewhere over the Neuse Basin were generally less than 1 inch. Some residential and business areas along Crabtree Creek were flooded during the evening of the 11th and the morning of the 12th, otherwise no damage was reported.

Near bankfull stage occurred on the Broad River at Blair, S. C., on the 31st from the heavy rains on the 30th and 31st. Some isolated areas reported unconfirmed amounts of rain of 5 to 6 inches. A number of small streams along the Tiger and Enoree reported heavy rises but no flooding occurred along the main streams. Some damage from flash flooding occurred in areas of excess rainfall.

Minor flooding occurred on the Ocmulgee River at Abbeville, Ga., on the 12th and 13th from the frequent heavy rains during the month. Rainfall of 1 to 2 inches fell at one or more stations in the Altamaha Basin on 15 days of the month. Record rainfall of 11.77 inches was reported for the month of May at Macon, Ga., with a maximum 24-hour fall of 4.01 inches on the 23d-24th. The greatest fall was at Stillmore, Ga., where 13.81 inches was recorded for the month. The average for the whole basin was 9.8 inches, which was considerably above normal.

EAST GULF OF MEXICO DRAINAGE

The flooding on the Apalachicola River at Blountstown, Fla., from the 6th to the 9th was due to moderate to heavy rain during the first 4 days of May. During that period, Blountstown, Fla., reported 7.83 inches. No damages resulted from the high water and there was little or no interruption of any operations.

Flash floods occurred on creeks and smaller streams in east-central Alabama on May 3 from rainfall ranging between 2 and 7.7 inches during the 24-hour period ending at 7 a.m. c.s.t. on May 4. At Montgomery, Ala., 2.72 inches of rain fell within a 3-hour period breaking all previous maximum rainfall amounts for a 15-minute period, and near record amounts for 5- and 10-minute periods. Severe flooding occurred in some areas with some bridges washed out and fences washed away. Considerable damage was reported to cotton and corn and other small plants in the flooded areas.

The flooding on the Pearl River at Bogalusa, La., on the 7th was due to moderately heavy rains during the first week of May. No damage was reported.

MISSISSIPPI SYSTEM

Upper Mississippi Basin.--Heavy thundershowers on the evening of the 29th and the morning of the 30th produced minor flooding in the Iowa River basin below Marshalltown, Iowa, and in the Black Hawk Creek basin at Hudson, Iowa. Rainfall amounts in the Iowa River basin averaged 2.45 inches, with local amounts in excess of 4 inches. The rainfall in the Black Hawk Creek basin averaged about 2.5 inches. Damage was slight and confined to lowlands near the river and to overflows in small streams.

The flooding in the Illinois Basin, which began on April 26 at Morris and LaSalle, Ill., was due to moderately heavy rains on the 25th and 27th of April. Crests were reached in the reach above Peoria, Ill., during the latter part of April, and in the reach below during the first few days of May. The flooding on the Meramec River in Missouri between the 18th and 28th was due to heavy rain (1.75 inches) on the 16th and 17th. Flooding was prolonged with additional rain on the 21st and 22d. This same storm also caused overflows on the Bourbeuse River at Union, Mo.

Missouri Basin.--Heavy rains (unofficial amounts of 6 inches) caused flooding in the middle fork of the Dearborn River in Montana on the 19th and 20th. Some damages resulted to farmyards, buildings, land, and bridges in the area. Three people received injuries when a car "jumped over" a washout on a bridge approach which crumbled as the car was passing over the bridge.

There was minor flooding of low level farmlands on the Big Hole - Jefferson Rivers from the 20th to the 25th. One death resulted as the high water turned over a suspension bridge at Divide, Mont., dumping a young man into the river. This flood was due to heavy rain from the 19th to the 21st and melting snow.

Rains in the Black Hills section and southwestern South Dakota caused substantial rises and lowland flooding on the lower reaches of the White and Cheyenne Rivers between the 18th and 25th. No damage was reported as the flooded area was mostly sparsely settled ranch country.

Some local bottomland flooding occurred along the South Platte River and its tributaries in Denver, Adams, Arapahoe, and Weld Counties in Colorado from the heavy rain on the afternoon of the 8th and the 9th. Heavy damage resulted to the communities of Frederick, Firestone, and Evanston in Weld County where homes had been built on dry creek beds. Three persons were drowned in a basement apartment northeast of Aurora, Colo., in the early morning of the 9th where 3 to 5 inches of rain had fallen in 24 hours swelling creeks and river above capacity. Homes, bridges, roads, sewer systems, and communication lines were destroyed or damaged. Heavy rains occurred again over the area north of Denver on the nights of the 11th and 12th causing additional flooding and damage. At Frederick, Colo., a dike broke and let in the collected water. Heavy rain and snow along and east of the divide on the 15th and 16th caused considerable damage to lowlands in some areas. The storm started as rain on the 15th, changing to wet snow and continuing through the 16th. Three to 5 inches of precipitation fell and snow ranged up to 15 inches in depth causing heavy runoff from snowmelt. Some local flooding occurred along the South Platte River, causing damage to homes, roads, bridges, and communication lines.

Light overflows with comparatively minor losses occurred locally in the Upper Republican in Nebraska, the Smoky Hill and Solomon Basins in Kansas, the Saline, Marais des Cygnes, Marmaton and Mill Creek (a Kansas River tributary) in Kansas during brief periods between the 16th and 21st. Moderate flooding occurred along the upper Marais des Cygnes while considerable inundation of lowlands occurred in northwest Kansas on Beaver and Sappa Creeks. Channel widths were reportedly about one-half mile on Beaver Creek in the vicinity of Atwood, Kans., as the overflow moved downstream with a slowly diminishing trend. Rail transportation was disrupted by washouts on Beaver Creek in northwest Kansas. Overflows were the result of heavy rains falling on soil subjected to prolonged rainfall this spring. Topsoil moisture conditions had been previously brought up to near normal.

The flooding along the Osage River in Missouri from the 25th to the 28th was a continuation of the flooding which started in the Marais des Cygnes River at Quenemo, Kans., on the 17th. Additional heavy rain occurred over the Osage on the 23d (1 to 1.5 inches) and 25th (1.75 inches).

The flooding on the Gasconade River in Missouri was due to heavy precipitation (slightly over 2 inches) on the 17th. Additional precipitation (1 inch) on the 22d and 23d (slightly under 2 inches) raised the flood peak.

The only flooding along the main stem of the Missouri River occurred in the reach below the mouth of the Osage River. The flooding was very light and exceeded flood stage by only a few tenths of a foot.

Ohio Basin.--The minor flooding on the Scioto River in Ohio south of Columbus was due to heavy thundershowers (2.25 inches) during the period from the 19th to the 22d. The heaviest rainfall reported was 5.2 inches south of Powell, Ohio, on the 19th and 20th. Flooding was limited to lowlying farmlands. Although some reseeding was required where crops had already been planted, losses were believed to be slight.

The flooding on the Green and Rough Rivers in Kentucky and the White and Wabash Rivers in Indiana was due to frequent heavy showers from the 14th to the end of the month. The rainfall was heaviest during the period from the 21st to the 23d. Rainfall in the reach of the Ohio River from Tell City, Ind., to Fords Ferry, Ky., averaged 6 inches, and over the Green in Kentucky, the Wabash and the White Rivers in Indiana during that period averaged 3 inches. Rains were locally heavier in parts of southern Illinois where Harrisburg had an estimated 10-inch fall between the 20th and 25th. At Evansville, Ind., it was the wettest month since January 1950 and the wettest May since 1935. At Indianapolis, Ind., the total rainfall for the month was the 2d highest ever recorded for the month of May. Crests in the lower White and lower East Fork were the highest since the great flood of 1950. Crests were just short of the stages which would have necessitated evacuations, but no evacuations are known to have been necessary. Many roads were closed and many fields of wheat and alfalfa were overflowed. However, the damage to crops was not nearly as great as would usually occur with such high stages because of the damage which had already been done by floods the previous month.

On the middle fork of the Saline River the gage site at Harrisburg, Ill., was flooded during part of the period between the 20th and 25th. A number of families in the flooded sections of Harrisburg had to be evacuated.

Flooding along the main stem of the Ohio was very minor and similar to the one the previous month. Losses were confined to extreme lowlands adjacent to the river, where some farmland had been prepared for planting.

White Basin.--The Black River remained above flood stage at Pocahontas, Ark., from April 5 through May 9 and at Black Rock, Ark., from April 4 through the month of May. General rains from the 10th through the 14th, which were locally heavy on the 12th and 13th caused the Black to again go above flood stage at Pocahontas from the 14th to the 16th. Another period of heavy rains, beginning on the 21st, caused the stream to go above flood stage on the 23d and to remain above flood stage through the end of the month. Heavy rains in southeastern Missouri on the 22d and 23d caused the Black to go above flood stage at Poplar Bluff, Mo., from the 23d to the 25th.

The Little Red River continued above flood stage at Judsonia, Ark., from April 27 to May 4. A period of general heavy rains beginning on the 21st caused the stream to go above flood stage at Heber Springs, Ark., on the 24th and at Judsonia from the 24th to the 28th.

At the beginning of the month the White River was above flood stage at and below Newport, Ark., from heavy rains in April. Flooding continued at Newport, Ark., until May 6, Augusta, Ark., until May 14, and in the reach below through the entire month of May. Additional heavy rains from the 22d to the 24th caused additional flooding in the reach above Newport on the 24th and 25th.

Arkansas Basin.--There were two periods of flooding in the Arkansas River and tributaries in Colorado during May. The first occurred from the 8th to the 10th and was minor in nature. The second occurred from the 15th to the 18th and was more serious and resulted in considerable lowland flooding. The first flood was due to a combination of heavy runoff from snowmelt and scattered heavy showers and thunderstorms. The precipitation ranged from 1 to 2 inches in the foothills and mountains to 0.25 to 0.5 inch over the lower portion of the basin. Most of the stream flow was from snowmelt in the lower mountain elevations. There was very little damage from the first overflow. The second period of flooding was due to general heavy precipitation plus runoff from snowmelt. Precipitation ranged from about an inch in lower elevations to about 5 inches in the Pueblo, Colo., area. Precipitation in the headwater areas of the Purgatoire, Fountain Creek, and the upper reaches of the Arkansas ranged from 1.5 to 2.5 inches. There was considerable damage to crops due to standing water. Two state highway bridges were damaged and several county road bridges and approaches are in need of repairs. A lowland dike near Avondale, Colo., was overflowed and a dike at LaJunta, Colo., was topped.

A flash flood occurred during the late afternoon and evening of the 29th on the Syracuse Creek, north of Syracuse, Kans. The creek overflowed at highest observed level in the last 35 years. The flow from this creek into the Arkansas River at Syracuse caused bankful stages for about 1 hour.

General heavy thunderstorms over southern Kansas, Oklahoma, and Arkansas during the latter half of May caused severe to record flooding in many streams in the basin. There were reports of more than 13 inches of rain in the Hennessey area and 12 inches in the Dover area in the Turkey Creek Basin (tributary of the Cimarron River) in north-central Oklahoma between 1:30 p.m. of the 15th and the morning of the 16th. The entire population of Dover was evacuated as flood waters engulfed the city. In the city of Enid, Okla., on Boggy Creek, only town square remained relatively dry. The rest of the town was under water and in some sections reached a depth of 8 feet. A few persons were rescued out of trees and from atop submerged automobiles. One person spent 5 hours in a tree before he was rescued.

The worst flood of record was reported on the 16th and 17th in the upper and middle Cimarron River. The crest at Waynoka, Okla., during the night of the 16th was about 1 foot higher than the previous highwater mark set in 1935. The bridge on which the river gage was located toppled into the river shortly before the crest occurred. The crest reached Guthrie, Okla., on the 17th, exceeding the previous record high stage of 16.5 feet set in 1935. The water reached 3 feet deep along the main street of Coyle, Okla., further downstream. Several families in the area had to leave their homes. The crest reached Perkins, Okla., during the evening of the 17th at a record stage of 19.8 feet, 2.8 feet above the October 1926 record stage of 17 feet.

Flooding occurred along the main stem of the Arkansas in the reach at and below Wichita, Kans., starting on the 16th with the crest between Morrilton and Little Rock, Ark., by the end of the month. At Bixby, Okla., the entire population of 2,300 persons was evacuated during the evening of the 18th. There were two crests at Tulsa. The first crest of 20.4 feet occurred on the morning of the 19th. The second crest of 21.5 feet (flood stage 19 feet) occurred on the afternoon of the 21st. There was no important flooding in the city of Tulsa or vicinity. Moderate to severe flooding occurred in the reach from Webbers Falls, Okla., to near Little Rock, Ark.

Red Basin.--The minor flooding on the Saline River at Benton, Ark., on the 24th was due to general moderate to heavy rains beginning on the 21st.

The rise on the Ouachita River which reached flood stage at Arkadelphia, Ark., on April 25 continued in flood at this point until May 2, and at Camden, Ark., until May 12. This stream went above flood stage again on the 24th which continued in flood until the 28th at Arkadelphia and continued in flood in the reach below as the month closed.

Heavy rains (3.5 inches) from the 1st to the 4th in the Upper Washita Basin resulted in a crest of 23.0 feet at Carnegie, Okla., on the 3d. Only agricultural damage resulted from this rise. Another rise near the middle of the month resulted in a major flood on the Washita at Lindsay, Okla., and below. Record flows were measured at both Pauls Valley and Durwood, Okla., by the U. S. Geological Survey, but stages were 2 to 3 feet lower than the previous recorded floods. The rainfall on the 16th causing this flood averaged in excess of 6 inches in the reach below Chickasha and over 9 inches in the reach from Ardmore to Lindsay, Okla. Another intense rain of 5 to 6 inches occurred over the Washita River on the night of the 24th and caused flooding at Lindsay and Pauls Valley, Okla. Substantial damage resulted to agricultural interests and to roads and bridges. One man near Lindsay, Okla., drowned while attempting to evacuate a woman from an automobile that fell through a bridge on the 18th.

Near record stages occurred at Wellington, Texas, and Mangrum, Okla., on the Salt Fork of the Red from the heavy rains that fell over the Texas Panhandle on the 15th. A near record flood also occurred on the North Fork of the Red near Carter, Okla. The bridge across U. S. Highway 66 south of Sayre, Okla., was destroyed by this flood. Two deaths from drowning occurred north of Erick, Okla., on the 16th.

There were three separate periods of flooding on the Little River in Arkansas and on the Sulphur River in Texas during May. The first rise started in April and resulted in the highest crest. The second period of flooding began around the middle of the month and the last overflow around the 23d.

The Cypress River at Jefferson, Texas, was in flood from April 26 until May 7. The Red River began flooding at Index and Fulton, Ark., on April 28 and was within its banks by the 8th and 10th, respectively. A second period of flooding began at Index on May 26 and at Fulton on May 27. In the reach below it was in flood throughout the entire month beginning from April 30. The flooding below Alexandria, La., approached in magnitude the record flood of 1945. It was only 4.5 feet lower at Alexandria than in 1945 and there was considerable flooding of unprotected areas along the east bank and up the tributaries. Portions of several parishes were inundated by the floodwaters. Farmers, ranchers, and oil companies reported considerable damage.

Lower Mississippi Basin.--The St. Francis River continued in flood at Fisk, Mo., from April 3 to May 10. Heavy rains (over 2 inches) on the 17th followed by another 2-inch rain on the 19th caused additional flooding at Fisk, Mo., starting on the 19th. The crest of 24.2 feet on the 23d was 0.1 foot higher than the crest on the 2d and the highest stage since 1950. In the reach below Fisk, Mo., at St. Francis, Ark., flooding continued from April 3 through the month of May into June.

Considerable flash flooding occurred on the smaller streams in southeast Missouri and northeast Arkansas from heavy local rains on the 23d. The water was not from the main St. Francis River, but from local streams and drainage ditches (dug some years ago so land in the area could be cultivated) which eventually enters Little River, a tributary of the St. Francis, with flow having considerable regulations at Big Lake and nearby floodways. Big Lake reached its highest stage on May 28. The damages to bridges, highways, grain crops, etc., were heavy, amounting to several millions of dollars. Substitute crops will have to be planted as it is too late to replant cotton.

The flooding along the main stem of the Mississippi at Caruthersville, Mo., from the 27th to the 31st was due to heavy rains over the lower Ohio and the middle and upper Mississippi on the 22d and 23d. The 2-day total at many stations was 5 inches or more. Scattered additional rains were reported through the 26th. The Mississippi River rose rapidly -- over 17 feet at Caruthersville, Mo., from the 21st to the 26th.

Very heavy local rains occurred in the Dyersburg, Tenn., area late on the 23d and early on the 24th and caused flash flooding in small local streams. The damage was quite large.

WEST GULF OF MEXICO DRAINAGE

Heavy rain (over 11 inches) during the last 10 days of April caused flooding along the Sabine River during the latter part of April which continued into May. Heavy rain (1.75 inches) occurred again over the Sabine from the 12th to the 14th causing the Sabine to overflow its banks again starting at Quitman and Mineola, Texas, on the 15th and Gladewater, Texas, on the 19th. At Logansport, La., the Sabine was in flood from April 26 to May 24. This was the highest water on the Sabine since 1945. The flooding was prolonged by an additional rainy period which produced 3.1 inches over the basin.

The excessive rains during the last half of April produced flooding in the Trinity River beginning at Trinidad, Texas, on April 21 and continued through the month of May. The rainfall ranged from 8 to 15 inches in the reach between Dallas and Long Lake, Texas, and from 6 to 12 inches in the reach from Long Lake to Liberty, Texas. Severe flooding continued along the Trinity through the month of May. Heavy rainfall in the upper Trinity from the 22d to the 26th produced serious local flooding in the Fort Worth, Texas, area and resulted in another major flood crest at Dallas, Texas. More than 4,000 persons were evacuated from unprotected lowlands on the West Fork of the Trinity above Fort Worth and along unprotected creeks in Fort Worth. The Trinity crested at Dallas on the 26th at a stage of 41.7 feet, 13.7 feet above flood stage for the highest crest during the April and May flooding. The crest reached Rosser, Texas, on the 29th at a stage of 38.0 feet, 12.0 feet above flood stage. There was no loss of life attributable to the flood. There was considerable damage to residential areas of both Fort Worth and Dallas. Some homes in Fort Worth could not be reoccupied for 2 weeks as discharge from Lake Worth continued to flood the low areas. There was extensive damage to streets and highways and some traffic arteries were closed for several weeks. Transportation facilities and utilities suffered moderate damage. There was extensive damage to agricultural interests with 425,000 acres inundated. There was not much direct loss of livestock, but loss of grazing in flooded lowlands was important and there was great loss of field crops, fences and levees.

Heavy rains of 4 to 6 inches over the middle and upper portions of the Guadalupe River on the 27th caused moderate flooding along the entire length of the river. The crests were 1 to 2 feet lower than in the latter part of April and the early part of May. There was much flooding on the San Antonio River in the city of San Antonio, Texas, and below Goliad, Texas, over the low flatlands to the mouth of the river. Heavy rains occurred again on May 31 and June 1 and caused another moderate rise in the Guadalupe and in the San Antonio Rivers, with flooding on the Guadalupe from Gonzales, Texas, to the mouth. There was also some flooding on the San Antonio River and in small streams in San Antonio and over the flatlands below Goliad. The material damages from these two rises were less than those of late April and early May since they followed these floods so closely and had lower crests. There was a loss of 5 lives attributed to the flood conditions.

The Colorado River below Austin, Texas, maintained high flow all month because of discharge operations at Mansfield, Texas. There was flooding of lowlands at times below Columbus, Texas, because of rain. Stages almost to flood level occurred at Columbus and Wharton, Texas, on the 28th and 29th. Serious flooding occurred along the South Concho River from torrential rains during the night of the 8th at the towns of Christoval and San Angelo, Texas. Several houses in these two towns were damaged or destroyed. There was some damage to railroads, highways, and bridges. Lake Travis reached an elevation of 707.38 feet m.s.l. on the 18th, the highest level ever reached since the dam was built. This was due to continuous runoff rains and the curtailment of discharging operations because of water in the lower river.

Considerable flooding occurred along the Nueces, Frio, and Atascosa Rivers on the 9th, 13th, 18th, 19th, and 27th. No major floods occurred along these rivers as the rains were well spaced. The most significant rise occurred after the rains on the 27th which were excessively heavy. The greatest amount reported during this storm was 7.7 inches at La Pryor, Texas, on the 27th. This latter rise which crested at Derby, Texas, at 11.3 feet, 5.3 feet above flood stage, is one of the larger floods on the Frio. Flood damages were limited to soil erosion and minor damage to roads. The greatest flood damage occurred in the upper Nueces and Frio Basins. High water kept construction at a standstill on Wesley Seale Dam near Mathis, Texas. Flooding of pasture lands continued, but benefits from rains and flood waters more than off set any sustained damage.

The frequent rains during the month from the 10th to the 29th caused 3 flood crests on the Rio Grande at Del Rio, Texas, and 5 flood crests at Eagle Pass, Texas. The flooding was confined to small areas of pasture land along the river bank. The heaviest damage in the area occurred to roads, railways, and fences over the Devils River watershed from heavy local rains. The river at Baker's Crossing, Texas, overflowed three times during the month with the highest crest of 18.9 feet occurring on the 13th.

PACIFIC SLOPE DRAINAGE

California Coast.--Heavy rain (3 to 5.5 inches) in the Sacramento River Basin in California during the late afternoon and evening of the 17th caused overflow in the bypass systems of the Sacramento River between the 20th and 24th. Overflow depth at the west end of Fremont Weir was slightly over

1 foot and there was some reflooding of Little Holland, a leveed tract in the Bypass, and of many acres of cultivated land in unleveed portions of the Bypass. All movable farm equipment and many head of livestock were moved out as a result of advance warnings, and damage was confined largely to planted crops.

Columbia Basin.--Floods in the Snake River Drainage were more pronounced in eastern Idaho, and in the Clearwater Drainage. Several hundreds of acres of farmland along the Henrys Fork at Rexburg, Idaho, were under water from the 9th to the end of the month. Along the Blackfoot River near Blackfoot, Idaho, several thousand acres were flooded by May 13 and a portion of Highway 91 south of Blackfoot was inundated. Several homes in the area were threatened when the water level reached within a few inches of the tops of the dikes. This was the highest flood of record on the Blackfoot (6.95 feet or 1,015 c.f.s.), where a bridge was washed out. The highest previous crest was 868 c.f.s. on May 21, 1921. A few homes and some pasture land were flooded along the Portneuf at Pocatello, Idaho. On the Clearwater River above Lewiston, Idaho, water was 2 to 3 feet deep on Highway 13 on May 8. Bear Creek bridge, 8 miles west of Orofino, Idaho, was washed out. The Snake and Clearwater Rivers, near Lewiston, Idaho, crested at the highest levels since 1948. About 175 persons were evacuated at Orofino, Idaho, due to the high water on Orofino Creek and Clearwater River. Volunteers were called by the National Guard for flood duty at Orofino, Kooskia, and Stiles. Several highways were closed due to the high water. Most of the flooding in the Snake River Basin was due to a combination of snowmelt and heavy precipitation. At Pocatello, Idaho, 4.33 inches of precipitation occurred during the first 23 days of May, compared to a previous monthly maximum of 4.34 inches in 1907. In the Rexburg, Idaho, area, 3.7 inches of rain occurred during May or 296 percent of the long-term normals. At Ft. Hall, Idaho, on the Blackfoot, 4.95 inches occurred which was 438 percent of normal. Precipitation at other points varied from 154 percent upward.

Several flash floods occurred in Washington and Oregon east of the Cascade Mountains from torrential showers and thunderstorms during the first part of May. Some of the towns hardest hit by the flash floods were Wenatchee and Spokane, Wash. Flash floods were also reported at Conconnully, Wash., Madros and Weston, Oreg. These flash floods did not add much water to the main streams and the only flooding reported in the lower Columbia Basin was on the Willamette at Portland, Oreg., and on the Columbia at Vancouver, Wash. Damages were confined to flooding of pastures and meadowland outside of the dyked areas and to that caused by flash floods.

FLOOD STAGE DATA

(All dates in May unless otherwise specified)

MAY 1957

River and station	Flood stage	Above flood stages -dates		Crest*	
		From–	To–	Stage	Date
	Ft.			Ft.	
ST. LAWRENCE DRAINAGE					
Lake Michigan					
Red Cedar. Williamston, Mich.	7	20	20	7.5	20
East Lansing, Mich	8	20	21	8.1	20
Lake Ontario					
Canaseraga Creek: Groveland, N.Y.	11	19	19	11.1	19
		20	20	11.9	20
Oatka Creek: Garbutt, N. Y.	5	20	22	5.4	20
ATLANTIC SLOPE DRAINAGE					
Neuse: Smithfield, N. C.	13	13	14	16.9	14
Santee: Rimini, S. C.	12	Mar. 1	1/	16.1	21
Ocmulgee: Abbeville, Ga.	12	12	13	12.1	12-13
EAST GULF OF MEXICO					
Apalachicola: Blountstown, Fla.	15	6	9	18.2	7
Pearl: Bogalusa, La.	15	7	7	15.0	7
MISSISSIPPI SYSTEM					
Upper Mississippi Basin					
Iowa· Marshalltown, Iowa	13	30	30	13.9	30
Illinois: Morris, Ill.	13	Apr. 26	1	#15.1	Apr. 28
La Salle, Ill.	20	Apr. 26	5	#23.5	Apr. 30
Peoria, Ill.	18	1	7	19.7	3
Havana, Ill.	14	Apr. 28	June 3	17.6	5
Beardstown, Ill.	14	Apr. 27	June 5	19.6	5-6
Bourbeuse: Union, Mo.	15	19	20	17.9	20
		23	25	20.7	24
Meramec: Sullivan, Mo.	11	18	27	#15.7	18
				21.2	23
Pacific, Mo.	11	18	28	19.0	22
				22.8	25
Valley Park, Mo.	14	Apr. 28	1	20.7	Apr. 30
		19	28	23.9	23
				26.5	26
Missouri Basin					
Jefferson: Sappington, Mont.	8	22	25	8.3	23-24
Big Hole: Divide, Mont.	--	19	24	5.6	21
Saline: Wilson, Kans.	12	16	17	13.25	17
Tescott, Kans.	25	19	20	26.2	19
North Fork Solomon: Lenora, Kans.	10	16	17	#12.0	17
Downs, Kans.	18	17	17	20.0	17
South Fork Solomon: Hill City, Kans.	8	16	16	#8.25	16
Osborne, Kans.	12	--	--	15.5	16
Solomon: Beloit, Kans.	20	16	19	22.0	18
Smoky Hill: Arnold, Kans.	7	17	17	12.0	17
Lindsborg, Kans.	21	16	17	21.1	16-17
Red Willow Creek: Red Willow, Nebr.	12	13	14	12.0	13-14
		16	16	14.0	16
Sappa Creek: Oberlin, Kans.	--	16	16	12.35	16
		30	30	15.15	30
Beaver City, Nebr.	12	17	17	13.15	17
Beaver Creek: Atwood, Kans.	--	--	—	11.8	26
Republican: Orleans, Nebr.	9	26	27	11.1	26
Mill Creek (Kansas): Paxico, Kans.	14	16	16	22.3	16
Lamine: Clifton City, Mo.	16	26	26	18.6	26
Marmaton: Ft. Scott, Kans.	30	17	17	30.9	17
Marais des Cygnes: Quenemo, Kans.	28	17	18	34.0	17
		31	31	28.85	31
Ottawa, Kans.	23	17	19	26.85	18
Osawatomie, Kans.	28	18	20	30.45	19
La Cygne, Kans.	25	19	21	26.4	20
Osage: Osceola, Mo.	22	25	28	26.2	25
Warsaw, Mo.	31	26	27	#31.5	26
St. Thomas, Mo.	23	25	28	23.8	27
Gasconade: Hazlegreen, Mo.	21	23	24	22.7	23
				24.0	24
Jerome, Mo.	15	22	27	#25.0	25
Missouri: Hermann, Mo.	21	27	27	#21.3	27
St. Charles, Mo.	25	27	28	#25.4	27
Ohio Basin					
Scioto: Circleville, O.	14	21	24	15.9	23
Piketon, O.	16	23	25	17.0	25
Rough: Dundee, Ky.	25	22	28	28.6	24
Green: Lock 4, Woodbury, Ky.	33	24	26	35.4	25
Lock 2, Calhoun, Ky.	23	24	31	26.6	28
MISSISSIPPI SYSTEM (Cont'd.)					
Ohio Basin (Cont'd.)					
Skillet Fork: Wayne City, Ill.	15	19	28	21.5	23
Eel: Bowling Green, Ind.	17	23	23	18.4	23
East Fork: Columbus, Ind.	10	23	24	11.45	24
Seymour, Ind.	14	23	26	17.9	23
Bedford, Ind.	20	25	30	27.2	27
Williams, Ind.	10	25	30	15.9	27
Shoals, Ind.	25	27	29	26.85	28
White: Anderson, Ind.	10	20	24	10.8	23
Spencer, Ind.	14	22	27	10.3	24
Elliston, Ind.	18	21	28	26.2	25
Newberry, Ind.	18	24	27	20.7	25
Edwardsport, Ind.	12	17	18	13.4	17
		20	1/	23.0	26
Petersburg, Ind.	16	23	1/	23.6	28
Hazleton, Ind.	16	25	1/	24.25	29
Wabash: Covington, Ind.	16	Apr. 20	1	21.65	Apr. 22
Montezuma, Ind.	14	Apr. 4	3	21.0	Apr. 24
		12	16	16.2	15
		21	26	16.9	24
Terre Haute, Ind.	14	Apr. 5	4	17.6	Apr. 25
		22	26	15.4	24
Vincennes, Ind.	16	Apr. 6	3	17.5	Apr. 29
		23	29	17.7	26
Mt. Carmel, Ill.	17	24	1/	22.5	30
New Harmony, Ind.	15	25	1/	----	--
Ohio: Shawneetown, Ill.	33	26	28	----	--
Dam 50, Fords Ferry, Ky.	34	25	30	----	--
Dam 53, Grand Chain, Ill.	42	25	30	42.9	26
Cairo, Ill.	40	24	June 1	43.4	27
White Basin					
Black: Poplar Bluff, Mo.	16	23	25	18.2	24
Pocahontas, Ark.	17	Apr. 5	9	21.25	2
		14	16	17.5	15
		23	1/	23.4	29
Black Rock, Ark.	14	Apr. 4	1/	26.9	Apr. 5
				21.0	Apr. 23
				24.7	Apr. 29
				25.8	24
Little Red: Heber Springs, Ark.	24	24	24	32.0	24
Judsonia, Ark.	30	Apr. 27	4	35.4	Apr. 29
		24	28	35.9	26
White: Calico Rock, Ark.	19	24	24	20.1	24
Batesville, Ark.	23	24	25	27.3	25
Newport, Ark.	26	Apr. 29	6	28.5	2
Augusta, Ark.	32	Apr. 7	14	33.9	Apr. 8
				34.1	3
Georgetown, Ark.	21	Apr. 7	1/	25.7	Apr. 10
				27.0	4
				26.1	29
Des Ark, Ark.	24	Apr. 8	1/	28.4	Apr. 12
				30.1	3
				29.3	30
Clarendon, Ark.	26	Apr. 9	1/	30.1	Apr. 16
				31.2	7
				30.9	June 1
St. Charles, Ark.	25	--	1/	29.5	7
				30.6	June 4
Arkansas Basin					
Little Arkansas: Sedgwick, Kans.	18	13	14	19.9	13
		17	20	24.5	17
Ripley, Kans.	12	17	19	16.3	17
Ninnescah: Belle Plaine, Kans.	18	17	19	25.6	17
Walnut: El Dorado, Kans.	15	16	17	27.50	16
Augusta, Kans.	23	17	18	29.67	17
Winfield, Kans.	30	18	19	30.50	19
Arkansas City, Kans.	18	17	20	25.76	19
Chikaskia: Blackwell, Okla.	26	16	18	32.57	18
Salt Fork: Tonkawa, Okla.	17	16	20	20.85	17
		23	23	18.80	23
		25	27	19.30	25
Cimarron: Waynoka, Okla.	8	16	16	15.1	16
Guthrie, Okla.	10	3	3	10.15	3
		16	18	18.5	17
		21	21	10.9	21
Perkins, Okla.	11	3	4	11.75	4
		16	19	19.53	17
		21	22	15.90	21
		26	26	12.22	26
Mannford, Okla.	18	17	19	28.85	18
		21	22	23.70	21
Little Caney: Copan, Okla.	21	1	2	24.1	2
		14	18	25.2	17
		22	26	25.7	26
Caney: Bartlesville, Okla.	29	1	1	29.05	1
		16	17	31.44	17
		25	26	32.10	25
Bird Creek: Sperry, Okla.	21	17	19	26.90	18
		21	23	27.26	22
		25	27	28.53	26
Verdigris: Coyville, Kans.	28	17	18	38.50	18
		29	30	34.03	30

FLOOD STAGE DATA

(All dates in May unless otherwise specified)

River and station	Flood stage	Above flood stages -dates		Crest*	
		From—	To—	Stage	Date
	Ft.			Ft.	
MISSISSIPPI SYSTEM (Cont'd.)					
Arkansas Basin (Cont'd.)					
Verdigris: Independence, Kans.	30	17	18	34.93	18
		30	30	31.23	30
Claremore, Okla.	38	18	29	43.90	22
				43.39	27
Inola, Okla.	41.5	18	31	51.4	25
				50.7	28
Cottonwood: Cottonwood Falls, Kans.	9	17	19	11.2	18
Emporia, Kans.	20	17	21	24.71	18-19
Spring: Quapaw, Okla.	19.5	22	27	21.35	23
				26.6	26
Elk: Tiff City, Okla.	15	21	23	24.72	21
		25	25	17.10	23
				20.8	25
Neosho: Council Grove, Kans.	--	16	17	22.7	16
Emporia, Kans.	22	17	18	25.05	17
Neosho Rapids, Kans.	22	18	21	23.90	19
Burlington, Kans.	27	17	22	30.34	18
				29.25	21
Leroy, Kans.	23	17	22	26.58	17
Iola, Kans.	15	17	23	16.9	17
				17.0	18
				15.8	22-23
Chanute, Kans.	20	17	21	22.74	19
		30	31	21.04	30
Oswego, Kans.	17	18	26	20.3	19
				20.45	23
		31	June 5	21.52	June 3
Commerce, Okla.	15	17	26	18.10	19
		31	31	18.79	23
				19.7	25
Deep Fork: Dewar, Okla.	18	--	5	19.8	1
		14	1/	24.3	25
North Canadian: Woodward, Okla.	10	16	16	10.8	16
Watonga, Okla.	7	16	16	7.8	16
Canadian: Whitefield, Okla.	16	18	18	18.5	18
				16.3	23
				16.9	26
Poteau: Poteau, Okla.	24	23	24	27.02	23
		25	30	27.44	26-27
Arkansas: Syracuse, Kans.	11	29	29	12.4	29
Hutchinson, Kans.	8	16	19	7.8	17
Wichita, Kans.	12	17	18	14.6	17
Oxford, Kans.	14	17	19	16.7	18
Arkansas City, Kans.	16	17	20	24.81	18
Ralston, Okla.	16	17	22	21.6	20
Tulsa, Okla.	19	18	19	20.41	19
		21	22	21.53	21
Muskogee, Okla.	35	25	28	39.0	26
Webbers Falls, Okla.	23	18	31	30.0	20
				31.0	23
				35.5	26
Sallisaw, Okla.	23	18	31	29.65	20
				31.10	23
				34.85	27
Van Buren, Ark.	22	19	31	30.1	21
				32.21	24
				36.35	27
Ozark, Ark.	22	21	1/	34.4	28
Dardanelle, Ark.	32	21	1/	33.6	29
Morrilton, Ark.	30	22	1/	39.55	30
Little Rock, Ark.	23	24	1/	28.0	June 1
Pine Bluff, Ark.	25	24	1/	30.85	31
Red Basin					
Saline: Benton, Ark.	20	24	24	21.8	24
Ouachita: Arkadelphia, Ark.	17	Apr. 25	2	#20.4	Apr. 27
		24	28	22.0	28
Camden, Ark.	26	Apr. 26	12	39.0	1
		26	1/	34.6	31
Monroe, La.	40	7	1/	42.65	19
Washita: Carnegie, Okla.	18	2	6	23.0	3
Pauls Valley, Okla.	24	18	19	27.3	18
		26	26	24.6	26
Little: Horatio, Ark.	27	Apr. 23	5	33.1	Apr. 28
		14	16	28.3	15
		25	30	30.95	27
Whitecliffs, Ark.	25	Apr. 24	8	29.8	Apr. 29
		16	18	25.7	17
		26	1/	27.8	28
Sulphur: Hagansport, Tex.	38	Apr. 22	6	43.4	Apr. 27
				#40.7	4
		13	19	#42.4	14
		23	1/	#42.6	27
Naples, Tex.	22	Apr. 24	11	32.3	Apr. 29
		15	1/	30.0	17
				31.25	29
Cypress: Jefferson, Tex.	18	Apr. 26	7	24.3	Apr. 28
Red: Index, Ark.	25	Apr. 28	8	#27.2	1
		26	1/	27.3	29
Fulton, Ark.	27	Apr. 28	10	30.45	2
		27	1/		
Grand Ecore, La.	33	Apr. 30	1/	#41.95	10
Alexandria, La.	32	Apr. 30	1/	#40.7	13

River and station	Flood stage	Above flood stages -dates		Crest*	
		From—	To—	Stage	Date
	Ft.			Ft.	
MISSISSIPPI SYSTEM (Cont'd.)					
Lower Mississippi Basin					
St. Francis: Fisk, Mo.	20	Apr. 3	10	24.3	Apr 8-12
				24.1	2
		19	1/	24.2	23
St. Francis, Ark.	18	Apr. 3	1/	21.9	Apr. 10-11
				21.5	Apr. 19-20
				21.3	2
				22.9	27
Mississippi: Caruthersville, Mo.	32	27	31	32.5	30
WEST GULF OF MEXICO DRAINAGE					
Sabine: Quitman, Tex.	16	Apr. 23	4	20.4	Apr 28
		15	16	18.0	15
		26	29	19.9	28
Mineola, Tex.	14	Apr. 21	10	#22.1	Apr. 29
		15	1/	#18.4	17
				#18.6	29
Gladewater, Tex.	26	Apr. 22	16	#40.3	1
		19	1/	#35.8	June 2
Logansport, La.	25	Apr. 26	24	#39.4	7
Angelina: Horger, Tex.	30	2	10	33.2	6
Neches: Rockland, Tex.	22	1	14	25.3	5
Evadale, Tex.	19	6	16	20.6	10
East Fork: Rockwall, Tex.	10	Apr. 30	1/	20.8	26
Trinity: Dallas, Tex.	28	Apr. 24	5	39.65	Apr. 28
		9	1/	41.7	26
Rosser, Tex.	26	Apr. 23	1/	38.0	29
Trinidad, Tex.	28	Apr. 21	1/	43.5	1
Long Lake, Tex.	40	Apr. 24	1/	48.8	Apr. 29
Midway, Tex.	40	Apr. 25	28	47.55	1
		31	1/	----	--
Riverside, Tex.	40	Apr. 30	16	49.7	4
Romayor, Tex.	30	4	17	32.15	10
Liberty, Tex.	24	Apr. 26	1/	29.3	12
Clear Fork: Ft. Griffin, Tex.	25	16	16	25.3	16
		26	30	32.7	28
Little: Cameron, Tex.	30	Apr. 24	1	39.05	Apr. 25
		14	16	35.0	15
Brazos: South Bend, Tex.	21	26	27	22.4	27
Rainbow, Tex.	20	Apr. 28	7	31.2	5
		13	17	22.1	15
		22	22	20.3	15
		25	30	31.1	27
Waco, Tex.	27	11	12	30.6	12
		13	14	30.0	13
Washington, Tex.	45	Apr. 30	2	45.8	1
Hempstead, Tex.	40	Apr. 28	5	44.2	2
Richmond, Tex.	35	2	8	37.5	6
Colorado: Columbus, Tex.	24	Apr. 23	Apr. 29	28.0	Apr. 29
Wharton, Tex.	26	Apr. 29	1	29.0	Apr. 30
Navidad: Ganado, Tex.	21	Apr. 30	3	29.8	1
Guadalupe: Gonzales, Tex.	20	Apr. 26	2	33.6	Apr. 28
		29	30	31.0	29
		June 3	June 4	25.6	June 4
Cuero, Tex.	23	Apr. 29	3	30.4	Apr. 30
		31	June 1	24.9	June 1
Victoria, Tex.	21	Apr. 28	6	29.8	3
		30	June 9	28.7	June 2
				25.3	June 7
Frio: Derby, Tex.	6	Apr. 21	2	9.7	Apr. 22 Apr. 24 Apr. 26 Apr. 29
		16	17	8.0	16
		19	21	7.9	21
		28	1/	11.3	29
Calliham, Tex.	12	Apr. 20	6	21.85	Apr. 21
				20.0	Apr. 24
				20.6	Apr. 28
				18.65	2
		9	11	19.3	10
		13	16	21.6	14
		19	21	15.5	19
		24	25	17.2	24
		27	1/	24.7	29
Atascosa: Whitsett, Tex.	20	Apr. 28	1	24.8	Apr. 29
Nueces: Cotulla, Tex.	15	Apr. 30	1/	15.6	Apr. 30
Tilden Crossing, Tex.	11	Apr. 21	15	22.7	1
		28	1/	----	--
Three Rivers, Tex.	35	Apr. 29	5	39.3	3
		30	1/	36.9	31
Mathis Dam, Tex.	74	Apr. 21	1/	76.7	6
				76.1	14
				75.0	23
				75.7	28
Calallen, Tex.	7	Apr. 24	1/	9.9	7
				9.2	18
				8.8	30
Rio Grande: Del Rio, Tex.	15	11	11	19.4	11
		13	14	17.1	13
		27	28	19.6	28
Eagle Pass, Tex.	16	12	13	17.5	12
		14	15	18.1	15
		17	17	16.0	17
		18	18	17.1	18
		28	29	20.7	29

FLOOD STAGE DATA

(All dates in May unless otherwise specified)

River and station	Flood stage	Above flood stages -dates		Crest*	
		From—	To—	Stage	Date
	Ft.			Ft.	
PACIFIC SLOPE DRAINAGE					
Sacramento: Colusa Weir, Calif.	61.8	20	22	62.9	21
Tisdale Weir, Calif.	45.5	20	23	47.8	21-22
Fremont Weir, Calif.	33.5	20	24	34.8	22
Columbia Basin					
Spokane: Spokane, Wash.	27	23	25	27.3	25
Blackfoot: Blackfoot, Idaho	A 6	12	31	6.95	28
Henrys Fork: Rexburg, Idaho	A 8	9	31	9.65	22
Portneuf: Pocatello, Idaho	A 4	21	26	4.1	21-24
Clearwater: Kamiah, Idaho	14	20	20	15.85	20
Spalding, Idaho	18	20	21	21.4	20
PACIFIC SLOPE DRAINAGE (Cont'd.)					
Columbia Basin (Cont'd.)					
Willamette: Portland, Oreg.	18	13	1/	#23.0	23
Columbia: Vancouver, Wash.	15	10	1/	#23.3	23
Ridgefield, Wash.	18	17	Ī/	21.2	23,24
St. Helens, Oreg.	20	20	Ī/	23.0	23

* Provisional
# Highest stage reported
1/ Continued at end of month
Ā Tentative

RAWINSONDE DATA

Average monthly values

MAY 1957

ALBANY, N. Y. (1005 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	86	11.7	71	304	2.9
1,000	31	130			291	3.7
950	31	562	11.4	59	304	8.4
900	31	1,010	9.0	62	296	12.8
850	31	1,482	6.3	66	297	14.4
800	31	1,977	3.8	63	293	17.3
750	31	2,504	1.5	61	287	20.0
700	31	3,054	-1.1	59	288	21.4
650	31	3,644	-4.3	55	286	25.6
600	31	4,270	-7.1	47	287	28.9
550	31	4,944	-10.8	39	284	32.1
500	31	5,670	-15.2		283	35.9
450	30	6,467	-20.7		283	37.9
400	30	7,321	-26.9		282	41.4
350	30	8,270	-34.1		284	45.3
300	30	9,331	-42.0		280	49.1
250	30	10,541	-50.8		275	54.8
200	30	11,967	-57.8		278	61.2
175	30	12,806	-59.1		276	58.5
150	30	13,775	-57.6		275	48.6
125	30	14,924	-58.2		280	40.6
100	30	16,323	-59.9		283	30.9
80	30	17,714	-60.3		277	21.6
60	30	19,508	-59.6		290	12.4
50	29	20,649	-58.1		295	8.9
40	26	22,060	-56.5		291	6.2
30	24	23,893	-54.0		296	2.7
20	9	26,484	-49.8			
15						

ALBUQUERQUE, N. MEX. (834 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	1,619	17.3	37	143	1.2
1,000	31	33				
950	31	492				
900	31	963				
850	31	1,454				
800	31	1,972	14.7	36	237	2.3
750	31	2,516	10.4	39	257	7.6
700	31	3,082	5.3	45	249	10.7
650	31	3,684	-.1	53	245	13.8
600	31	4,316	-5.3	58	241	15.3
550	31	4,992	-10.8	63	240	18.1
500	31	5,717	-16.5	61	250	21.8
450	31	6,512	-21.9	51	249	25.3
400	31	7,357	-28.0	42	251	21.4
350	31	8,300	-35.0		249	21.8
300	31	9,356	-42.7		250	24.5
250	31	10,561	-51.0		257	26.0
200	31	11,990	-56.3		258	28.6
175	31	12,835	-57.0		256	30.7
150	31	13,809	-56.7		268	34.8
125	[illegible]	14,959	-58.8			
100	27	16,346	-61.7			
80	27	17,721	-62.8			
60	25	19,499	-60.7			
50	25	20,633	-59.6			
40	22	22,036	-56.6			
30	17	23,880	-53.0			
20						
15						

AMARILLO, TEX. (889 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	1,099	15.8	72	138	6.2
1,000	31	76				
950	31	524				
900	31	989				
850	31	1,473	14.5	68	160	10.9
800	31	1,983	12.0	59	205	10.1
750	31	2,527	8.6	56	229	11.7
700	31	3,088	4.8	55	245	11.1
650	31	3,692	.2	57	255	13.8
600	31	4,324	-4.3	53	251	16.9
550	31	5,004	-8.9	49	255	20.4
500	31	5,735	-13.5	43	251	24.5
450	31	6,534	-19.0		248	29.3
400	31	7,395	-25.0		244	32.4
350	30	8,346	-32.6		244	37.1
300	30	9,413	-40.8		242	40.8
250	30	10,628	-49.9		240	43.5
200	30	12,057	-57.8		246	45.1
175	30	12,896	-58.3		248	43.5
150	30	13,864	-58.8		247	42.3
125	29	15,008	-59.7		249	36.9
100	28	16,393	-62.1		245	26.2
80	26	17,765	-63.2		246	13.0
60	26	19,544	-60.8		237	3.1
50	25	20,684	-59.3		69	3.1
40	22	22,089	-56.6		61	1.6
30	19	23,936	-52.0		3	1.2
20	15	26,588	-47.7		278	5.4
15	10	28,509	-45.3			

ANCHORAGE, ALASKA (1007 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	30	13.1	46	230	6.4
1,000	31	90			224	5.6
950	31	522	8.8	48	169	3.5
900	31	962	5.1	53	136	3.1
850	31	1,425	1.2	59	118	3.3
800	31	1,909	-2.3	63	105	4.9
750	31	2,424	-5.9	61	113	6.2
700	31	2,955	-9.3	57	112	6.4
650	30	3,534	-12.3	53	112	5.2
600	30	4,135	-15.9	47	116	4.9
550	30	4,788	-19.9	43	119	6.4
500	30	5,486	-24.6	42	129	8.4
450	30	6,253	-29.7	42	128	8.5
400	30	7,076	-35.6		132	8.5
350	30	7,989	-42.4		136	6.4
300	29	9,014	-48.7		148	5.6
250	29	10,199	-51.8		133	9.9
200	29	11,643	-50.8		150	11.3
175	29	12,513	-50.2		143	10.9
150	29	13,521	-48.8		152	9.5
125	29	14,717	-48.9		169	6.4
100	27	16,189	-49.4		170	5.8
80	26	17,648	-49.5		160	5.2
60	24	19,536	-49.4		164	4.9
50	23	20,727	-49.9		140	4.7
40	20	22,190	-49.2		118	6.8
30	11	24,087	-48.9			
20						
15						

ANNETTE, ALASKA (1010 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	37	12.0	68	159	1.7
1,000	31	123	11.3	67	136	1.6
950	31	546	8.3	68	137	5.4
900	31	994	5.2	70	147	8.2
850	31	1,458	2.2	70	153	8.7
800	31	1,945	-.4	61	167	7.8
750	31	2,465	-3.0	58	170	8.9
700	31	3,002	-6.2	56	180	10.1
650	31	3,581	-9.5	54	186	11.7
600	31	4,193	-12.9	56	194	16.1
550	31	4,853	-16.8	55	196	18.6
500	31	5,561	-21.4	50	198	22.0
450	31	6,336	-26.3	51	193	24.7
400	31	7,172	-32.2	48	185	20.6
350	31	8,099	-39.1		195	17.7
300	31	9,136	-46.7		199	19.6
250	31	10,322	-53.9		205	15.0
200	31	11,746	-54.3		219	7.4
175	31	12,604	-52.2		250	9.9
150	30	13,603	-51.1		242	10.3
125	30	14,787	-51.3		248	8.2
100	29	16,232	-52.2		261	7.4
80	27	17,675	-52.3		285	6.6
60	27	19,534	-52.2			
50	21	20,714	-52.4			
40	19	22,157	-51.6			
30	18	24,028	-50.7			
20						
15						

ATHENS, GA. (988 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	246	19.6	82	154	2.5
1,000	31	138				
950	31	588	19.8	66	154	6.0
900	31	1,047	16.7	69	166	5.4
850	31	1,532	13.2	73	166	4.9
800	31	2,040	10.1	66	155	2.3
750	31	2,580	7.1	57	262	1.6
700	31	3,139	3.9	52	266	3.3
650	31	3,741	.7	51	268	5.4
600	30	4,377	-2.7	46	274	6.0
550	29	5,065	-6.9	42	266	8.5
500	29	5,799	-11.3	40	266	13.2
450	29	6,607	-16.8		259	16.3
400	29	7,474	-23.0		261	20.0
350	28	8,436	-30.4		254	21.0
300	28	9,513	-38.6		244	23.5
250	28	10,738	-48.3		246	27.8
200	28	12,172	-58.0		253	36.3
175	28	13,008	-60.1		258	40.4
150	28	13,966	-61.4		268	41.8
125	27	15,096	-64.1		269	34.6
100	24	16,447	-66.8		262	27.0
80	22	17,798	-67.4		268	18.3
60	20	19,535	-63.9		275	3.3
50	20	20,658	-61.4		335	1.7
40	19	22,051	-57.8		15	1.9
30	16	23,887	-53.1		63	3.5
20						

BARROW, ALASKA (1023 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	8	-5.3	84	71	9.9
1,000	31	183	-6.8	83	77	11.8
950	31	588	-6.5	78	91	12.6
900	31	1,008	-3.9	63	90	11.8
850	31	1,459	-4.1	56	83	8.9
800	31	1,936	-5.3	46	81	4.3
750	31	2,445	-7.5	45	65	4.9
700	31	2,975	-10.4	48	74	4.1
650	31	3,546	-13.7	46	38	3.1
600	31	4,146	-17.1	42	351	3.1
550	30	4,791	-21.2	40	333	2.1
500	30	5,488	-25.6		336	4.1
450	30	6,251	-31.0	41	263	2.1
400	30	7,069	-36.9		167	1.4
350	30	7,979	-43.0		185	4.7
300	30	9,001	-49.2		196	8.4
250	30	10,182	-52.6		209	4.5
200	30	11,628	-49.6		186	4.3
175	30	12,504	-48.0		193	5.1
150	30	13,518	-47.9		210	4.3
125	30	14,717	-48.3		168	4.7
100	30	16,183	-48.5		191	2.7
80	30	17,648	-48.5		166	2.5
60	30	19,539	-48.1		167	1.7
50	29	20,735	-47.8		118	3.5
40	28	22,201	-47.6		113	4.5
30	26	24,093	-47.3		106	4.9
20						

BARTER IS., ALASKA (1021 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	15	-5.0	82	88	8.5
1,000	31	174	-6.2	83	78	10.1
950	31	581	-5.6	78	78	10.9
900	31	1,001	-3.4	64	73	7.2
850	31	1,453	-4.0	49	88	1.6
800	31	1,929	-5.9	44	312	1.2
750	31	2,437	-8.2	44	267	2.9
700	31	2,966	-10.9	44	273	4.7
650	31	3,537	-14.2	40	288	5.6
600	31	4,135	-17.7	38	283	7.0
550	31	4,782	-21.6	41	296	8.2
500	31	5,476	-26.2	42	300	10.9
450	31	6,234	-31.5	41	301	10.9
400	30	7,055	-37.2		295	11.7
350	30	7,964	-43.3		293	14.4
300	30	8,985	-49.2		294	14.6
250	30	10,168	-52.2		276	13.4
200	30	11,614	-50.2		277	12.2
175	30	12,486	-49.0		277	9.5
150	29	13,494	-48.5		291	7.0
125	29	14,690	-48.7		286	5.8
100	29	16,152	-49.1		303	2.7
80	27	17,610	-49.4		283	2.5
60	25	19,485	-49.1		349	2.5
50	25	20,680	-48.7		312	1.0
40	25	22,145	-48.1		326	2.5
30	21	24,033	-47.8		4	1.9
20	10	26,771	-45.1			

BISMARCK, N. DAK. (954 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	505	13.7	62	136	5.6
1,000	31	105				
950	31	544			142	6.2
900	31	997	12.3	53	130	8.9
850	31	1,473	8.6	57	127	5.8
800	31	1,971	4.9	62	124	4.5
750	31	2,503	2.1	59	108	2.5
700	31	3,049	-1.0	59	55	1.7
650	31	3,642	-4.2	51	12	1.0
600	31	4,264	-8.1	48	304	1.6
550	31	4,936	-12.4	44	280	2.1
500	31	5,656	-17.1	39	295	4.7
450	31	6,447	-22.8	37	273	8.7
400	31	7,290	-29.2	38	265	9.3
350	31	8,229	-36.7	39	250	13.6
300	31	9,278	-45.2		252	13.8
250	31	10,469	-54.5		251	18.3
200	31	11,877	-58.4		253	17.5
175	31	12,721	-55.5		250	15.7
150	31	13,705	-54.7		255	16.1
125	28	14,874	-55.3		273	15.2
100	26	16,294	-57.0		276	12.4
80	22	17,709	-57.2		293	10.7
60	20	19,529	-57.5		327	5.8
50	19	20,682	-57.5		357	6.8
40	17	22,079	-56.9		10	5.2
30	11	23,897	-55.0			
20						

BOISE, IDAHO (911 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	868	15.9	63	312	3.5
1,000	31	63				
950	31	508				
900	31	969	16.1	58	323	4.3
850	31	1,452	12.9	53	330	6.0
800	31	1,958	9.1	57	328	5.8
750	31	2,495	4.9	62	313	5.1
700	31	3,048	.7	63	290	3.9
650	31	3,640	-3.6	64	260	2.9
600	31	4,267	-8.0	63	235	4.1
550	31	4,937	-12.5	59	224	4.1
500	31	5,658	-17.4	54	203	5.8
450	31	6,447	-23.3	51	185	5.6
400	31	7,290	-29.4	50	162	7.0
350	31	8,228	-36.8	46	142	7.4
300	31	9,275	-45.1		149	9.7
250	31	10,466	-54.3		141	12.0
200	29	11,881	-57.8		182	4.5
175	25	12,724	-54.8		251	4.9
150	22	13,715	-53.8		260	9.1
125	18	14,896	-54.7		247	11.1
100	13	16,308	-56.7			
80	11	17,732	-57.6			
60	11	19,544	-58.3			
50	8	20,683	-58.3			
40	6	22,109	-57.4			
30						
20						

BROWNSVILLE, TEX. (1009 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	7	25.2	84	134	10.9
1,000	31	90	24.8	83	131	11.7
950	31	541	22.1	80	146	15.7
900	31	1,009	21.0	65	147	14.0
850	31	1,503	18.8	55	152	10.9
800	31	2,021	16.4	42	173	9.1
750	31	2,572	13.1	38	203	7.0
700	31	3,143	9.4	36	235	7.6
650	31	3,757	5.0	34	244	10.9
600	31	4,401	.2	35	251	10.7
550	31	5,093	-4.7	28	258	12.6
500	31	5,834	-9.8		268	16.3
450	31	6,645	-15.3		264	20.6
400	31	7,519	-21.4		269	24.9
350	31	8,487	-28.8		275	32.2
300	31	9,570	-37.1		274	42.5
250	31	10,804	-45.8		270	47.2
200	31	12,253	-55.8		284	43.7
175	31	13,093	-59.4		263	35.7
150	31	14,048	-63.1		254	35.4
125	30	15,155	-67.2		247	25.6
100	27	16,487	-71.7		231	15.5
80	22	17,796	-72.2			
60	18	19,510	-66.2			
50	17	20,624	-62.1			
40	16	22,016	-59.2			
30	14	23,833	-54.2			
20	5	26,447	-48.6			
15						

BUFFALO, N. Y. (995 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	182	10.4	79	311	1.7
1,000	30	137				
950	30	570	11.1	63	274	4.3
900	30	1,016	8.6	64	273	7.0
850	30	1,487	6.6	63	279	8.5
800	30	1,983	4.5	61	282	10.9
750	30	2,516	2.3	58	282	16.3
700	30	3,062	-.2	54	281	18.8
650	29	3,657	-3.2	50	278	24.1
600	29	4,281	-6.8	45	279	26.8
550	29	4,955	-11.0	44	282	29.1
500	29	5,680	-15.8	42	278	33.2
450	29	6,474	-21.5	41	277	34.0
400	29	7,323	-27.6	42	273	37.1
350	29	8,269	-34.9		270	41.0
300	29	9,326	-42.8		270	45.6
250	29	10,531	-51.4		269	49.7
200	29	11,956	-58.1		267	54.6
175	28	12,791	-59.1		273	50.5
150	24	13,748	-57.7		274	40.6
125	23	14,896	-58.2		272	34.0
100	22	16,295	-59.7		277	26.2
80	21	17,688	-59.8		279	19.6
60	19	19,473	-59.0		281	13.6
50	19	20,619	-58.1		290	9.1
40	16	22,021	-56.4		293	5.6
30	12	23,872	-53.5		302	2.5
20	8	26,505	-50.0			
15	5	28,401	-46.3			

BURRWOOD, LA. (1014 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	3	24.0	84	162	5.1
1,000	30	123	23.5	82	150	6.6
950	30	570	20.7	78	147	7.2
900	30	1,037	18.0	72	143	6.0
850	30	1,524	15.5	63	152	3.7
800	30	2,036	12.6	58	172	3.7
750	30	2,581	9.6	54	200	3.3
700	30	3,145	6.4	48	226	4.7
650	30	3,757	2.9	42	233	5.1
600	30	4,393	-.7	39	246	7.0
550	29	5,083	-4.9	34	262	8.5
500	29	5,824	-9.6		258	11.8
450	29	6,640	-15.5		256	14.0
400	29	7,506	-22.0		260	16.3
350	29	8,474	-29.3		264	20.0
300	29	9,555	-37.8		263	22.1
250	29	10,786	-46.6		265	27.0
200	28	12,237	-54.7		267	41.8
175	28	13,085	-57.7		270	46.6
150	28	14,050	-60.8		262	42.9
125	27	15,170	-64.6		256	29.9
100	27	16,521	-68.3		251	20.8
80	27	17,854	-68.7		240	14.4
60	27	19,592	-64.3		115	6.0
50	26	20,715	-60.5		103	10.3
40	24	22,117	-56.0		75	9.9
30	22	23,969	-52.3		65	11.7
20	17	26,626	-47.4			
15						

CAPE HATTERAS, N. C. (1017 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	4	19.4	84	147	1.6
1,000	31	148	19.3	76	181	3.5
950	31	590	17.0	72	203	6.0
900	31	1,048	14.8	68	230	5.4
850	31	1,530	12.0	70	262	6.2
800	31	2,036	9.6	61	268	7.8
750	31	2,575	7.0	52	266	8.4
700	31	3,134	4.2	49	266	8.5
650	30	3,737	.8	46	265	10.3
600	30	4,371	-2.6	39	269	12.4
550	30	5,058	-6.6	38	271	14.0
500	30	5,794	-11.4	39	266	17.5
450	30	6,601	-16.7	38	267	19.0
400	30	7,468	-23.1	37	265	22.9
350	29	8,431	-30.0	38	268	28.0
300	28	9,508	-38.3		267	30.7
250	28	10,735	-47.7		264	37.3
200	28	12,173	-57.8		264	43.9
175	27	13,006	-61.1		266	42.7
150	25	13,954	-62.2		273	44.7
125	24	15,075	-62.4		274	40.0
100	22	16,437	-64.7		278	31.7
80	21	17,793	-65.1		284	20.0
60	19	19,562	-63.0		292	9.3
50	17	20,687	-60.8		309	5.6
40	17	22,086	-56.9		335	3.3
30	14	23,924	-52.7		331	3.9
20	5	26,572	-49.0			
15						

CARIBOU, ME. (990 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	191	8.7	65	276	4.5
1,000	31	104				
950	31	535	8.7	55	288	8.9
900	31	976	5.9	57	304	13.0
850	31	1,442	2.9	62	302	14.6
800	31	1,930	-.6	65	303	17.3
750	31	2,452	-3.7	65	303	16.9
700	31	2,985	-6.6	64	301	20.2
650	31	3,567	-9.8	61	299	23.3
600	31	4,174	-13.2	56	295	24.9
550	29	4,840	-16.5	48	290	29.3
500	29	5,548	-20.7	45	290	35.2
450	28	6,327	-26.1	41	290	40.0
400	28	7,157	-32.0		294	44.5
350	27	8,089	-38.8		294	47.2
300	26	9,132	-45.6		292	52.6
250	26	10,328	-52.1		291	62.4
200	26	11,758	-55.3		287	58.1
175	25	12,607	-53.7		285	48.8
150	25	13,597	-53.8		290	42.7
125	21	14,785	-55.6		288	35.4
100	19	16,195	-57.1		290	27.4
80	16	17,597	-56.6		290	21.0
60	14	19,433	-56.3		298	12.8
50	12	20,601	-55.8		300	8.2
40	8	22,041	-54.0			
30	6	23,885	-51.6			
20						
15						

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

RAWINSONDE DATA

Average monthly values

MAY 1957

CHARLESTON, S. C. (1016 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	13	19.9	90	113	1.4
1,000	31	146	20.9	82	153	3.9
950	31	593	19.1	76	163	6.6
900	31	1,055	16.7	73	163	5.4
850	31	1,540	13.7	68	163	3.3
800	31	2,049	10.9	62	193	1.7
750	31	2,590	8.0	59	256	2.7
700	31	3,152	5.0	54	260	3.9
650	31	3,761	1.8	50	247	5.2
600	31	4,396	- 1.8	45	257	8.2
550	31	5,086	- 5.6	38	259	9.5
500	31	5,826	-10.2	41	261	10.9
450	31	6,639	-15.6	40	260	15.0
400	31	7,510	-21.8	40	259	16.1
350	31	8,478	-29.2	38	262	17.9
300	31	9,561	-37.5		249	21.6
250	31	10,793	-47.4		251	28.9
200	31	12,234	-57.6		251	34.8
175	31	13,070	-60.8		259	35.2
150	30	14,026	-61.8		279	34.0
125	27	15,159	-64.2		281	27.6
100	24	16,511	-67.2		276	17.9
80	22	17,858	-66.9		299	8.5
60	21	19,603	-64.5		48	3.7
50	21	20,724	-61.4		74	4.9
40	21	22,122	-57.1		76	7.8
30	19	23,963	-53.1		73	10.1

COLD BAY, ALASKA (1006 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	29	6.5	77	138	7.8
1,000	31	79			170	2.1
950	31	498	2.9	78	123	4.9
900	31	933	.4	80	114	5.2
850	31	1,389	- 1.8	76	103	4.9
800	31	1,870	- 3.6	67	108	4.1
750	31	2,386	- 5.6	62	140	3.7
700	31	2,917	- 8.4	63	132	4.3
650	31	3,494	-11.5	59	125	3.7
600	31	4,098	-15.1	55	114	2.9
550	31	4,752	-19.1	50	111	4.9
500	31	5,453	-23.7	48	98	4.3
450	30	6,227	-28.6	50	52	3.3
400	30	7,053	-34.4	48	354	5.4
350	30	7,972	-41.0		296	6.4
300	30	9,002	-47.7		301	7.8
250	30	10,189	-52.2		264	8.7
200	30	11,630	-50.4		274	7.4
175	30	12,502	-49.6		276	6.2
150	30	13,511	-48.6		255	6.6
125	30	14,706	-49.0		249	4.1
100	30	16,166	-49.2		231	4.5
80	29	17,631	-49.5		245	1.7
60	27	19,509	-49.4		168	4.9
50	27	20,700	-49.8		134	6.0
40	27	22,156	-49.9		121	8.9
30	17	24,048	-49.3		73	6.0

COLUMBIA, MO. (986 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	238	17.5	72	123	1.9
1,000	31	113				
950	31	556	17.3	64	162	5.6
900	31	1,014	14.5	67	192	8.4
850	31	1,495	11.7	66	216	11.1
800	31	2,000	9.2	59	236	14.0
750	31	2,541	6.6	51	243	16.7
700	31	3,096	3.2	49	245	16.7
650	31	3,698	- .2	47	243	17.9
600	31	4,330	- 4.0	43	245	20.2
550	31	5,012	- 8.1	37	247	21.6
500	31	5,745	-12.9	38	248	23.9
450	31	6,547	-18.4	36	249	27.4
400	31	7,409	-24.6	38	252	30.7
350	31	8,366	-31.8		250	33.4
300	31	9,436	-40.1		248	35.5
250	31	10,653	-49.5		241	42.3
200	31	12,081	-58.6		244	51.3
175	31	12,915	-59.8		253	45.6
150	31	13,879	-58.8		258	37.7
125	31	15,023	-59.3		254	32.4
100	31	16,411	-61.5		256	22.7
80	30	17,792	-61.8		262	14.2
60	29	19,577	-60.2		289	4.5
50	29	20,714	-59.4		355	2.7
40	29	22,115	-57.5		53	4.1
30	22	23,931	-54.8		5	2.1

DAYTON, OHIO (981 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	297	16.1	65	3	1.0
1,000	31	136				
950	31	572	15.3	64	265	2.1
900	31	1,029	12.5	64	242	5.8
850	31	1,507	10.2	56	251	9.3
800	31	2,009	7.6	51	271	10.5
750	31	2,545	5.0	44	269	12.8
700	31	3,099	2.2	40	272	15.7
650	31	3,697	- .9	41	271	19.0
600	30	4,330	- 4.6		275	18.6
550	30	5,006	- 8.7		272	21.0
500	30	5,742	-13.5		272	23.1
450	30	6,540	-19.1		273	28.6
400	30	7,402	-25.0		271	32.2
350	29	8,354	-32.1		267	35.0
300	29	9,423	-40.5		267	37.7
250	28	10,635	-49.9		263	42.3
200	27	12,061	-58.5		261	44.3
175	27	12,895	-60.2		265	44.5
150	26	13,868	-59.0		268	40.6
125	24	15,009	-59.7		269	34.8
100	23	16,398	-61.2		274	27.0
80	22	17,777	-61.7		279	17.3
60	21	19,558	-60.3		295	8.5
50	19	20,701	-58.8		319	4.7
40	18	22,103	-56.6		351	3.3
30	12	23,949	-53.6			

DENVER, COLO. (835 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,608	11.6	62	352	2.5
1,000	31	65				
950	31	511				
900	31	972				
850	31	1,456				
800	31	1,964	10.1	57	15	1.6
750	31	2,504	6.4	61	304	.8
700	31	3,060	2.5	64	264	2.3
650	31	3,659	- 2.0	69	256	3.9
600	31	4,285	- 6.7	74	262	8.0
550	31	4,960	-11.5	74	268	9.9
500	31	5,683	-16.7	69	269	12.2
450	31	6,475	-22.2	60	266	10.9
400	31	7,320	-28.9	51	256	10.7
350	31	8,259	-36.8	47	253	10.7
300	31	9,307	-44.9		244	12.6
250	31	10,502	-53.0		233	23.7
200	31	11,926	-56.1		237	27.2
175	31	12,775	-55.6		240	28.0
150	30	13,753	-55.2		246	24.3
125	30	14,915	-56.5		240	20.8
100	28	16,319	-59.0		248	15.7
80	24	17,715	-59.5		267	5.6
60	21	19,508	-59.3		11	1.9
50	18	20,651	-58.7		30	4.3
40	15	22,054	-57.1		41	3.7
30	13	23,889	-53.5		359	2.3

DODGE CITY, KANS. (922 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	792	15.5	75	119	4.7
1,000	31	91				
950	31	536				
900	31	995	15.1	69	125	5.6
850	31	1,477	12.3	67	170	5.8
800	31	1,983	10.3	57	223	6.2
750	31	2,526	7.2	55	245	10.1
700	31	3,081	3.3	55	248	14.2
650	31	3,685	- .8	53	249	16.1
600	31	4,312	- 5.0	49	251	17.3
550	31	4,992	- 9.5	47	254	20.4
500	31	5,720	-14.3	45	258	21.4
450	31	6,517	-19.7	42	253	25.1
400	31	7,375	-25.8	42	251	28.4
350	30	8,327	-32.9	40	250	25.6
300	30	9,392	-41.0		256	29.1
250	30	10,605	-50.3		247	33.2
200	30	12,032	-57.3		239	35.4
175	30	12,873	-58.3		270	30.3
150	29	13,846	-58.0		263	27.4
125	29	14,993	-58.0		265	22.5
100	29	16,388	-60.9		282	16.3
80	27	17,773	-62.0		281	9.7
60	25	19,549	-59.7		341	5.1
50	24	20,690	-59.1		25	3.5
40	21	22,101	-56.9			
30	13	23,918	-54.0			
20						

EL PASO, TEX. (877 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,195	22.5	26	277	4.7
1,000	31	36				
950	31	494				
900	31	966				
850	31	1,466	21.2	24	259	5.2
800	31	1,986	16.9	26	257	9.7
750	31	2,534	12.2	29	258	12.4
700	31	3,105	7.2	34	252	12.8
650	31	3,712	2.1	38	248	15.3
600	31	4,349	- 3.3	41	236	18.6
550	31	5,031	- 8.4	37	240	23.7
500	31	5,763	-13.3	32	246	24.5
450	31	6,567	-18.7		248	24.5
400	30	7,424	-24.8		255	25.4
350	29	8,381	-32.3		254	27.2
300	28	9,450	-40.5		268	33.6
250	27	10,665	-49.4		270	37.1
200	26	12,096	-57.1		271	35.9
175	26	12,938	-57.7		273	38.9
150	26	13,906	-59.0		270	36.1
125	26	15,041	-61.3		267	32.4
100	26	16,413	-64.8		266	25.1
80	26	17,769	-65.2		270	11.5
60	26	19,531	-61.8		305	3.5
50	25	20,661	-60.1		124	2.5
40	24	22,062	-57.1		62	4.5
30	22	23,908	-52.8			
20						

ELY, NEV. (805 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,908	10.0	57	195	2.5
1,000	31	61				
950	31	509				
900	31	968				
850	31	1,448				
800	31	1,958	10.5	55	207	2.5
750	31	2,499	6.7	55	227	4.7
700	31	3,053	2.3	58	233	5.6
650	31	3,650	- 2.4	61	252	7.8
600	31	4,276	- 7.3	62	257	7.6
550	31	4,951	-12.4	60	262	8.2
500	31	5,669	-17.5	52	263	8.0
450	31	6,458	-23.2	41	260	8.0
400	31	7,300	-30.0	40	260	8.0
350	30	8,240	-37.5		247	3.9
300	30	9,285	-45.6		75	.2
250	30	10,477	-53.3		320	4.7
200	29	11,902	-54.9		275	11.8
175	25	12,756	-52.9		264	12.2
150	25	13,750	-53.0		259	15.2
125	12	14,933	-55.1		276	12.0
100	6	16,328	-55.6			
80						
60						
50						
40						
30						
20						

FAIRBANKS, ALASKA (997 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	135	13.5	50	46	4.1
1,000	30	108			7	1.7
950	30	539	9.4	48	41	3.7
900	30	982	5.4	53	59	3.9
850	30	1,446	1.6	59	86	2.3
800	30	1,931	- 2.0	63	153	1.0
750	30	2,444	- 5.5	60	212	2.5
700	30	2,979	- 8.7	57	196	2.9
650	30	3,555	-12.3	55	209	2.9
600	30	4,158	-15.8	48	161	1.4
550	30	4,811	-19.9	46	287	1.0
500	30	5,508	-24.6	43	143	1.2
450	30	6,273	-29.5	41	250	1.7
400	29	7,099	-35.4	43	187	10.5
350	29	8,014	-42.1		172	6.6
300	29	9,041	-48.4		177	6.6
250	29	10,225	-52.6		191	8.2
200	29	11,667	-50.8		276	8.4
175	29	12,537	-50.3		264	3.1
150	29	13,544	-49.0		238	3.9
125	29	14,740	-48.7		216	2.1
100	29	16,202	-49.3		204	1.9
80	29	17,662	-49.3		209	2.5
60	28	19,553	-49.2		168	1.4
50	26	20,749	-49.2		98	2.5
40	24	22,212	-49.0		103	1.7
30	17	24,120	-47.8			
20	10	26,845	-45.3			

FLINT, MICH. (989 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	234	11.3	73	133	2.9
1,000	31	140				
950	31	573	10.8	65	157	3.3
900	31	1,021	9.4	62	215	5.2
850	31	1,493	7.4	64	262	8.7
800	31	1,991	5.5	57	271	11.7
750	31	2,522	3.4	52	267	14.6
700	31	3,074	.8	48	268	16.9
650	31	3,666	- 2.7	48	263	19.6
600	31	4,295	- 6.4	43	260	22.0
550	31	4,970	-10.4	37	259	26.2
500	31	5,697	-14.9	35	260	29.9
450	31	6,490	-20.4	36	264	31.9
400	29	7,344	-26.9		263	36.3
350	29	8,292	-33.9		263	41.4
300	29	9,353	-41.8		259	46.4
250	29	10,563	-50.4		260	53.0
200	29	11,991	-57.7		261	50.7
175	29	12,828	-59.2		262	49.5
150	29	13,796	-57.8		264	43.3
125	28	14,943	-57.8		267	34.2
100	26	16,330	-59.3		268	28.6
80	24	17,727	-60.0		277	19.6
60	22	19,525	-59.7		287	10.7
50	21	20,674	-58.9		304	7.2
40	17	22,087	-56.5		344	3.5
30	12	23,926	-53.5		13	3.9
20						

FORT WORTH, TEX. (991 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	178	22.5	74	149	5.1
1,000	31	98				
950	31	549	21.5	68	150	11.7
900	31	1,012	18.6	67	166	13.4
850	31	1,501	15.5	64	182	11.7
800	31	2,013	12.2	65	198	9.7
750	31	2,557	9.0	62	215	9.5
700	31	3,120	5.7	53	234	9.9
650	31	3,727	1.8	48	234	12.6
600	30	4,361	- 2.2	46	245	15.9
550	30	5,048	- 6.5	44	249	19.2
500	30	5,784	-11.5	36	250	21.2
450	29	6,586	-17.3		256	22.1
400	29	7,451	-23.9		257	26.0
350	27	8,410	-31.4		252	27.6
300	27	9,480	-40.0		251	28.0
250	27	10,696	-49.6		250	30.7
200	27	12,122	-58.4		254	37.3
175	27	12,956	-59.8		252	41.0
150	26	13,915	-60.6		253	41.0
125	25	15,045	-62.8		254	35.5
100	23	16,402	-65.8		251	22.1
80	22	17,757	-65.1		242	13.2
60	19	19,509	-62.3		224	2.1
50	19	20,638	-59.9		80	2.5
40	17	22,042	-56.7		68	4.1
30	14	23,869	-52.3		97	5.4
20	12	26,521	-46.8		39	5.4
15	6	28,467	-45.0			

GLASGOW, MONT. (931 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	695	16.4	43	91	7.2
1,000	31	82				
950	31	524				
900	31	986	15.5	42	112	11.1
850	31	1,467	11.4	49	123	9.3
800	31	1,970	7.3	56	134	6.6
750	31	2,503	3.2	61	137	3.3
700	31	3,054	- .4	60	196	.6
650	31	3,646	- 3.9	55	285	1.7
600	31	4,271	- 7.9	54	284	2.9
550	31	4,942	-12.2	44	308	4.1
500	31	5,664	-17.0	37	300	5.6
450	31	6,450	-22.6	35	293	6.6
400	31	7,299	-29.1	33	285	8.5
350	31	8,238	-36.7		290	11.5
300	31	9,285	-45.2		291	13.4
250	30	10,476	-54.2		274	11.7
200	29	11,881	-59.1		269	13.8
175	29	12,723	-56.4		271	14.0
150	28	13,708	-54.2		268	13.8
125	26	14,879	-54.2		271	13.8
100	26	16,305	-55.1		268	12.4
80	26	17,729	-55.5		277	10.5
60	25	19,553	-56.5		301	5.4
50	21	20,707	-56.7		339	4.3
40	20	22,127	-55.6		33	1.6
30	19	23,973	-53.8		90	6.0
20	9	26,625	-50.0			
15						

GRAND JUNCTION, COLO. (848 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,474	14.8	48	132	2.5
1,000	31	48				
950	31	498				
900	31	962				
850	31	1,449			65	1.6
800	31	1,961	12.7	43	167	2.5
750	31	2,502	8.3	47	222	3.1
700	31	3,065	3.5	51	241	6.8
650	31	3,660	- 1.5	56	239	8.7
600	31	4,292	- 6.8	62	239	10.9
550	31	4,962	-11.9	61	244	12.0
500	31	5,688	-17.0	51	242	13.2
450	31	6,475	-22.8	41	239	12.2
400	31	7,322	-29.5	42	233	11.5
350	31	8,259	-37.2	41	224	10.1
300	31	9,303	-45.6		233	8.2
250	31	10,495	-52.9		231	12.6
200	31	11,920	-55.3		238	21.2
175	30	12,772	-54.0		240	22.9
150	29	13,758	-54.0		242	22.3
125	29	14,923	-55.3		237	21.6
100	29	16,337	-57.4		240	16.5
80	29	17,741	-58.6		233	5.6
60	27	19,546	-59.1		151	1.6
50	27	20,689	-58.3		45	3.7
40	24	22,094	-56.8		86	2.9
30	21	23,922	-54.0		76	2.1
20						
15						

GREAT FALLS, MONT. (884 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,123	15.7	47	91	4.9
1,000	31	62				
950	31	509				
900	31	968				
850	31	1,454	13.1	48	86	7.0
800	31	1,960	8.8	54	91	6.2
750	31	2,497	4.6	60	102	3.9
700	31	3,049	.3	65	217	1.2
650	31	3,645	- 3.8	68	262	2.9
600	31	4,267	- 7.8	61	278	3.1
550	31	4,941	-11.8	47	269	4.1
500	31	5,662	-16.5	42	261	2.5
450	31	6,452	-22.0	37	279	3.9
400	31	7,302	-28.6	35	276	3.7
350	31	8,242	-36.4		269	4.9
300	31	9,290	-45.0		262	7.0
250	31	10,482	-54.3		256	10.3
200	29	11,891	-59.7		265	11.1
175	28	12,726	-57.3		274	11.5
150	26	13,709	-54.5		270	10.7
125	26	14,876	-54.9		270	11.7
100	24	16,297	-55.8		263	10.5
80	24	17,716	-56.0		265	7.0
60	22	19,550	-56.4		289	3.1
50	22	20,706	-56.7		50	1.2
40	22	22,121	-56.0		10	2.9
30	20	23,957	-54.3		53	8.0
20	7	26,536	-53.0			
15						

GREEN BAY, WIS. (990 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	210	11.5	71	79	1.6
1,000	31	125				
950	31	561	11.1	57	89	2.7
900	31	1,005	9.1	55	76	2.1
850	31	1,477	6.9	56	314	1.6
800	31	1,973	4.8	55	293	6.2
750	31	2,503	2.4	53	280	8.9
700	31	3,052	- .6	52	273	11.8
650	31	3,643	- 4.0	51	277	12.8
600	31	4,268	- 7.6	44	279	15.2
550	31	4,940	-11.6	35	274	17.9
500	31	5,663	-16.4	36	273	20.8
450	31	6,454	-22.0	40	270	20.8
400	31	7,302	-28.0	39	275	25.4
350	31	8,245	-35.3		269	36.5
300	31	9,300	-43.2		275	38.3
250	31	10,503	-51.4		267	48.4
200	31	11,927	-56.9		270	52.3
175	30	12,769	-56.5		268	39.0
150	30	13,748	-55.4		271	41.0
125	28	14,908	-56.3		283	28.6
100	28	16,319	-57.7		283	25.6
80	26	17,727	-57.9		288	16.9
60	24	19,547	-57.9			
50	23	20,694	-57.2			
40	19	22,114	-55.3			
30	16	23,946	-53.5			
20						
15						

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

RAWINSONDE DATA

Average monthly values

MAY 1957

GREENSBORO, N. C. (986 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	273	18.4	79	193	1.7
1,000	31	152				
950	31	596	18.9	65	208	6.4
900	31	1,057	16.3	64	227	5.8
850	31	1,541	13.1	63	250	6.2
800	31	2,048	10.2	59	287	6.0
750	31	2,588	7.1	50	297	7.2
700	31	3,147	4.1	45	290	8.7
650	31	3,754	.8	42	290	10.1
600	31	4,385	- 2.8	36	284	10.9
550	31	5,073	- 6.6	32	278	13.4
500	31	5,808	-11.4	34	279	15.3
450	31	6,619	-16.9	33	273	19.4
400	31	7,482	-22.9	36	264	23.3
350	31	8,446	-29.9		261	27.4
300	30	9,523	-38.3		257	31.3
250	29	10,749	-48.0		259	35.2
200	29	12,184	-57.7		256	40.6
175	29	13,018	-60.6		269	41.2
150	29	13,974	-60.6		275	34.4
125	29	15,106	-61.3		282	31.7
100	27	16,484	-63.7		280	19.4
80	26	17,845	-64.0		292	10.9
60	23	19,614	-61.5		344	5.1
50	22	20,746	-59.6		32	6.8
40	19	22,151	-56.3		80	7.4
30	17	23,984	-52.1		64	7.0
20	6	26,579	-48.6			

HILO, T. H. (1015 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	9	24.6	70	77	6.8
1,000	31	143	22.8	71	79	6.6
950	31	591	19.1	78	80	6.4
900	31	1,051	15.7	82	79	4.5
850	31	1,534	12.7	82	70	3.5
800	31	2,042	10.5	74	80	4.5
750	31	2,589	9.2	53	358	4.3
700	31	3,149	7.4	43	354	1.6
650	31	3,765	5.0		313	3.3
600	31	4,406	2.1		296	7.0
550	31	5,103	- 2.1		291	9.5
500	31	5,854	- 6.9		280	12.0
450	31	6,675	-12.5		266	14.6
400	31	7,556	-19.1		270	18.8
350	31	8,535	-26.0		267	21.6
300	31	9,631	-34.0		273	25.3
250	31	10,883	-43.1		266	30.5
200	31	12,348	-54.3		274	33.4
175	31	13,192	-60.1		277	34.8
150	31	14,139	-66.0		277	35.2
125	31	15,230	-70.6		273	30.7
100	31	16,540	-73.5		284	15.3
80	31	17,844	-71.2		52	2.9
60	31	19,573	-63.9		91	15.3
50	31	20,696	-61.0		89	19.8
40	31	22,092	-57.6		93	25.4
30	28	23,923	-53.3		89	24.9
20	19	26,566	-45.5		87	25.3

INTERNAT. FALLS, MINN. (972 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	360	12.0	52	45	1.4
1,000	31	120				
950	31	554	12.5	44	75	1.2
900	31	1,003	9.2	49	161	.2
850	31	1,473	5.8	54	260	2.1
800	31	1,966	2.6	56	279	4.5
750	31	2,495	- .1	55	291	5.6
700	31	3,035	- 3.2	54	304	7.2
650	31	3,621	- 6.3	47	305	9.1
600	31	4,240	- 9.5	42	306	11.1
550	31	4,906	-13.5	38	302	14.8
500	31	5,625	-18.3	35	296	17.3
450	31	6,407	-24.0	37	293	18.5
400	30	7,253	-30.4	39	289	21.8
350	30	8,187	-37.4		282	24.5
300	29	9,231	-45.4		282	31.7
250	29	10,422	-53.7		275	34.4
200	29	11,838	-57.6		272	38.7
175	28	12,678	-55.9		275	33.2
150	28	13,661	-54.7		277	28.9
125	27	14,825	-54.5		278	26.0
100	27	16,248	-55.6		281	23.3
80	25	17,667	-56.5		282	18.1
60	24	19,486	-56.8		300	9.1
50	23	20,642	-56.7		306	7.0
40	19	22,063	-55.4		7	5.2
30	7	23,855	-53.4			
20						

JACKSON, MISS. (1003 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	101	21.3	80	142	2.9
1,000	31	125			134	2.5
950	31	576	20.3	68	139	6.6
900	31	1,035	17.1	71	162	7.6
850	31	1,521	14.4	62	182	7.6
800	31	2,031	11.8	54	205	5.6
750	31	2,574	8.9	50	218	6.4
700	31	3,137	5.5	45	223	5.4
650	31	3,743	2.0	41	240	4.7
600	31	4,380	- 1.9	41	260	5.8
550	31	5,068	- 6.1	41	264	9.3
500	31	5,806	-10.7	36	255	13.2
450	31	6,616	-15.9		263	15.2
400	31	7,485	-22.3		260	18.5
350	31	8,451	-29.8		261	19.4
300	31	9,530	-38.1		255	21.2
250	31	10,758	-47.5		250	24.5
200	31	12,198	-57.0		261	37.1
175	31	13,037	-59.4		265	40.0
150	31	13,998	-60.4		264	37.1
125	31	15,126	-63.5		259	31.7
100	31	16,483	-67.0		249	22.0
80	28	17,827	-66.6		252	11.8
60	26	19,574	-63.8		144	2.9
50	25	20,698	-60.8		89	3.3
40	24	22,095	-57.1		74	5.8
30	23	23,937	-53.1		77	7.4
20	11	26,576	-47.6			

JACKSONVILLE, FLA (1016 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	6	21.9	87	131	3.9
1,000	31	148	21.8	81	136	6.2
950	31	593	19.7	77	149	7.0
900	31	1,057	17.2	73	161	3.5
850	31	1,543	14.2	72	227	1.9
800	31	2,053	11.5	63	266	4.3
750	31	2,595	8.4	61	269	4.9
700	31	3,157	5.0	57	270	6.0
650	31	3,763	1.5	59	267	7.6
600	31	4,399	- 2.0	51	254	8.7
550	31	5,088	- 5.8	42	249	9.9
500	31	5,826	-10.4	42	255	12.2
450	31	6,636	-15.7	46	250	13.4
400	31	7,508	-22.0	46	249	15.3
350	31	8,476	-29.4	44	248	16.1
300	31	9,557	-37.9		245	21.0
250	31	10,786	-47.8		242	27.0
200	30	12,226	-57.6		248	35.7
175	30	13,062	-60.5		256	40.8
150	30	14,015	-63.0		265	39.8
125	28	15,125	-66.0		267	36.9
100	24	16,462	-69.5		[illegible]	27.4
80	23	17,792	-70.2		273	16.1
60	19	19,522	-66.2		130	1.4
50	18	20,635	-62.0		92	4.5
40	18	22,029	-57.4		83	7.2
30	13	23,862	-53.5		85	12.6
20						

KING SALMON, ALASKA (1009 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	15	11.6	52	131	2.3
1,000	31	90			199	3.3
950	31	518	6.5	60	118	4.3
900	31	956	2.9	63	97	5.8
850	31	1,416	- .1	63	100	6.8
800	31	1,898	- 3.0	60	118	6.6
750	31	2,414	- 5.9	55	117	7.0
700	31	2,944	- 8.8	55	109	6.6
650	31	3,521	-12.4	53	106	7.4
600	31	4,122	-16.2	53	101	7.8
550	31	4,771	-20.4	51	97	8.4
500	31	5,470	-25.1	49	88	7.8
450	31	6,234	-30.2	49	88	8.5
400	31	7,055	-35.7	49	86	9.5
350	31	7,972	-42.0		89	9.9
300	31	9,000	-48.5		99	9.9
250	31	10,187	-52.6		115	9.3
200	31	11,634	-50.2		104	5.6
175	31	12,508	-49.7		120	5.6
150	31	13,520	-48.8		151	4.9
125	31	14,717	-48.9		152	3.7
100	31	16,182	-49.2		144	5.1
80	30	17,646	-49.7		151	5.6
60	30	19,529	-49.5		141	4.7
50	30	20,723	-49.8		137	5.1
40	29	22,181	-49.4		118	5.4
30	27	24,070	-48.7		105	6.0
20	24	26,751	-47.1		89	9.9
15	22	28,660	-45.3		84	12.2
10	5	31,334	-43.8			

KOTZEBUE, ALASKA (1015 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	5	3.1	76	79	1.4
1,000	31	129	3.8	63	97	3.5
950	31	547	2.9	55	106	6.0
900	31	981	.7	51	119	6.4
850	31	1,438	- 1.4	47	127	6.4
800	31	1,919	- 3.4	46	121	6.0
750	31	2,434	- 5.9	44	125	5.8
700	31	2,965	- 8.7	40	137	5.2
650	31	3,539	-12.0	40	142	5.1
600	31	4,143	-15.7	41	128	5.8
550	31	4,794	-19.9	40	143	4.3
500	31	5,494	-24.6	38	156	2.3
450	31	6,259	-29.8	39	181	1.4
400	31	7,082	-35.7		223	2.3
350	31	7,996	-42.4		232	4.1
300	31	9,021	-48.8		199	3.7
250	31	10,202	-53.0		150	3.9
200	30	11,637	-50.9		135	7.4
175	30	12,506	-49.9		154	8.5
150	30	13,515	-48.7		143	6.0
125	30	14,711	-48.8		147	7.0
100	30	16,172	-49.3		146	5.4
80	30	17,631	-49.4		140	4.7
60	30	19,515	-48.9		139	4.9
50	28	20,708	-49.1		121	6.2
40	28	22,170	-48.8		127	6.0
30	25	24,048	-48.6		106	7.2
20	13	26,739	-47.7			
15						
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LAKE CHARLES, LA. (1012 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	5	22.9	84	155	3.5
1,000	31	112	23.0	79	152	6.0
950	31	563	20.8	73	141	8.4
900	31	1,025	18.1	70	142	8.5
850	31	1,513	15.7	59	142	6.8
800	31	2,026	13.3	48	189	5.6
750	31	2,573	10.2	45	197	6.0
700	31	3,137	7.0	42	218	6.8
650	31	3,747	3.2	36	234	7.0
600	31	4,387	- .9	35	242	9.7
550	31	5,075	- 5.3		257	10.7
500	30	5,818	- 9.9		262	13.8
450	30	6,630	-15.5		265	15.9
400	30	7,500	-22.2		269	19.4
350	30	8,466	-29.5		267	19.0
300	30	9,546	-37.9		271	20.0
250	30	10,773	-47.6		265	28.0
200	30	12,213	-56.6		268	38.9
175	30	13,053	-58.9		273	41.4
150	30	14,013	-61.4		270	40.6
125	30	15,136	-64.6		262	38.7
100	30	16,486	-67.5		263	22.5
80	30	17,823	-68.0		231	8.9
60	29	19,565	-63.9		69	3.9
50	29	20,689	-60.4		81	8.9
40	29	22,088	-56.7		88	13.2
30	27	23,920	-52.3			
20	11	26,536	-48.2			
15						
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LANDER, WYO. (825 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,696	11.9	64	220	1.2
1,000	31	56				
950	31	499				
900	31	961				
850	31	1,446				
800	31	1,956	10.8	57	156	1.6
750	31	2,493	6.9	59	86	.8
700	31	3,053	2.5	64	288	.8
650	31	3,649	- 2.2	69	319	2.7
600	31	4,278	- 7.0	72	305	4.7
550	31	4,948	-11.9	70	279	5.1
500	31	5,673	-16.8	61	262	4.3
450	31	6,459	-22.4	54	246	5.1
400	31	7,309	-29.0	48	258	7.4
350	31	8,247	-36.8	47	237	6.2
300	31	9,293	-45.7		207	6.4
250	29	10,475	-54.9		204	10.1
200	28	11,882	-57.6		229	11.5
175	27	12,732	-55.4		247	12.6
150	27	13,717	-54.0		247	13.8
125	25	14,878	-54.9		243	11.8
100	25	16,299	-56.3		247	10.9
80	24	17,713	-57.1		250	6.4
60	23	19,526	-58.2		263	2.5
50	23	20,673	-57.8		33	2.3
40	22	22,080	-56.8		54	5.1
30	16	23,905	-54.7		55	7.2
20						
15						
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LAS VEGAS, NEV. (932 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	660	23.8	22	241	7.4
1,000	30	38				
950	30	491				
900	30	962	21.3	25	232	8.7
850	30	1,453	16.8	30	226	8.7
800	30	1,964	12.1	35	226	8.2
750	30	2,504	7.1	40	225	7.0
700	30	3,062	2.1	45	242	6.6
650	30	3,659	- 2.7	49	259	5.1
600	30	4,284	- 7.7	51	242	5.2
550	30	4,957	-12.5	46	251	7.8
500	30	5,676	-17.4	35	263	8.5
450	30	6,463	-23.1		278	10.1
400	30	7,308	-29.6		280	12.4
350	30	8,245	-36.8		289	17.1
300	29	9,296	-44.2		285	22.9
250	28	10,493	-50.8		271	30.9
200	28	11,933	-54.1		268	35.5
175	27	12,792	-54.0		265	33.0
150	27	13,779	-54.9		260	32.6
125	26	14,938	-55.8		260	25.3
100	25	16,350	-58.5		252	16.9
80	23	17,747	-59.4		237	10.3
60	22	19,555	-58.6		182	1.0
50	21	20,696	-58.2		114	2.7
40	21	22,107	-55.9		77	4.1
30	19	23,952	-52.9		105	4.1
20	6	26,556	-49.8			
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LITTLE ROCK, ARK. (1004 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	79	21.5	77	145	3.3
1,000	31	110			158	4.1
950	31	559	20.2	66	175	9.1
900	31	1,019	17.1	67	190	9.1
850	31	1,505	13.9	65	204	8.0
800	31	2,014	11.0	55	211	7.0
750	31	2,560	8.0	[illegible]	230	9.1
700	31	3,116	4.8	47	240	9.9
650	31	3,719	1.0	45	239	12.6
600	31	4,356	- 3.2	46	243	11.7
550	31	5,043	- 7.3	47	253	14.6
500	31	5,774	-12.4	45	259	16.1
450	31	6,581	-17.7	42	267	19.2
400	31	7,442	-23.8		265	22.3
350	30	8,401	-31.3		267	27.4
300	30	9,475	-39.3		267	30.9
250	30	10,699	-48.6		265	38.3
200	29	12,136	-58.0		273	42.0
175	29	12,972	-60.2		274	42.3
150	29	13,933	-59.7		268	43.9
125	28	15,070	-61.9		266	41.0
100	26	16,436	-65.1			
80	26	17,795	-64.8			
60	23	19,563	-62.5			
50	23	20,691	-60.8			
40	23	22,091	-57.2			
30	16	23,917	-53.1			
20						

McGRATH, ALASKA (999 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	103	13.4	38	339	1.0
1,000	31	97			273	1.7
950	31	523	9.5	45	17	2.9
900	31	970	5.3	52	88	1.0
850	31	1,433	1.4	57	126	2.9
800	31	1,918	- 2.0	59	137	4.7
750	31	2,430	- 5.2	56	133	4.9
700	31	2,966	- 8.7	55	141	5.4
650	31	3,538	-12.2	50	142	5.6
600	31	4,143	-15.7	45	146	5.4
550	31	4,796	-19.7	42	132	4.7
500	31	5,495	-24.4	41	136	8.0
450	31	6,260	-29.7	41	131	9.9
400	31	7,084	-35.4	41	131	7.0
350	31	7,999	-42.2		115	7.8
300	31	9,024	-49.0		120	8.2
250	31	10,205	-52.7		129	8.9
200	30	11,649	-51.3		134	7.8
175	30	12,516	-50.3		154	5.6
150	30	13,524	-49.0		147	7.6
125	30	14,719	-48.8		143	7.2
100	30	16,180	-49.4		160	5.2
80	29	17,639	-49.4		145	6.0
60	28	19,521	-49.3		162	6.2
50	26	20,714	-49.5		146	4.7
40	24	22,175	-49.5		100	7.4
30	17	24,079	-48.6		90	11.3
20	9	26,825	-45.1			

MAZATLAN, MEXICO (1008 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	14	24.6	74		
1,000	30	86	23.9	74		
950	30	536	22.3	55		
900	30	1,005	22.8	35		
850	30	1,500	20.5			
800	30	2,021	17.5			
750	30	2,580	14.0			
700	30	3,146	10.3			
650	29	3,767	6.1			
600	29	4,407	1.9			
550	29	5,105	- 2.8			
500	29	5,852	- 7.8			
450	29	6,671	-13.3			
400	28	7,550	-19.6			
350	28	8,528	-26.9			
300	23	9,622	-35.3			
250	16	10,873	-44.6			
200	9	12,372	-54.4			
175	5	13,177	-58.5			
150						
125						
100						
80						
60						
50						
40						
30						
20						

MEDFORD, OREG. (965 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	401	18.3	53	309	6.4
1,000	31	92				
950	31	535	17.4	50	314	7.4
900	31	991	13.8	55	310	7.2
850	31	1,469	9.8	61	297	5.4
800	31	1,970	5.9	67	270	2.9
750	31	2,502	2.2	68	222	2.9
700	31	3,048	- 1.6	65	210	5.1
650	31	3,640	- 5.3	57	219	6.4
600	31	4,258	- 9.1	50	224	4.5
550	31	4,928	-13.6	43	226	4.7
500	31	5,643	-18.6	39	226	4.9
450	31	6,428	-24.3	39	225	5.4
400	31	7,268	-30.4	37	191	5.4
350	31	8,201	-37.7		185	4.3
300	30	9,252	-45.6		183	8.5
250	30	10,444	-53.1		240	6.6
200	30	11,866	-55.9		274	9.3
175	30	12,717	-54.6		255	9.7
150	30	13,704	-53.7		246	10.5
125	30	14,873	-54.5		227	10.3
100	30	16,295	-56.0		223	8.7
80	30	17,710	-56.5		224	6.4
60	30	19,535	-56.4		194	1.2
50	29	20,692	-56.8		120	3.3
40	25	22,115	-55.7		78	5.6
30	18	23,963	-53.8		64	7.2
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MIAMI, FLA. (1016 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	4	24.4	85	129	4.3
1,000	31	141	24.2	79	120	7.0
950	31	593	21.3	79	114	8.4
900	31	1,057	18.4	77	112	7.4
850	31	1,546	15.6	72	127	3.5
800	31	2,058	12.8	65	173	2.7
750	31	2,602	9.8	58	211	4.5
700	31	3,167	6.7	54	234	6.8
650	31	3,778	3.2	52	231	6.0
600	31	4,418	- .4	52	220	8.2
550	31	5,108	- 4.4	48	216	8.2
500	31	5,853	- 9.1	43	227	9.1
450	31	6,671	-14.3	46	238	10.5
400	31	7,544	-20.4	46	249	14.4
350	30	8,518	-27.4	45	251	17.3
300	30	9,606	-35.9	47	241	22.1
250	30	10,846	-45.2		252	26.6
200	30	12,301	-54.8		267	35.0
175	30	13,145	-59.2		270	31.5
150	28	14,101	-63.2		281	25.1
125	27	15,208	-67.3		291	20.6
100	23	16,534	-70.9		287	10.3
80	22	17,853	-70.8		310	4.1
60	19	19,574	-65.6		87	9.7
50	18	20,695	-60.5		85	13.4
40	18	22,094	-56.9		83	17.3
30	16	23,940	-52.3		86	21.4
20	5	26,599	-47.8			

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

RAWINSONDE DATA

Average monthly values

MIDLAND, TEX. (912 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	871	21.2	55	107	7.2
1,000--	31	63				
950----	31	515				
900----	31	986	20.7	53	114	8.2
850----	31	1,478	17.4	53	147	11.1
800----	31	1,993	14.5	49	185	7.4
750----	31	2,537	11.1	44	230	9.1
700----	31	3,107	7.0	41	244	13.8
650----	31	3,711	2.4	41	252	17.9
600----	31	4,353	- 2.3	39	256	21.6
550----	31	5,038	- 6.9	31	254	24.1
500----	31	5,775	-11.6		254	24.7
450----	31	6,580	-17.2		252	26.0
400----	30	7,444	-23.3		250	27.8
350----	30	8,405	-31.0		252	29.7
300----	29	9,480	-39.4		259	33.6
250----	29	10,702	-48.5		259	38.1
200----	29	12,137	-57.1		261	41.2
175----	28	12,981	-59.1		262	42.0
150----	28	13,942	-60.7		261	41.2
125----	26	15,069	-62.2		269	37.3
100----	23	16,444	-64.9			
80-----	22	17,796	-65.8			
60-----	21	19,553	-61.9			
50-----	21	20,683	-60.4			
40-----	21	22,080	-57.2			
30-----	20	23,913	-52.9			
20-----	6	26,515	-49.6			

MONTGOMERY, ALA. (1008 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	61	21.3	83	186	1.6
1,000--	31	133	22.8	72	141	1.9
950----	31	582	21.1	63	130	4.5
900----	31	1,047	17.8	65	126	5.4
850----	31	1,533	14.2	65	144	5.4
800----	31	2,043	11.4	59	169	3.5
750----	31	2,586	8.4	52	208	3.7
700----	31	3,147	5.4	45	248	3.9
650----	31	3,757	1.9	42	266	5.1
600----	31	4,391	- 1.8	44	267	6.8
550----	31	5,080	- 5.8	41	266	9.9
500----	31	5,819	-10.5	41	262	10.3
450----	31	6,631	-15.8	39	261	12.6
400----	31	7,499	-22.0	37	262	16.1
350----	31	8,467	-29.3		255	18.1
300----	31	9,549	-37.8		248	20.4
250----	30	10,776	-47.4		248	23.1
200----	30	12,218	-56.7		260	34.0
175----	29	13,056	-59.0		263	39.0
150----	28	14,016	-60.6		264	39.2
125----	28	15,143	-63.2		263	34.2
100----	28	16,503	-66.4		258	25.3
80-----	28	17,850	-66.7		258	15.5
60-----	27	19,595	-63.9		195	1.0
50-----	24	20,725	-60.8		104	4.3
40-----	24	22,122	-57.3		64	4.3
30-----	20	23,962	-52.9		93	5.6
20-----						

NANTUCKET, MASS. (1015 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	14	10.3	83	259	1.7
1,000--	31	135	11.2	72	257	6.2
950----	31	569	12.3	58	271	13.0
900----	31	1,017	10.5	53	285	12.6
850----	31	1,491	8.0	54	289	13.8
800----	31	1,990	5.7	53	289	16.1
750----	31	2,523	3.0	53	287	21.2
700----	31	3,071	- .1	56	284	21.6
650----	31	3,665	- 3.2	49	286	23.3
600----	31	4,291	- 6.3	40	288	26.2
550----	31	4,965	-10.0		285	28.4
500----	31	5,694	-14.9		279	24.5
450----	31	6,488	-20.3		282	31.1
400----	31	7,345	-26.4		279	33.2
350----	31	8,296	-33.3		272	35.4
300----	30	9,364	-41.2		265	40.0
250----	30	10,576	-50.4		263	46.2
200----	30	12,002	-58.6			
175----	30	12,836	-60.2			
150----	30	13,796	-59.9			
125----	30	14,935	-60.1			
100----	29	16,318	-61.7			
80-----	28	17,697	-61.8			
60-----	26	19,478	-60.2			
50-----	25	20,620	-58.9			
40-----	24	22,022	-57.2			
30-----	22	23,858	-53.8			
20-----	9	26,516	-50.7			

NASHVILLE, TENN. (995 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	177	20.1	75	331	1.0
1,000--	31	135				
950----	31	581	19.2	61	167	2.1
900----	31	1,042	16.1	63	193	6.0
850----	31	1,526	12.9	63	204	8.2
800----	31	2,033	10.2	56	223	7.6
750----	31	2,573	7.2	53	230	7.6
700----	31	3,131	3.8	47	250	8.4
650----	31	3,732	.4	46	260	8.5
600----	31	4,367	- 3.5	43	267	9.9
550----	31	5,049	- 7.7	42	269	12.8
500----	31	5,785	-12.0	35	264	15.3
450----	30	6,589	-17.5		267	19.4
400----	30	7,452	-24.0		268	20.6
350----	30	8,411	-31.2		263	25.3
300----	30	9,484	-39.4		257	25.8
250----	30	10,703	-48.9		255	30.1
200----	30	12,133	-58.5		256	38.7
175----	30	12,965	-60.8		263	39.0
150----	30	13,921	-60.6		266	36.1
125----	29	15,057	-62.4		263	35.4
100----	29	16,423	-64.7		273	18.5
80-----	29	17,782	-64.8		271	9.7
60-----	27	19,543	-63.1		281	2.7
50-----	26	20,668	-60.7		71	2.5
40-----	26	22,063	-57.5		54	4.9
30-----	24	23,900	-53.5		52	3.5
20-----	6	26,560	-48.7			

N.Y. INT. AP, IDLEWILD (1016 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	5	15.3	65	283	3.3
1,000--	31	139	15.2	61	279	5.1
950----	31	575	13.5	55	288	9.1
900----	31	1,026	11.0	60	286	12.8
850----	31	1,501	8.7	59	289	15.3
800----	31	2,001	6.7	54	288	17.7
750----	31	2,536	3.8	54	288	19.8
700----	31	3,086	.6	55	286	22.7
650----	31	3,681	- 2.6	49	289	25.6
600----	31	4,309	- 6.0	40	288	27.4
550----	31	4,987	- 9.8	38	288	29.3
500----	30	5,714	-14.4	35	287	32.6
450----	30	6,513	-19.8	37	287	36.5
400----	30	7,368	-25.7	33	285	40.4
350----	30	8,323	-32.6		284	45.8
300----	29	9,389	-40.9		281	50.1
250----	29	10,604	-49.7		280	57.7
200----	29	12,034	-57.8		281	60.6
175----	28	12,872	-60.3		281	58.7
150----	28	13,833	-59.5		282	50.9
125----	26	14,970	-59.7		286	44.5
100----	22	16,362	-60.8		285	40.4
80-----	21	17,744	-61.4		288	33.0
60-----	18	19,527	-59.0		289	18.8
50-----	17	20,672	-58.0		296	11.3
40-----	13	22,109	-55.6		298	1.6
30-----	10	23,970	-52.8			
20-----						

NOME, ALASKA (1014 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	7	5.7	71	72	3.5
1,000--	31	119	5.2	66	77	4.3
950----	31	539	3.1	59	97	5.6
900----	31	973	1.0	58	119	6.2
850----	31	1,430	- 1.2	55	135	6.8
800----	31	1,912	- 3.2	48	119	6.6
750----	31	2,422	- 5.7	47	124	8.9
700----	31	2,959	- 8.3	45	127	8.7
650----	31	3,532	-11.5	45	131	7.6
600----	31	4,140	-14.8	44	135	7.8
550----	31	4,796	-18.9	46	134	7.6
500----	31	5,496	-23.6	46	128	7.8
450----	31	6,263	-29.0	46	156	7.8
400----	31	7,088	-34.9	46	154	11.3
350----	30	8,005	-41.6		141	8.7
300----	30	9,032	-48.8		166	5.2
250----	30	10,214	-53.0		154	7.2
200----	30	11,654	-51.3		162	7.2
175----	30	12,525	-49.0		203	9.3
150----	30	13,536	-48.3		163	6.0
125----	30	14,735	-48.2		154	5.1
100----	30	16,200	-48.8		147	7.6
80-----	30	17,665	-48.5		139	8.0
60-----	30	19,555	-48.5		150	6.6
50-----	29	20,753	-48.6		134	6.2
40-----	29	22,218	-48.4		137	7.0
30-----	24	24,096	-48.7		125	9.5
20-----	13	26,747	-48.2			
15-----						

NORFOLK, VA. (1016 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	9	18.6	79	169	3.5
1,000--	31	147	18.6	75	181	6.4
950----	31	589	17.2	69	223	8.7
900----	31	1,047	14.7	68	266	8.4
850----	31	1,529	11.8	64	285	9.7
800----	31	2,034	9.2	52	296	9.3
750----	31	2,575	6.7	44	293	9.7
700----	31	3,131	3.6	41	283	10.5
650----	31	3,733	.3	39	280	12.0
600----	30	4,364	- 3.6		274	15.3
550----	30	5,051	- 7.4		276	18.8
500----	29	5,782	-12.1		273	22.7
450----	29	6,590	-17.7		272	25.4
400----	29	7,451	-24.0		270	29.5
350----	29	8,411	-31.4		268	33.8
300----	29	9,484	-39.6		267	39.2
250----	29	10,706	-48.9		269	43.5
200----	28	12,141	-58.7		266	46.0
175----	27	12,970	-61.7		271	45.8
150----	24	13,907	-61.8		275	44.9
125----	19	15,019	-62.4		277	40.6
100----	13	16,351	-62.8		274	36.9
80-----	10	17,739	-63.9		276	26.0
60-----	8	19,508	-62.2			
50-----	6	20,622	-60.1			
40-----						
30-----						
20-----						
15-----						

NORTH PLATTE, NEBR. (914 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	848	13.3	78	110	2.3
1,000--	31	83				
950----	31	521				
900----	31	980	13.3	72	126	4.3
850----	31	1,459	10.6	69	173	4.7
800----	31	1,962	7.7	71	216	6.6
750----	31	2,498	5.0	70	255	7.6
700----	31	3,052	1.6	66	280	9.1
650----	31	3,645	- 2.2	63	276	8.0
600----	31	4.277	- 6.2	59	268	7.2
550----	31	4,949	-10.7	50	266	8.2
500----	31	5,678	-15.7	46	267	10.9
450----	31	6,468	-21.4	43	261	12.8
400----	31	7,321	-28.0	44	254	15.9
350----	30	8,261	-35.4	43	252	18.1
300----	30	9,315	-43.5		253	21.4
250----	30	10,518	-51.4		243	27.2
200----	30	11,947	-56.6		246	33.8
175----	30	12,791	-56.5		248	30.3
150----	29	13,771	-54.8		251	26.6
125----	29	14,932	-56.2		254	21.6
100----	29	16,343	-57.7		258	17.7
80-----	29	17,743	-59.1		259	6.8
60-----	27	19,541	-58.8		303	4.3
50-----	26	20,683	-58.4		68	3.7
40-----	25	22,094	-56.4		50	2.7
30-----	17	23,945	-53.9		63	2.1
20-----						
15-----						

OAKLAND, CALIF. (1013 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	6	16.2	68	271	9.5
1,000--	31	113	14.6	70	266	9.9
950----	31	545	12.5	73	259	9.3
900----	31	999	11.3	62	261	7.4
850----	31	1,474	9.1	58	248	6.0
800----	31	1,974	6.2	54	235	5.6
750----	31	2,507	3.4	44	236	6.8
700----	31	3,058	.1	39	239	6.6
650----	31	3,651	- 3.3	35	243	7.6
600----	31	4,277	- 7.3		246	8.2
550----	31	4,952	-11.9		255	9.7
500----	31	5,671	-17.2	33	265	11.8
450----	31	6,461	-22.6		281	16.3
400----	31	7,307	-28.8		284	21.2
350----	31	8,247	-36.3		287	23.9
300----	31	9,297	-44.6		288	27.4
250----	31	10,495	-52.6		291	31.9
200----	31	11,918	-56.3		288	32.2
175----	31	12,767	-55.7		282	27.4
150----	30	13,749	-55.1		273	26.2
125----	30	14,910	-56.6		278	20.6
100----	28	16,321	-59.1		274	14.4
80-----	28	17,719	-58.8		247	7.4
60-----	27	19,529	-58.1		170	2.9
50-----	23	20,673	-58.0		63	1.6
40-----	23	22,082	-56.3		57	2.9
30-----	21	23,914	-53.5		51	3.9
20-----	15	26,560	-48.1		273	6.4
15-----	10	28,460	-44.2			

OKLAHOMA CITY, OKLA. (966 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	391	18.2	84	145	3.9
1,000--	31	96				
950----	31	536	19.4	71	145	6.6
900----	31	1,003	17.2	66	170	10.9
850----	31	1,488	14.0	65	196	11.3
800----	31	1,998	11.5	54	216	11.5
750----	31	2,539	8.2	53	226	9.9
700----	31	3,100	4.3	54	243	10.5
650----	31	3,701	.4	51	242	12.6
600----	31	4,336	- 3.7	43	245	14.2
550----	30	5,022	- 7.6	35	248	18.1
500----	29	5,753	-12.4	35	250	21.0
450----	29	6,554	-18.1		257	22.0
400----	29	7,416	-24.5		265	22.0
350----	29	8,373	-31.7		269	24.7
300----	29	9,443	-39.7		274	27.6
250----	29	10,662	-48.6		270	30.3
200----	29	12,096	-57.3		259	30.5
175----	29	12,934	-59.1		256	31.7
150----	29	13,896	-59.2		265	33.0
125----	28	15,032	-59.4		262	28.2
100----	26	16,423	-61.8		264	22.1
80-----	26	17,797	-62.3		269	11.5
60-----	24	19,576	-60.2		302	3.7
50-----	22	20,714	-58.7		256	1.4
40-----	20	22,117	-56.1			
30-----	17	23,968	-51.7			
20-----	9	26,621	-47.3			
15-----						

OMAHA, NEBR. (965 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	403	15.2	69	116	3.3
1,000--	31	98				
950----	31	536	15.5	63	129	3.3
900----	31	993	12.7	64	182	5.1
850----	31	1,471	9.9	65	228	6.2
800----	31	1,972	7.2	66	234	9.5
750----	31	2,511	4.8	61	241	10.1
700----	31	3,061	1.6	57	242	11.7
650----	31	3,659	- 1.8	49	245	13.0
600----	31	4,287	- 5.6	48	248	15.2
550----	31	4,965	- 9.8	40	249	17.1
500----	31	5,692	-14.9	39	252	18.6
450----	31	6,488	-20.5	38	247	22.7
400----	31	7,342	-26.8	34	250	26.8
350----	31	8,290	-33.9		243	31.5
300----	31	9,351	-42.1		238	38.3
250----	31	10,560	-50.7		234	44.9
200----	31	11,985	-58.0		239	49.5
175----	31	12,824	-57.8		246	42.0
150----	30	13,797	-56.6		257	35.2
125----	30	14,951	-57.5		255	27.8
100----	30	16,353	-59.3		253	20.0
80-----	30	17,744	-60.5		267	12.0
60-----	30	19,539	-59.5		274	5.1
50-----	30	20,679	-59.0		343	1.6
40-----	29	22,084	-57.0		13	2.7
30-----	25	23,915	-54.1		346	1.0
20-----	6	26,485	-50.5			

PEORIA, ILL. (991 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	201	16.2	70	130	2.5
1,000--	31	120				
950----	31	565	14.9	64	167	6.2
900----	31	1,013	12.8	65	201	8.7
850----	31	1,492	10.6	60	224	10.1
800----	31	1,995	8.1	52	243	13.0
750----	31	2,537	5.2	50	247	17.3
700----	31	3,085	2.2	49	253	17.7
650----	31	3,687	- 1.3	44	254	20.2
600----	30	4,316	- 5.2	41	262	20.8
550----	30	4,997	- 9.3	33	261	22.9
500----	30	5,724	-14.1		266	23.7
450----	29	6,526	-19.6		265	25.6
400----	29	7,379	-25.9		260	29.9
350----	28	8,330	-33.1		262	35.7
300----	28	9,396	-41.3		256	39.4
250----	28	10,609	-50.4		258	46.0
200----	28	12,033	-59.1		260	49.5
175----	28	12,866	-60.0		259	42.9
150----	28	13,832	-58.5		261	39.0
125----	28	14,976	-59.2		262	37.5
100----	27	16,366	-60.8		268	25.1
80-----	23	17,758	-61.3		271	15.7
60-----	23	19,547	-60.3		291	6.4
50-----	23	20,683	-59.6		348	3.1
40-----	20	22,079	-58.0		7	4.3
30-----	15	23,893	-54.6		291	2.9
20-----						

PHOENIX, ARIZ. (969 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	341	26.6	26	277	4.7
1,000--	31	56				
950----	31	514	25.5	24	270	7.6
900----	31	983	21.8	25	261	10.5
850----	31	1,474	17.6	28	256	11.5
800----	31	1,987	13.0	34	246	9.9
750----	31	2,533	8.2	40	239	9.5
700----	31	3,090	3.3	44	228	9.9
650----	31	3,691	- 1.1	41	222	11.7
600----	31	4,319	- 5.4	34	224	12.6
550----	31	5,002	- 9.8		234	15.9
500----	31	5,725	-15.0		235	18.1
450----	31	6,521	-20.7		253	15.3
400----	31	7,374	-26.9		253	18.8
350----	31	8,322	-34.1		258	22.5
300----	31	9,383	-42.0		256	28.4
250----	31	10,595	-49.7		266	35.5
200----	31	12,035	-55.0		268	40.2
175----	31	12,887	-55.3		269	30.7
150----	31	13,868	-55.9		265	27.0
125----	31	15,022	-58.0		271	22.7
100----	29	16,417	-60.8			
80-----	28	17,799	-61.7			
60-----	28	19,585	-59.9			
50-----	27	20,726	-58.1			
40-----	27	22,136	-56.1			
30-----	24	23,982	-52.5			
20-----	6	26,606	-48.3			

PITTSBURGH, PA. (976 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	353	15.3	66	316	3.1
1,000--	31	142				
950----	31	583	15.2	63	287	4.9
900----	31	1,035	12.7	66	269	9.1
850----	31	1,513	10.1	62	259	14.0
800----	31	2,015	7.5	60	267	15.5
750----	31	2,551	4.4	58	271	16.3
700----	31	3,104	1.5	47	274	19.8
650----	31	3,700	- 1.8	42	279	21.8
600----	31	4,330	- 5.4	40	277	24.3
550----	31	5,008	- 9.1	35	274	27.8
500----	31	5,738	-14.1	35	279	30.5
450----	31	6,535	-19.6		276	32.8
400----	31	7,394	-26.0		277	38.5
350----	31	8,345	-33.3		271	40.6
300----	31	9,408	-41.5		270	45.8
250----	31	10,618	-50.6		267	51.3
200----	29	12,039	-59.2		262	58.1
175----	25	12,876	-61.3		264	56.3
150----	23	13,849	-60.4		267	50.9
125----	18	14,990	-60.8		278	38.5
100----	12	16,357	-62.2		278	29.5
80-----	6	17,679	-62.5			
60-----						
50-----						
40-----						
30-----						
20-----						

PORTLAND, ME. (1013 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	20	11.2	74	277	2.3
1,000--	31	125	12.5	60	286	6.0
950----	31	559	11.4	55	294	11.5
900----	31	1,005	8.7	59	298	12.0
850----	31	1,475	5.7	63	303	11.7
800----	31	1,969	2.3	65	299	13.2
750----	31	2,495	.2	64	295	16.9
700----	31	3,039	- 2.3	59	290	19.8
650----	31	3,631	- 5.0	52	291	24.1
600----	31	4,251	- 8.3	47	288	31.1
550----	31	4,925	-12.1	44	289	33.6
500----	30	5,643	-16.6	41	286	35.2
450----	30	6,434	-21.7		285	40.2
400----	29	7,282	-27.8		287	47.8
350----	29	8,227	-34.9		286	49.1
300----	29	9,284	-42.7		287	58.7
250----	29	10,492	-50.5		287	64.7
200----	29	11,926	-55.9		282	63.9
175----	29	12,772	-56.7		282	61.2
150----	29	13,750	-55.8		279	54.2
125----	27	14,909	-56.4		281	44.5
100----	25	16,326	-58.3		282	43.1
80-----	23	17,715	-58.4		279	33.0
60-----	21	19,525	-57.6		287	18.3
50-----	16	20,652	-57.2		288	10.9
40-----	14	22,037	-55.6		280	4.9
30-----	9	23,850	-53.4			
20-----						

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

RAWINSONDE DATA

Average monthly values

RAPID CITY, S. DAK. (902 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	966	11.7	75	52	3.9
1,000	31	91				
950	31	529				
900	31	986			79	2.7
850	31	1,464	9.4	70	79	2.9
800	31	1,964	6.2	73	127	1.9
750	31	2,497	3.3	76	181	1.7
700	31	3,048	.1	76	266	1.9
650	31	3,638	-3.7	73	289	4.5
600	31	4,266	-7.6	67	284	5.6
550	31	4,938	-11.9	63	287	5.6
500	30	5,661	-16.8	58	283	8.0
450	29	6,460	-22.6	49	265	8.4
400	29	7,303	-29.1	48	262	10.3
350	26	8,247	-36.9		263	12.8
300	26	9,294	-45.5		260	15.3
250	25	10,485	-54.9		250	17.1
200	23	11,878	-59.0		243	21.6
175	21	12,715	-57.3		243	21.0
150	19	13,694	-56.1		252	18.3
125	15	14,846	-56.8		247	17.3
100	10	16,259	-57.1			
80						
60						
50						
40						
30						
20						

ST. CLOUD, MINN. (977 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	316	12.2	64	35	2.9
1,000	31	116				
950	31	550	13.0	55	73	4.5
900	31	1,001	10.4	55	90	4.7
850	31	1,475	7.3	58	97	2.5
800	31	1,971	4.7	59	298	.6
750	31	2,500	2.2	59	277	2.5
700	31	3,050	-.6	55	296	4.1
650	31	3,640	-3.8	51	288	6.8
600	31	4,267	-7.3	48	297	8.7
550	30	4,938	-11.5	43	292	10.5
500	30	5,664	-16.2	40	286	11.3
450	30	6,454	-21.9	37	288	13.2
400	30	7,304	-28.3	38	278	16.7
350	30	8,246	-35.7		275	20.8
300	30	9,299	-43.9		274	23.1
250	30	10,498	-52.1		270	23.5
200	30	11,920	-57.3		262	29.9
175	30	12,765	-56.1		265	29.9
150	30	13,747	-55.1		265	24.7
125	29	14,908	-55.4		277	23.3
100	29	16,324	-57.0		283	17.5
80	27	17,730	-58.0		289	11.5
60	26	19,542	-58.2		315	8.2
50	25	20,692	-57.6		309	4.5
40	24	22,101	-56.5		355	4.5
30	18	23,922	-54.4		19	5.1
20	[illegible]	26,463	-51.5			

ST. PAUL IS., ALASKA (1008 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	10	3.6	84	68	2.9
1,000	31	77			124	1.7
950	31	494	1.3	81	131	4.3
900	31	926	-.4	76	135	5.6
850	31	1,381	-2.3	71	140	7.2
800	31	1,861	-4.2	65	135	7.0
750	31	2,372	-6.4	59	132	7.6
700	31	2,904	-8.8	54	139	6.0
650	31	3,480	-11.8	54	140	5.4
600	31	4,084	-15.0	46	144	5.8
550	31	4,739	-19.0	45	165	5.2
500	31	5,439	-23.5	41	185	7.4
450	31	6,208	-28.9	39	189	9.1
400	31	7,033	-34.7	40	212	7.0
350	31	7,951	-41.3		250	9.7
300	31	8,980	-47.9		295	12.2
250	31	10,168	-51.4		298	12.4
200	30	11,612	-49.0		286	7.6
175	30	12,489	-48.2		286	8.2
150	30	13,505	-47.3		288	6.4
125	30	14,708	-47.8		261	5.1
100	29	16,177	-48.2		258	4.1
80	29	17,644	-48.4		234	2.3
60	28	19,538	-48.3		128	3.1
50	26	20,746	-48.3		132	2.5
40	22	22,216	-48.3		139	4.3
30	9	24,121	-47.4			
20						

SALEM, OREG. (1005 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	61	17.6	64	322	2.3
1,000	31	106			329	3.1
950	31	538	13.5	67	331	4.5
900	31	994	10.2	70	326	4.5
850	31	1,467	7.0	68	306	3.1
800	31	1,963	4.3	64	257	3.3
750	31	2,493	1.4	59	233	4.1
700	31	3,038	-1.7	52	215	5.8
650	30	3,624	-5.3	49	205	6.0
600	30	4,246	-9.0	45	211	3.9
550	30	4,913	-13.3	46	193	5.1
500	30	5,633	-18.0	44	188	5.8
450	30	6,417	-23.6	42	178	8.4
400	29	7,265	-29.7	40	165	8.4
350	29	8,202	-37.0		157	11.8
300	29	9,249	-45.0		157	14.8
250	28	10,446	-53.1		155	9.9
200	28	11,865	-57.0		225	6.6
175	27	12,710	-55.3		235	8.4
150	24	13,694	-53.2		236	8.0
125	24	14,867	-53.5		243	8.2
100	23	16,293	-55.1		232	6.6
80	22	17,719	-55.4		217	6.0
60	22	19,551	-55.4		217	2.9
50	19	20,714	-55.5		173	2.1
40	13	22,123	-55.1		112	1.4
30	11	23,952	-54.0			
20						

SALT LAKE CITY, UTAH (867 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	1,288	15.0	54	180	2.7
1,000	31	55				
950	31	505				
900	31	968				
850	31	1,453	14.8	45	179	4.3
800	31	1,962	10.9	45	186	6.6
750	31	2,504	6.5	49	205	6.0
700	31	3,058	1.9	55	220	6.2
650	31	3,655	-2.8	57	239	7.2
600	31	4,280	-7.7	59	232	6.8
550	31	4,954	-12.6	57	234	6.8
500	31	5,671	-17.6	51	226	5.4
450	31	6,460	-23.3	47	228	6.2
400	31	7,302	-29.7	45	213	6.6
350	31	8,239	-37.1	42	206	6.0
300	31	9,286	-45.2		203	6.2
250	30	10,478	-53.9		194	7.4
200	30	11,896	-56.7		235	12.4
175	28	12,745	-54.6		247	14.4
150	28	13,734	-53.6		251	14.8
125	28	14,903	-54.7		255	12.0
100	27	16,324	-56.6		256	10.5
80	23	17,733	-58.0		237	7.0
60	21	19,542	-58.6		137	1.6
50	20	20,686	-58.6		47	1.9
40	19	22,095	-56.8		48	3.7
30	13	23,932	-54.5		40	2.5
20						

SAN ANTONIO, TEX. (983 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	243	22.8	78	132	5.4
1,000	31	94				
950	31	540	21.7	77	121	11.8
900	31	1,008	18.8	79	141	12.4
850	31	1,498	16.4	73	165	9.9
800	31	2,012	14.1	58	199	7.6
750	31	2,562	11.1	53	227	8.0
700	31	3,126	7.8	44	242	11.8
650	31	3,738	4.0	35	253	13.6
600	31	4,378	-.5	31	256	15.7
550	31	5,067	-5.1	28	260	19.8
500	31	5,809	-10.2		263	22.9
450	31	6,620	-15.9		259	23.9
400	31	7,488	-22.2		257	27.0
350	31	8,452	-29.9		267	26.8
300	31	9,530	-38.2		265	29.5
250	30	10,758	-47.4		265	42.0
200	30	12,199	-56.3		271	54.8
175	30	13,039	-59.1		266	51.1
150	29	14,002	-61.5		265	43.9
125	26	15,120	-64.7		270	37.7
100	26	16,467	-68.4		270	25.6
80	25	17,806	-68.7			
60	19	19,543	-63.7			
50	17	20,667	-61.1			
40	17	22,062	-57.4			
30	12	23,894	-53.7			
20						
15						

SAN DIEGO, CALIF. (999 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	124	15.4	78	280	6.0
1,000	31	115			291	7.4
950	31	553	12.0	77	291	6.0
900	31	1,000	10.9	66	292	4.7
850	31	1,476	9.9	46	282	5.4
800	31	1,978	7.8	46	275	6.8
750	31	2,517	5.2	38	276	6.6
700	31	3,069	2.1		282	8.9
650	31	3,670	-1.3		282	11.7
600	31	4,298	-4.9		281	15.5
550	31	4,982	-8.9		286	18.1
500	31	5,710	-14.0		282	21.4
450	31	6,511	-19.9		280	24.7
400	31	7,364	-26.4		281	29.5
350	31	8,314	-33.9		282	34.8
300	31	9,376	-41.9		278	41.8
250	30	10,586	-50.2		276	44.5
200	30	12,020	-56.7		271	49.1
175	30	12,863	-57.5		264	45.6
150	30	13,836	-57.6		266	42.0
125	29	14,982	-59.1		265	36.3
100	28	16,373	-61.6		263	23.9
80	28	17,752	-62.3		254	12.0
60	27	19,533	-60.3		172	.8
50	26	20,673	-59.1		67	4.5
40	26	22,080	-56.2		72	7.2
30	23	23,919	-52.7		89	8.0
20	15	26,560	-49.3			
15						

SAN JUAN, P. R. (1016 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	6	24.2	81	113	5.6
1,000	31	148	23.9	76	104	10.9
950	31	604	20.9	81	92	14.8
900	31	1,062	18.1	78	94	12.8
850	31	1,550	15.7	69	87	11.3
800	31	2,063	13.2	65	84	11.3
750	31	2,607	10.9	56	80	10.5
700	31	3,177	8.5	37	75	10.1
650	31	3,795	5.1	32	63	8.4
600	31	4,435	1.9	26	60	6.4
550	31	5,134	-2.2	25	23	2.9
500	31	5,882	-6.8		320	3.5
450	31	6,706	-12.1	30	290	5.2
400	31	7,586	-18.1	30	281	8.0
350	31	8,568	-25.5		276	15.3
300	31	9,665	-34.0		273	21.0
250	30	10,912	-44.3		272	29.1
200	30	12,368	-56.0		268	34.0
175	30	13,204	-62.3		272	37.5
150	30	14,140	-68.1		275	37.3
125	28	15,221	-72.1		279	27.6
100	25	16,527	-75.0		306	18.1
80	22	17,818	-75.4		10	7.6
60	21	19,517	-66.5		77	15.3
50	20	20,633	-62.2		80	15.7
40	18	22,020	-58.7		67	24.5
30	17	23,848	-53.0		79	29.5
20	11	26,509	-46.2			
15						

SANTA MARIA, CALIF. (1006 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	74	14.9	71	285	8.2
1,000	31	122	14.4	72	288	7.2
950	31	555	12.4	74	300	7.8
900	31	1,007	11.4	67	308	7.4
850	31	1,483	9.9	55	313	4.5
800	31	1,984	7.3	47	321	3.3
750	31	2,519	4.4	41	297	5.1
700	31	3,072	1.5	35	286	6.8
650	31	3,669	-1.7	31	280	8.9
600	31	4,298	-5.7		290	10.3
550	31	4,976	-10.0		287	15.7
500	31	5,703	-14.6		288	16.5
450	31	6,502	-20.4		280	15.7
400	31	7,353	-27.3		284	18.1
350	31	8,299	-34.8		289	21.6
300	31	9,356	-43.2		284	25.3
250	31	10,560	-51.5		278	28.9
200	31	11,990	-56.3		274	34.2
175	31	12,837	-56.1		274	29.1
150	31	13,816	-56.0		268	26.6
125	31	14,972	-57.5		267	20.8
100	31	16,375	-59.5		259	12.2
80	29	17,763	-60.1		238	10.5
60	29	19,564	-58.8		244	.8
50	29	20,710	-58.2		97	4.1
40	28	22,120	-56.1		61	5.4
30	23	23,958	-52.7		97	4.1
20						
15						

SANTA MONICA, CALIF. (1009 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	38	16.0	74	251	8.2
1,000	31	118	15.1	75	250	8.9
950	31	551	13.8	70	262	9.5
900	31	1,006	12.2	64	277	4.3
850	31	1,484	10.5	53	263	4.1
800	31	1,986	7.7	51	271	5.1
750	31	2,519	4.8	44	273	6.2
700	31	3,075	1.6	37	276	7.4
650	31	3,673	-1.9	31	278	9.7
600	31	4,300	-5.8		284	13.0
550	31	4,978	-10.1		283	16.7
500	31	5,705	-15.1		288	21.0
450	31	6,499	-20.9		290	24.5
400	31	7,352	-27.7		289	27.6
350	31	8,296	-35.1		292	33.4
300	31	9,351	-43.3		285	39.6
250	31	10,553	-51.3		284	43.9
200	30	11,980	-57.0		277	48.4
175	30	12,823	-57.1		276	45.5
150	30	13,797	-57.0		272	40.8
125	28	14,942	-58.8		272	30.1
100	28	16,335	-60.6		264	19.8
80	27	17,716	-60.9		257	11.8
60	27	19,503	-59.9		313	1.4
50	25	20,640	-58.7		38	1.4
40	25	22,047	-56.1		71	4.1
30	24	23,888	-52.1		63	2.9
20	21	26,536	-47.8		24	1.7
15	14	28,448	-45.7		321	5.2

S. STE. MARIE, MICH. (991 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	221	8.5	70	215	1.4
1,000	31	143				
950	31	573	8.7	55	305	1.7
900	31	1,015	6.8	55	299	2.3
850	31	1,483	4.4	57	288	2.5
800	31	1,974	1.9	57	289	4.3
750	31	2,501	-.5	54	291	8.9
700	31	3,042	-2.6	49	292	13.8
650	31	3,631	-5.4	47	290	17.5
600	30	4,253	-8.8	40	288	20.8
550	30	4,921	-13.1	35	288	23.5
500	30	5,641	-18.0	35	287	26.4
450	30	6,427	-23.5	36	286	29.5
400	29	7,273	-29.5	38	283	33.4
350	28	8,211	-36.4		277	40.4
300	27	9,260	-44.1		275	52.6
250	25	10,464	-52.1		269	64.9
200	25	11,886	-57.0		271	64.3
175	25	12,731	-56.2		273	58.1
150	25	13,711	-55.0		272	49.3
125	23	14,872	-55.2		279	43.1
100	21	16,287	-57.2		282	35.5
80	20	17,696	-57.3		283	21.2
60	17	19,518	-57.0			
50	12	20,656	-56.6			
40	10	22,063	-55.3			
30	8	23,890	-52.7			
20						
15						
10						

SEATTLE, WASH. (999 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	124	17.3	62	262	5.1
1,000	31	115			300	5.4
950	31	551	13.6	64	259	3.9
900	31	1,004	10.6	65	297	3.1
850	31	1,477	7.4	65	294	3.5
800	31	1,974	4.8	63	283	2.9
750	31	2,504	1.7	63	247	2.5
700	31	3,050	-1.5	58	228	1.6
650	31	3,640	-5.0	54	200	1.2
600	31	4,262	-8.7	48	175	3.5
550	31	4,931	-13.1	44	168	5.1
500	31	5,649	-18.0	41	171	7.4
450	31	6,435	-23.5	43	173	9.3
400	31	7,277	-29.9	44	172	10.7
350	31	8,213	-37.5	45	169	13.4
300	31	9,258	-46.1		172	14.8
250	31	10,444	-55.3		178	15.9
200	31	11,849	-58.5		213	10.1
175	31	12,691	-56.3		226	10.5
150	31	13,675	-54.4		235	10.5
125	31	14,842	-54.6		240	9.5
100	31	16,267	-55.6		245	7.2
80	31	17,688	-55.6		247	4.9
60	31	19,520	-55.9		223	1.2
50	29	20,672	-56.0		155	.4
40	28	22,091	-54.9		66	1.9
30	25	23,936	-53.6		54	3.5
20	18	26,562	-49.5		53	3.9
15	12	28,488	-44.7		77	7.8
10						

SHREVEPORT, LA. (1004 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	76	22.8	74	129	4.5
1,000	31	106			116	5.4
950	31	557	20.8	67	148	10.5
900	31	1,020	17.4	71	162	10.9
850	31	1,506	14.3	65	176	10.3
800	31	2,017	12.0	53	188	9.9
750	31	2,564	9.1	48	200	10.3
700	31	3,123	5.8	44	218	11.1
650	31	3,732	1.9	46	222	12.4
600	31	4,367	-2.1	45	235	14.0
550	31	5,055	-6.6	43	244	14.4
500	31	5,791	-11.5	43	252	15.9
450	30	6,602	-16.8		260	19.0
400	30	7,468	-23.0		258	20.8
350	30	8,431	-30.6		262	22.7
300	30	9,507	-38.9		260	23.9
250	30	10,731	-48.1		260	26.6
200	30	12,167	-58.0		264	38.1
175	30	13,002	-60.5		265	41.4
150	30	13,960	-61.4		264	42.9
125	30	15,084	-63.7		261	34.6
100	30	16,442	-66.8		250	22.0
80	30	17,785	-67.4		244	15.9
60	29	19,524	-64.2		169	2.5
50	27	20,646	-61.9		83	4.3
40	26	22,033	-58.2		72	4.5
30	20	23,879	-53.5		70	6.6
20						
15						
10						

* SPOKANE, WASH. (927 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	722	16.9	63	206	4.3
1,000	31	71				
950	31	518				
900	31	976	15.1	61	218	4.9
850	31	1,457	11.4	64	240	3.3
800	31	1,961	7.4	68	359	.4
750	31	2,497	3.6	69	80	2.7
700	31	3,045	-.1	67	75	2.5
650	31	3,641	-3.9	61	62	1.9
600	30	4,262	-7.7	56	237	.2
550	30	4,938	-12.1	49	200	.6
500	30	5,655	-16.9	46	166	1.7
450	30	6,443	-22.6	46	199	2.5
400	30	7,290	-29.0	46	205	2.5
350	30	8,229	-36.7	47	181	4.7
300	30	9,276	-45.1		226	3.1
250	30	10,466	-54.5		226	6.4
200	29	11,871	-59.7		223	6.8
175	29	12,711	-56.7		237	6.2
150	29	13,695	-54.1		254	7.4
125	28	14,863	-54.4		249	8.5
100	27	16,290	-55.0		255	8.2
80	27	17,714	-55.4		253	6.4
60	27	19,548	-55.6		258	3.5
50	24	20,713	-55.7		36	1.0
40	23	22,137	-54.9		64	1.0
30	22	23,985	-53.5		62	4.7
20	20	26,621	-49.8		73	6.6
15	18	28,530	-46.6		75	8.0
10	13	31,234	-41.9		74	11.1

SWAN ISLAND, W. I. (1011 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	10	27.4	81	106	11.8
1,000	31	111	26.5	82	101	12.6
950	31	565	22.7	86	109	15.3
900	31	1,033	20.0	82	111	14.6
850	31	1,525	17.2	76	114	12.4
800	31	2,041	14.5	68	113	10.5
750	31	2,589	11.9	54	108	8.0
700	31	3,159	8.8	53	106	6.8
650	31	3,775	5.2	48	107	5.6
600	31	4,418	1.3	44	108	3.5
550	31	5,113	-2.9	40	172	1.6
500	30	5,862	-7.0	34	255	3.7
450	30	6,686	-12.2	29	260	7.0
400	30	7,566	-18.6	33	269	11.8
350	30	8,548	-25.3		273	17.5
300	30	9,648	-33.3		264	21.0
250	30	10,902	-43.0		268	26.8
200	30	12,367	-54.5		265	29.3
175	30	13,209	-60.5		271	28.9
150	29	14,155	-66.2		268	22.9
125	25	15,241	-71.6		262	19.2
100	19	16,536	-75.6		261	11.8
80	12	17,817	-75.3			
60	10	19,511	-65.5			
50	8	20,622	-63.3			
40	6	22,002	-58.1			
30						
20						
15						
10						

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

* 7 mb., 10 obs., 33,651 m., -38.2°C.

RAWINSONDE DATA

Average monthly values

MAY 1957

Standard pressure surface (mb.)	TAMPA, FLA. (1015 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	7	23.6	82	72	3.7
1,000	30	139	23.0	76	91	4.7
950	30	591	20.8	75	120	6.8
900	30	1,053	18.0	75	139	4.9
850	30	1,541	15.0	74	174	4.1
800	30	2,052	12.1	67	188	3.3
750	30	2,596	9.0	63	227	3.1
700	30	3,159	5.6	57	242	4.9
650	30	3,766	2.5	52	249	6.2
600	30	4,406	-1.3	44	248	8.5
550	30	5,093	-5.4	33	247	11.1
500	30	5,836	-9.9	33	248	11.3
450	30	6,646	-15.3	32	248	14.0
400	30	7,520	-21.5	30	250	12.6
350	30	8,490	-28.7		246	15.9
300	30	9,575	-36.9	38	238	16.1
250	30	10,811	-46.2		244	21.8
200	30	12,264	-55.1		262	34.8
175	29	13,107	-58.8		265	36.1
150	26	14,065	-61.7		270	27.2
125	24	15,183	-64.6		274	22.0
100	24	16,535	-68.4		273	13.6
80	21	17,869	-69.1		255	2.7
60	18	19,604	-63.7		88	10.9
50	18	20,731	-60.1		83	10.7
40	16	22,133	-56.5		88	15.0
30	15	23,983	-52.2		82	19.0
20	6	26,647	-46.8			

Standard pressure surface (mb.)	TATOOSH IS., WASH. (1010 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	31	11.6	85	240	6.6
1,000	31	115	10.7	83	249	7.8
950	31	543	9.3	72	249	7.2
900	31	991	8.8	61	229	4.5
850	31	1,462	6.7	58	191	3.9
800	31	1,957	4.0	53	187	3.9
750	31	2,486	1.1	50	199	5.6
700	31	3,031	-2.2	50	185	6.8
650	31	3,618	-5.6	46	197	7.2
600	31	4,239	-9.6	42	190	8.2
550	31	4,905	-13.7	43	191	9.5
500	31	5,623	-18.4	41	188	10.7
450	30	6,407	-23.6	38	189	12.8
400	30	7,251	-30.1	38	182	13.6
350	30	8,186	-37.5		189	15.9
300	30	9,230	-45.9		185	18.6
250	30	10,419	-54.5		192	20.0
200	30	11,827	-58.3		213	15.9
175	30	12,671	-55.7		221	12.8
150	30	13,658	-53.6		224	11.5
125	28	14,832	-54.2		232	11.5
100	28	16,259	-55.2		245	8.4
80	27	17,683	-55.1		239	5.1
60	25	19,523	-54.8		242	1.7
50	25	20,687	-55.0		351	.8
40	23	22,108	-54.4		45	2.5
30	15	23,942	-53.3		30	3.5
20						

Standard pressure surface (mb.)	TONOPAH, NEV. (830 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	29	1,650	14.3	38	251	1.2
1,000	29	41				
950	29	493				
900	29	961				
850	29	1,443				
800	29	1,954	11.7	41	269	2.5
750	29	2,497	7.3	46	264	3.7
700	29	3,053	2.5	53	269	4.9
650	29	3,647	-2.5	58	264	5.8
600	29	4,276	-7.4	62	272	6.2
550	29	4,948	-12.1	55	282	7.0
500	29	5,669	-17.2	50	296	6.8
450	29	6,456	-22.9	44	298	7.2
400	29	7,302	-29.4	42	286	7.6
350	29	8,238	-37.1		270	8.9
300	29	9,284	-45.0		293	12.8
250	28	10,471	-52.2		285	15.7
200	26	11,896	-54.5		279	22.7
175	24	12,743	-53.3		269	24.7
150	24	13,734	-52.9		263	24.7
125	20	14,910	-54.3		268	19.8
100	18	16,334	-56.9		258	13.8
80	14	17,727	-57.4		240	9.9
60	13	19,539	-57.8		224	3.5
50	13	20,686	-58.2		232	3.1
40	10	22,103	-56.1			
30	6	23,917	-53.2			
20						

Standard pressure surface (mb.)	TOPEKA, KANS. (981 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	270	17.3	74	127	2.5
1,000	31	103				
950	31	545	17.3	63	138	4.7
900	31	1,004	14.5	65	188	5.6
850	31	1,484	11.3	67	218	8.9
800	31	1,989	8.8	60	235	12.2
750	31	2,526	5.9	58	238	14.0
700	31	3,082	2.5	50	243	16.1
650	31	3,680	-1.1	45	245	14.8
600	31	4,311	-5.1	45	250	17.3
550	31	4,990	-9.0	36	250	18.6
500	31	5,720	-13.7		251	22.5
450	31	6,519	-19.3	34	249	27.2
400	31	7,377	-25.5	35	246	32.6
350	31	8,330	-32.7		243	35.0
300	31	9,396	-40.9		242	36.3
250	31	10,610	-50.1		241	41.6
200	30	12,032	-58.4		239	47.4
175	30	12,868	-59.3		245	46.8
150	27	13,836	-57.8		254	39.6
125	26	14,984	-58.7		257	28.7
100	25	16,379	-61.0		255	20.6
80	22	17,758	-61.3		253	11.3
60	20	19,548	-59.7		193	2.7
50	17	20,693	-59.1		216	1.7
40	14	22,100	-56.5		109	4.3
30	12	23,947	-53.3		62	4.3
20						

Standard pressure surface (mb.)	TUCSON, ARIZ. (921 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	781	24.7	22	269	4.7
1,000	31	47				
950	31	502				
900	31	978	23.1	24	269	7.2
850	31	1,471	18.8	27	263	10.3
800	31	1,986	14.1	32	252	11.5
750	31	2,532	9.1	38	238	11.5
700	31	3,092	4.2	42	224	12.2
650	31	3,693	-.4	40	222	14.0
600	31	4,323	-4.9	36	228	16.9
550	31	5,003	-9.3		242	19.8
500	31	5,732	-13.8		248	25.8
450	31	6,530	-19.5		250	30.9
400	31	7,389	-25.5		254	38.5
350	31	8,343	-32.7		260	43.3
300	31	9,410	-40.9		259	49.0
250	31	10,627	-49.2		260	55.2
200	31	12,065	-56.0		258	62.7
175	29	12,914	-56.6		262	56.7
150	29	13,890	-57.2		262	50.7
125	28	15,033	-59.5		259	39.0
100	25	16,407	-62.7		255	25.3
80	20	17,777	-63.0		246	13.0
60	16	19,556	-61.1		260	1.7
50	12	20,686	-59.4		100	1.7
40	9	22,095	-57.3			
30	6	23,931	-52.7			
20						

Standard pressure surface (mb.)	WASHINGTON, D. C. (1007 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	88	17.8	64	166	2.3
1,000	31	144	18.0	62	167	3.5
950	31	586	16.7	59	236	6.8
900	31	1,043	14.2	61	261	11.5
850	31	1,523	11.2	62	276	12.4
800	31	2,027	8.3	58	285	12.8
750	31	2,562	5.3	52	286	16.1
700	31	3,118	2.4	49	286	17.1
650	31	3,717	-.9	49	284	19.2
600	31	4,348	-4.7	44	285	19.0
550	31	5,032	-8.8	38	282	22.9
500	31	5,760	-13.2	36	279	28.6
450	31	6,564	-18.5		277	31.9
400	31	7,423	-24.7		277	36.3
350	31	8,380	-31.6		277	40.2
300	31	9,452	-39.6		271	44.3
250	31	10,672	-49.1		272	49.1
200	31	12,103	-58.4		276	48.4
175	31	12,936	-61.0		278	47.4
150	31	13,893	-60.6		278	47.8
125	31	15,028	-60.7		282	37.7
100	31	16,410	-62.6		282	32.8
80	31	17,784	-62.8		283	20.4
60	30	19,560	-60.5		297	8.9
50	29	20,695	-59.2		310	4.1
40	28	22,104	-56.3		314	2.1
30	27	23,947	-52.8		276	3.1
20	21	26,591	-48.4		269	5.6
15	17	28,507	-46.7		284	7.6
10	9	31,245	-43.1			

Standard pressure surface (mb.)	WINNEMUCCA, NEV. (865 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	1,310	14.2	55	319	2.3
1,000	31	63				
950	31	505				
900	31	967				
850	31	1,454	13.5	51	317	2.7
800	31	1,961	9.6	50	301	6.4
750	31	2,498	5.1	55	298	6.6
700	31	3,051	.5	62	276	6.6
650	31	3,644	-3.9	64	257	6.4
600	31	4,268	-8.2	64	243	6.2
550	30	4,934	-13.0	59	240	7.0
500	30	5,654	-18.0	52	240	7.2
450	30	6,443	-23.7	46	250	7.4
400	29	7,285	-30.1	42	260	6.4
350	29	8,220	-37.5		249	6.4
300	29	9,265	-45.5		227	4.1
250	29	10,457	-53.2		286	4.9
200	29	11,879	-55.7		281	10.9
175	29	12,732	-54.1		266	11.5
150	28	13,720	-53.0		269	13.2
125	26	14,892	-54.2		264	10.5
100	26	16,314	-56.1		258	9.3
80	26	17,730	-56.8		245	7.0
60	25	19,551	-57.3		218	2.1
50	24	20,705	-57.6		33	1.7
40	22	22,113	-56.2		69	3.5
30	15	23,936	-54.2		61	5.2
20	7	26,539	-50.6			
15						
10						

Standard pressure surface (mb.)	YAKUTAT, ALASKA (1013 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	12	10.1	70	149	1.9
1,000	31	122	8.7	72	142	2.9
950	31	546	6.0	73	124	5.8
900	31	986	3.1	72	125	8.5
850	31	1,446	.2	72	121	10.7
800	31	1,930	-2.3	68	122	12.0
750	31	2,448	-5.3	64	128	10.1
700	31	2,978	-8.4	57	131	10.1
650	31	3,558	-11.6	50	140	9.7
600	31	4,159	-15.3	51	142	9.3
550	31	4,817	-19.3	53	145	10.3
500	31	5,513	-24.0	50	155	9.9
450	31	6,283	-29.1	47	159	13.6
400	31	7,106	-34.7	47	161	14.4
350	31	8,024	-41.3		165	17.3
300	31	9,055	-47.5		182	18.1
250	31	10,244	-52.1		190	16.9
200	31	11,685	-51.2		216	8.9
175	31	12,553	-49.9		220	11.3
150	30	13,566	-49.3		227	11.3
125	30	14,759	-49.5		227	8.0
100	30	16,217	-50.1		229	5.4
80	28	17,670	-50.5		235	4.5
60	27	19,545	-50.5		179	2.3
50	24	20,719	-50.7		199	1.0
40	19	22,169	-50.6			
30	8	24,057	-49.7			
20						
15						
10						

Standard pressure surface (mb.)	YUMA, ARIZ. (995 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	29	105	27.4	22	253	7.8
1,000	29	58				
950	29	509	23.9	25	255	9.7
900	29	977	19.7	29	252	8.5
850	29	1,465	15.5	33	254	7.4
800	29	1,975	11.2	35	232	7.2
750	29	2,511	7.2	35	242	7.2
700	29	3,072	3.2	32	246	6.2
650	29	3,671	-.8		251	6.8
600	29	4,303	-4.8		267	9.9
550	29	4,982	-9.1		275	14.4
500	29	5,712	-14.2		275	18.5
450	29	6,509	-19.8		274	21.4
400	28	7,366	-26.3		273	27.2
350	25	8,320	-33.9		272	30.3
300	24	9,374	-42.1		276	39.6
250	22	10,598	-51.0		271	40.4
200	20	12,020	-56.8		272	47.2
175	19	12,870	-57.5		261	43.3
150	15	13,842	-56.8		272	44.7
125	12	14,988	-59.2		275	37.3
100	10	16,378	-62.1			
80	9	17,754	-63.1			
60	7	19,535	-60.6			
50	7	20,672	-59.3			
40	7	22,079	-56.2			
30	6	23,919	-51.8			
20						
15						
10						

Note: All observations scheduled at 0300, G.C.T. except at Mazatlan, Merida and Veracruz, where they are taken near 0200, G.C.T. "Number of observations" refers to those of dynamic height only. Temperature, humidity or wind data may be missing for one or more pressure surfaces of some observations. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Relative humidity data are not published for standard pressure surfaces having less than 16 actual observations.

Relative humidity data beginning with October 1, 1948, were computed and expressed in these tables on the basis of vapor-pressure over water. Upper air values of relative humidity at levels with temperatures less than 0°C, have formerly been computed and expressed on the basis of the vapor-pressure over ice. All relative humidity observations are obtained by electric hygrometer and have been adjusted to compensate for the value occurring below the operating range of the humidity element.

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

SOLAR RADIATION DATA

Solar radiation intensities, tabulated in langleys per minute on a surface normal to the direction of the sun. MAY 1957

ALBUQUERQUE, N. MEX.

Date	A.M. 78.7°	A.M. 75.7°	A.M. 70.7°	A.M. 60.0°	0.0°	P.M. 60.0°	P.M. 70.7°	P.M. 75.7°	P.M. 78.7°
Air mass	4.19	3.35	2.51	1.67	0.84	1.67	2.51	3.35	4.19
May									
1	----	----	----	----	Cloudy	----	----	----	----
2	0.58	----	0.80	0.96	1.20	----	----	----	----
3	.59	.67	.80	.96	1.21	----	----	----	----
4	.63	.72	.84	1.00	----	----	----	----	----
5-11	----	----	----	----	Cloudy	----	----	----	----
12	.74	.85	.95	1.09	----	----	----	----	----
13	----	----	----	----	Cloudy	----	----	----	----
14	.66	.80	.88	1.03	1.20	----	----	----	----
15-23	----	----	----	----	Cloudy	----	----	----	----
24	DH.59	DH.67	DH.81	DH.99	----	----	----	----	----
25	M	M	.95	1.08	1.24	1.12	1.00	0.90	0.83
26	D.61	D.69	D.78	D.86	----	----	----	----	----
27	----	----	----	D.83	D1.07	----	----	----	----
28	.58	.66	.79	K.94	1.12	----	----	----	----
29	M	M	M	1.02	1.25	----	----	----	----
30-31	----	----	----	----	Cloudy	----	----	----	----
Averages	.64	.74	.86	.99	1.18	1.12	1.00	.90	.83

MADISON, WIS.

Date	A.M. 78.7°	A.M. 75.7°	A.M. 70.7°	A.M. 60.0°	0.0°	P.M. 60.0°	P.M. 70.7°	P.M. 75.7°	P.M. 78.7°
Air mass	4.84	3.87	2.90	1.94	0.97	1.94	2.90	3.87	4.84
May									
3	----	----	----	----	----	1.26	1.04	0.88	0.78
4	S0.87	S0.94	S1.05	S1.21	S1.32	----	----	----	----
5	S.92	S1.01	S1.12	S1.28	S1.42	S1.18	S.98	S.82	Ci
6	S.64	S.78	S.95	S1.11	Ac	S1.06	S.84	S.70	S.58
7	M.66	M.79	S.95	S1.07	K1.33	----	----	----	----
24	S.81	S.92	S1.04	S1.21	K1.38	----	----	----	----
26	S.84	S.95	----	----	----	----	----	----	----
28	----	----	M.90	M1.04	----	----	----	----	----
Averages	.79	.90	1.00	1.15	1.38	1.17	.95	.80	.68

TABLE MOUNTAIN, CALIF.

Date	A.M. 78.7°	A.M. 75.7°	A.M. 70.7°	A.M. 60.0°	0.0°	P.M. 60.0°	P.M. 70.7°	P.M. 75.7°	P.M. 78.7°
Air mass	3.85	3.08	2.31	1.54	0.77	1.54	2.31	3.08	3.85
May									
2	----	----	----	1.36	----	----	----	----	----
3	----	----	----	1.44	----	----	----	----	----
5	1.06	1.16	1.25	1.38	----	----	----	----	----
26	----	1.14	1.25	1.39	----	----	----	----	----
27	----	----	----	1.37	----	----	----	----	----
29	----	----	----	1.39	----	----	----	----	----
31	.99	1.09	1.21	1.35	----	----	----	----	----
Averages	1.02	1.13	1.24	1.38	----	----	----	----	----

*	forest fire smoke
K	smoke
H	haze
MH	moderate haze
D	dust
M	moderate haze - indeterminable

BLUE HILL, MASS.

Date	A.M. 78.7°	A.M. 75.7°	A.M. 70.7°	A.M. 60.0°	0.0°	P.M. 60.0°	P.M. 70.7°	P.M. 75.7°	P.M. 78.7°
Air mass	4.86	3.89	2.92	1.94	Noon	1.94	2.92	3.89	4.86
May									
1	----	----	----	----	1.21	----	----	0.70	0.60
2	0.87	0.97	1.09	1.23	1.39	----	----	----	----
3	.88	.98	1.10	1.21	----	----	----	----	----
6	MH.69	MH.80	MH.96	MH1.13	----	----	----	----	----
7	H.71	H.81	H.94	----	----	----	----	----	----
8*	K.54	K.65	K.74	K1.00	K1.13	----	K0.68	K.60	K.44
9*	----	----	----	----	K1.15	----	----	----	----
10*	K.27	K.33	K.44	K.63	----	----	----	----	----
16	----	----	----	----	1.37	1.17	1.00	.87	.78
17	.79	.90	1.03	1.17	----	----	----	----	----
18	----	----	----	----	----	----	----	H.69	H.58
21	----	----	----	1.35	----	----	----	----	----
24	----	.56	.82	1.10	1.33	1.22	.98	.85	.77
25	.86	.95	1.06	1.21	1.32	----	1.00	.89	.79
29	.86	.94	1.06	1.19	1.33	----	1.04	.90	.82
31	----	.84	.98	1.13	1.29	1.12	1.07	.88	.77
Averages	.72	.79	.93	1.10	1.29	1.17	.96	.80	.69

TAGUAC, GUAM, M. I.

Date	A.M. 78.7°	A.M. 75.7°	A.M. 70.7°	A.M. 60.0°	0.0°	P.M. 60.0°	P.M. 70.7°	P.M. 75.7°	P.M. 78.7°
Air mass									
May									
3	M0.64	M0.68	----	----	M1.26	----	----	----	----
6	----	----	----	M1.65	----	----	----	----	----
9	----	S.63	S.81	----	S1.26	S1.14	S0.95	S0.87	M0.78
10	----	----	----	----	S1.30	S1.10	M.85	----	----
11	----	----	----	----	S1.36	----	----	----	----
13	----	----	----	----	1.36	.78	.88	1.03	1.16
14	----	----	----	----	----	1.47	1.04	.39	.26
16	----	----	----	----	S1.24	1.16	.95	----	----
17	----	----	----	----	S1.37	1.18	1.02	.85	----
18	.78	.90	1.02	1.16	----	----	----	----	----
20	----	----	----	----	----	M1.13	M1.02	M.87	M.75

WASHINGTON, D. C. (WBCO)

Date	A.M. 78.7°	A.M. 75.7°	A.M. 70.7°	A.M. 60.0°	0.0°	P.M. 60.0°	P.M. 70.7°	P.M. 75.7°	P.M. 78.7°
Air mass	5.00	4.00	3.00	2.00	1.00	2.00	3.00	4.00	5.00

Instrument inoperable during May 1957

Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station listed in Table 30 appears in Monthly Weather Review, Volume 75, No. 3, March 1947, p. 47.

SOLAR RADIATION DATA

MAY 1957

Daily totals and average daily totals by weeks of solar and sky radiation plus the radiation reflected from the ground as received on a vertical surface facing south at Blue Hill, Mass. during the month

								Avg								Avg								Avg
Date----------	7	8	9	10	11	12	13		14	15	16	17	18	19	20		21	22	23	24	25	26	27	
Langleys------	313	295	302	269	20	65	185	207	254	257	265	290	189	76	35	195	253	275	233	286	282	126	138	228
Date----------	28	29	30	31	1	2	3																	
Langleys------	265	271	271	262	262	136	275	249																

Daily totals and average daily totals by weeks of diffuse (sky) radiation as received on a horizontal surface at Blue Hill, Mass. during the month

								Avg								Avg								Avg
Date----------	7	8	9	10	11	12	13		14	15	16	17	18	19	20		21	22	23	24	25	26	27	
Langleys------	123	157	152	213	45	110	320	161	221	221	107	148	318	168	81	181	153	235	242	95	94	204	246	181
Date----------	28	29	30	31	1	2	3																	
Langleys------	214	104	167	114	276	223	153	179																

Note Langley is the unit used to denote one gram calorie per square centimeter

NET RADIATION

Net radiation in langleys per day (midnight to midnight) at Raleigh, N. C., during the month

MAY 1957

Date.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langleys. . .	344	305	129	*11	294	263	332	325	303	270	*-3	379	359	398	326	202	219	407	*305	389	223	168	367	*406	*161	*303	234	310	227	*64	342	279

* Estimated values owing to occurrence of rain during period. While rain is falling, radiation is assumed to be zero.

The measurement is made with a Beckman and Whitley net exchange radiometer over a plot of Bermuda grass. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the North Carolina State College at Raleigh. The instrument with which they were measured has not been checked by the Weather Bureau.

SOLAR RADIATION DATA

Daily totals and weekly averages of solar radiation (direct and diffuse) received on a horizontal surface, tabulated in langleys.

	Aklavik, Mackenzie	Albuquerque, N.Mex.	Annette, Alaska	Apalachicola, Fla.	Astoria, Oreg.	Atlanta, Ga.	Barrow, Alaska	Bethel, Alaska	Bismarck, N. Dak.	Blue Hill, Mass.	Boise, Idaho	Boston, Mass.	Brownsville, Tex.	Canton Island Pacific Area	Cape Hatteras, N.C.	Caribou, Me.	Charleston, S. C.	Cleveland, Ohio	Columbia, Mo.	Dodge City, Kans.
1957																				
May 7------	263	624	665	672	293	703	450	673	636	711	624	663	343	556	789	475	707	727	674	727
May 8------	368	337	683	269	186	598	423	620	205	686	151	672	545	606	806	590	561	765	661	646
May 9------	279	784	680	590	455	599	399	493	538	683	692	649	580	599	761	329	569	618	458	356
May 10------	667	541	246	278	383	238	691	526	771	567	486	523	611	467	---	274	631	302	384	621
May 11------	658	533	300	702	299	305	677	488	730	54	177	76	352	500	---	744	188	321	302	142
May 12------	697	609	510	741	391	557	744	631	537	158	247	112	466	546	492	752	411	472	573	760
May 13------	549	---	592	738	514	596	734	723	466	400	477	371	405	501	601	521	640	628	229	487
Average-------	497	571	525	570	360	514	588	593	555	466	408	438	472	539	690	526	529	548	469	534
May 14------	593	747	677	740	471	389	655	647	262	590	262	532	550	472	659	704	569	280	703	709
May 15------	624	---	266	745	653	468	504	356	785	570	531	620	526	622	756	124	573	633	683	354
May 16------	601	797	207	742	726	722	414	493	720	634	661	658	576	553	587	813	683	828	180	519
May 17------	661	624	172	724	126	592	414	368	536	704	710	662	588	627	(694)	791	425	362	367	725
May 18------	648	735	181	737	527	590	373	389	465	408	286	---	355	630	503	802	296	297	127	670
May 19------	591	---	540	733	527	590	(396)	111	127	173	312	---	583	470	(378)	721	591	139	174	258
May 20------	628	768	151	753	583	739	422	378	50	89	882	---	546	620	723	454	751	78	680	441
Average-------	621	734	314	739	516	584	(454)	392	421	452	521	618	532	571	(614)	630	555	374	416	525
May 21------	664	578	294	748	224	602	399	445	100	659	487	669	677	538	313	786	539	242	555	777
May 22------	361	---	555	748	---	647	475	373	283	670	482	647	679	586	---	682	649	476	267	605
May 23------	612	771	729	711	---	696	456	450	819	523	741	488	648	328	687	225	613	376	569	713
May 24------	699	819	267	610	---	476	419	732	724	749	764	763	655	615	773	500	585	827	483	171
May 25------	709	---	56	605	---	688	334	613	541	764	752	764	610	---	586	671	449	597	512	524
May 26------	532	747	303	722	---	642	477	625	810	234	753	186	597	612	803	684	607	566	769	771
May 27------	481	629	58	726	---	749	478	680	699	262	688	261	387	594	631	137	602	223	776	618
Average-------	580	709	323	696	---	643	434	560	568	552	667	540	607	545	632	526	578	472	562	597
May 28------	308	757	402	729	---	661	526	640	604	663	580	594	317	572	802	235	591	841	668	747
May 29------	558	707	763	673	---	406	412	193	738	775	677	772	338	600	743	541	229	780	523	648
May 30------	542	716	721	738	---	279	391	193	723	703	685	712	721	481	308	422	223	735	144	732
May 31------	478	598	750	479	---	578	546	128	803	753	713	727	567	532	378	761	441	400	559	255
June 1------	374	583	743	556	---	668	573	236	757	578	655	637	388	396	653	687	443	414	301	299
June 2------	582	797	683	744	---	698	602	521	627	296	700	294	758	590	726	111	611	809	624	763
June 3------	253	645	544	485	---	501	431	485	692	715	662	749	751	616	788	789	547	845	667	721
Average-------	442	686	658	629	---	542	497	342	706	640	667	641	549	541	628	507	441	689	498	595

	Davis, Calif.	E. Lansing, Mich.	Edmonton, Alberta	El Paso, Tex.	Ely, Nev.	Fairbanks, Alaska	Ft. Worth, Tex.	Fresno, Calif.	Gainesville, Fla.	Glasgow, Mont.	Grand Junction, Colo	Grand Lake, Colo.	Great Falls, Mont.	Greensboro, N. C.	Griffin, Ga.	Indianapolis, Ind.	Ithaca, N. Y	Lake Charles, La.	Lander, Wyo
1957																			
May 7------	322	695	172	515	295	---	621	327	580	355	470	533	370	701	736	737	704	648	418
May 8------	676	657	640	697	486	589	320	421	279	536	546	278	45	655	686	703	700	519	91
May 9------	178	491	687	782	658	600	540	458	458	649	316	358	280	640	719	401	534	666	235
May 10------	628	198	698	692	414	628	557	506	412	677	428	487	693	512	389	481	198	523	428
May 11------	545	137	228	693	260	639	249	424	350	(540)	496	265	686	171	345	507	90	655	351
May 12------	464	198	490	654	(494)	667	299	386	528	(324)	641	274	158	627	575	534	333	533	316
May 13------	439	315	442	811	256	662	362	601	540	343	562	181	645	642	639	251	495	519	405
Average-------	465	385	480	692	(409)	631	421	446	450	(489)	494	340	411	564	584	516	436	580	321
May 14------	592	378	116	660	403	459	729	398	364	540	540	292	240	576	473	485	141	559	205
May 15------	707	262	507	722	435	327	532	616	332	448	260	214	483	618	543	694	553	665	211
May 16------	711	800	378	828	607	484	434	672	535	876	377	176	639	618	699	593	802	691	196
May 17------	346	116	625	781	643	576	534	566	345	635	617	330	705	195	726	325	490	702	639
May 18------	166	89	724	805	372	615	335	141	592	713	567	360	632	755	551	---	453	579	566
May 19------	585	84	601	731	408	341	701	609	487	300	80	181	254	373	686	176	34	707	377
May 20------	147	170	131	708	466	244	433	362	583	97	592	361	80	474	--	224	74	629	479
Average-------	465	271	440	748	476	435	528	481	463	516	433	273	433	516	613	416	364	647	382
May 21------	765	177	776	682	582	345	479	630	650	126	762	466	175	626	644	303	610	610	203
May 22------	564	566	697	788	397	532	384	703	606	474	671	354	179	251	743	430	160	602	446
May 23------	758	200	610	810	401	608	(94)	658	632	758	348	333	829	493	697	325	393	643	146
May 24------	758	757	437	791	363	473	408	685	454	728	422	268	802	582	519	700	632	638	236
May 25------	634	327	(596)	833	816	692	69	696	675	735	621	275	653	612	792	310	739	547	741
May 26------	722	629	707	799	740	701	675	(660)	673	716	778	429	682	506	731	584	488	504	795
May 27------	747	299	752	733	653	---	350	588	448	647	752	385	---	459	784	304	364	606	756
Average-------	707	422	(654)	776	565	559	(351)	(660)	591	598	622	359	553	504	701	422	484	593	475
May 28------	607	671	546	774	423	567	701	414	507	(608)	776	511	660	648	697	788	512	618	742
May 29------	743	688	672	786	364	425	716	650	337	709	471	488	767	617	389	779	768	715	387
May 30------	756	620	666	823	606	214	591	685	560	608	612	444	706	312	300	595	675	642	687
May 31------	782	566	679	823	768	300	434	683	504	780	529	290	761	693	684	192	701	357	243
June 1------	765	238	579	695	791	247	605	677	445	736	661	479	694	660	579	496	441	306	841
June 2------	778	775	694	734	642	482	294	683	408	576	764	623	511	599	543	531	462	245	809
June 3------	788	789	579	796	715	403	340	675	435	668	695	471	543	405	368	659	654	535	816
Average-------	746	621	631	776	616	377	526	638	457	(669)	644	472	663	562	509	577	602	491	646

Note.--Langley is the unit used to denote one gram calorie per square centimeter.
Values in parentheses are interpolated.

SOLAR RADIATION DATA

Daily totals and weekly averages of solar radiation (direct and diffuse) received on a horizontal surface, tabulated in langleys. - Continued

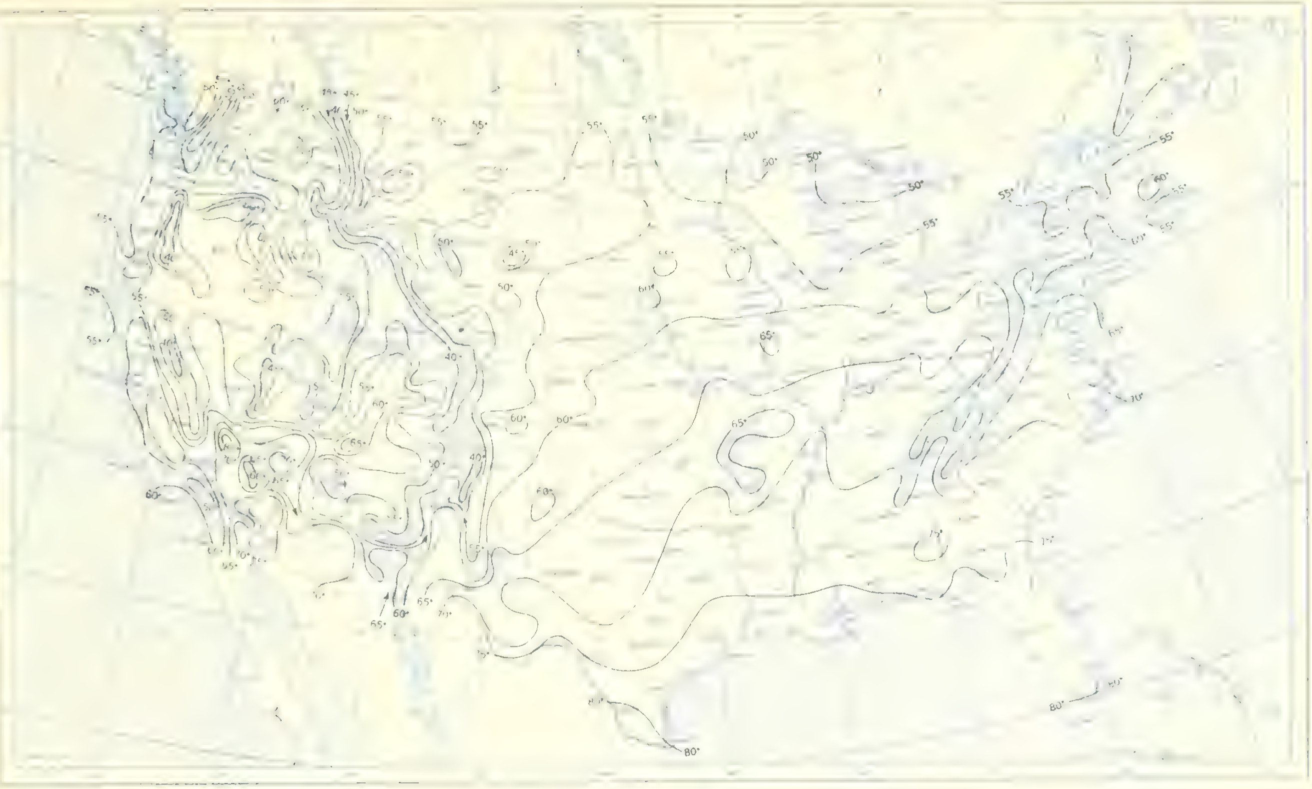
1957	Las Vegas, Nev.	Lemont, Ill.	Little Rock, Ark.	Los Angeles, Calif. (urban)	Los Angeles, Calif.	Madison, Wis.	Matanuska, Alaska	Medford, Oreg.	Miami, Fla.	Midland, Tex.	Nashville, Tenn.	Newport, R. I.	New York, N. Y.	Oak Ridge, Tenn.	Oklahoma City, Okla.	Ottawa, Ontario	Phoenix, Ariz.	Portland, Me.	Rapid City, S. Dak.	Riverside, Calif.
May 7------	300	746	648	310	365	690	615	542	496	691	613	698	655	731	741	648	710	712	657	136
May 8------	581	720	432	451	552	601	599	529	391	593	524	676	652	643	218	561	684	703	241	544
May 9------	679	353	336	611	586	329	576	598	224	707	511	682	664	602	623	276	744	667	206	620
May 10------	563	203	403	555	658	135	630	(428)	481	478	168	649	629	330	356	117	495	310	711	390
May 11------	571	110	445	307	448	50	537	636	412	660	544	120	67	503	231	634	468	593	588	241
May 12------	526	303	481	544	710	151	643	(397)	577	573	438	256	362	586	555	657	541	219	190	191
May 13------	621	134	221	385	644	267	631	401	422	760	476	477	507	612	539	281	756	353	258	502
Average-------	549	367	424	452	566	317	605	(504)	429	637	467	508	505	573	466	453	628	508	407	375
May 14------	569	532	647	600	721	195	345	681	495	730	416	596	324	468	---	279	729	496	173	462
May 15------	737	248	704	737	726	213	647	704	647	638	551	606	531	438	---	70	655	495	456	774
May 16------	---	591	511	711	694	632	304	(701)	531	727	610	609	663	701	536	773	715	771	115	761
May 17------	---	199	649	692	620	63	693	174	539	195	320	684	620	691	---	650	759	715	202	737
May 18------	502	153	447	191	309	61	420	554	531	659	547	277	483	635	312	627	720	---	407	318
May 19------	799	110	424	669	754	118	---	(502)	558	708	244	138	146	403	728	558	550	315	115	633
May 20------	785	319	684	477	668	642	---	453	681	706	568	87	63	557	---	291	756	63	503	500
Average-------	679	307	581	582	642	275	482	(539)	569	623	465	428	404	556	525	464	698	476	282	598
May 21------	424	387	410	554	700	164	368	716	655	713	537	462	553	660	722	710	688	---	371	651
May 22------	604	684	518	630	463	708	591	(468)	607	735	160	719	409	218	397	173	750	---	526	771
May 23------	532	226	561	618	664	424	382	704	674	688	537	652	420	687	285	336	787	582	765	351
May 24------	773	787	250	501	631	741	695	715	670	280	284	756	779	319	---	753	767	767	189	692
May 25------	805	219	403	(762)	604	107	690	735	571	745	551	773	761	613	566	688	772	765	606	760
May 26------	811	599	386	(771)	735	368	441	725	691	387	317	256	541	348	---	142	784	218	830	785
May 27------	803	480	734	549	541	420	554	712	578	531	668	413	299	715	507	377	773	---	539	678
Average-------	679	483	466	(627)	620	419	532	(682)	635	583	436	576	537	509	496	454	760	583	547	670
May 28------	680	770	700	369	344	598	639	719	698	---	555	763	725	530	406	298	770	363	481	556
May 29------	759	652	708	352	546	435	612	696	388	627	405	769	736	625	---	736	788	792	683	666
May 30------	729	488	642	478	625	133	678	708	370	621	514	732	686	626	288	533	778	690	458	599
May 31------	792	312	540	703	702	274	---	(688)	243	541	506	763	707	622	---	649	763	462	660	751
June 1------	790	619	230	741	690	728	543	707	584	268	491	618	432	690	340	354	772	707	759	744
June 2------	791	817	253	737	673	807	553	732	601	392	339	451	392	561	122	---	724	232	758	750
June 3------	785	---	231	744	710	751	---	672	591	158	350	665	635	---	108	522	765	613	781	753
Average-------	761	610	472	589	613	532	605	(703)	496	435	452	680	616	609	253	526	766	551	654	688

1957	St. Cloud, Minn.	San Antonio, Tex.	Santa Maria, Calif.	S. Ste. Marie, Mich.	Sayville, N. Y.	Schenectady, N. Y.	Seabrook, N. J.	Seattle, Wash. (U. of W.)	Seattle-Tacoma, Wash.	Spokane, Wash.	State College, Pa.	Stillwater, Okla.	Tampa, Fla.	Toronto, Ontario	Tucson, Ariz. (U. of A.)	Upton, N. Y.	Wake Island Pacific Area	Washington, D. C. (Silver Hill Obs.)	Winnipeg, Manitoba
May 7------	584	212	365	719	732	570	651	---	702	662	696	783	---	659	---	721	676	704	655
May 8------	588	427	686	175	687	529	647	---	381	728	687	326	---	577	739	677	711	691	656
May 9------	598	188	602	618	720	405	652	128	197	671	617	690	---	503	777	697	675	637	593
May 10------	738	640	599	600	673	334	617	325	274	584	550	303	---	96	494	663	532	621	697
May 11------	729	275	388	754	79	84	225	211	243	640	165	187	---	356	601	88	728	262	647
May 12------	341	208	642	634	419	222	550	349	393	519	392	662	---	226	414	333	600	464	722
May 13------	501	---	750	699	468	318	535	558	655	418	529	---	---	442	789	518	502	643	(710)
Average-------	583	325	576	600	540	352	554	314	406	603	519	492	---	408	636	528	632	575	(669)
May 14------	65	654	642	---	508	235	553	660	550	328	282	---	---	85	792	349	565	567	691
May 15------	715	381	791	529	697	418	637	657	643	354	471	---	---	309	776	663	496	594	759
May 16------	739	333	788	889	618	595	538	713	728	646	616	---	---	753	780	550	606	564	506
May 17------	58	525	563	350	578	538	659	---	317	692	610	---	---	238	776	570	617	352	716
May 18------	137	210	109	673	463	402	396	503	550	312	336	---	516	292	767	477	178	546	497
May 19------	172	724	805	681	144	81	130	285	511	173	56	794	678	89	672	---	586	109	735
May 20------	322	363	417	830	96	70	106	208	280	135	142	560	697	160	799	---	649	178	(309)
Average-------	315	456	588	659	444	334	431	505	511	377	356	677	---	275	766	522	528	416	(602)
May 21------	384	386	677	251	449	603	250	111	131	439	217	778	674	643	800	514	593	163	74
May 22------	240	391	784	596	604	313	283	273	264	128	157	369	722	309	758	652	626	234	195
May 23------	672	257	803	235	430	266	518	246	239	567	518	516	693	279	799	598	691	666	617
May 24------	515	488	552	842	808	635	649	656	596	750	662	316	643	693	790	773	672	673	630
May 25------	53	492	753	372	811	607	702	654	663	754	741	675	569	591	806	794	684	---	336
May 26------	204	409	780	295	378	275	574	609	582	768	489	---	688	406	801	468	638	---	606
May 27------	753	111	702	469	367	379	272	735	742	772	435	539	705	239	789	358	729	---	736
Average-------	403	362	722	437	550	440	464	469	459	597	460	532	671	451	792	594	662	434	456
May 28------	686	501	176	778	825	413	672	688	738	776	756	531	636	583	769	802	730	756	716
May 29------	526	551	434	98	762	602	628	688	(742)	774	767	---	426	707	792	769	625	651	651
May 30------	715	581	797	741	762	552	654	730	673	759	675	459	438	481	798	709	732	619	435
May 31------	664	163	767	443	832	527	687	364	---	746	748	471	534	590	---	829	689	(609)	751
June 1------	785	353	798	858	532	381	515	496	522	736	497	216	610	192	772	515	663	615	783
June 2------	522	---	823	786	509	207	499	608	609	721	478	164	620	762	---	564	760	528	221
June 3------	738	449	838	262	726	573	112	766	732	708	594	249	589	534	789	703	724	103	719
Average-------	662	433	662	567	707	465	538	620	(669)	746	645	348	550	550	784	699	703	(554)	611

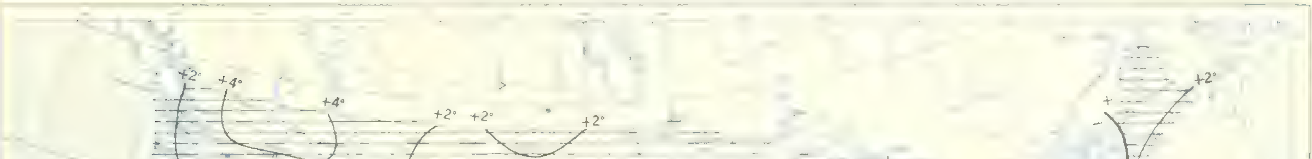
Note.--Langley is the unit used to denote one gram calorie per square centimeter.
Values in parentheses are interpolated.

NWRC, Asheville, N. C. --- 8/15/57 --- 1900

Chart I. A. Average Temperature (°F.) at Surface, May 1957.

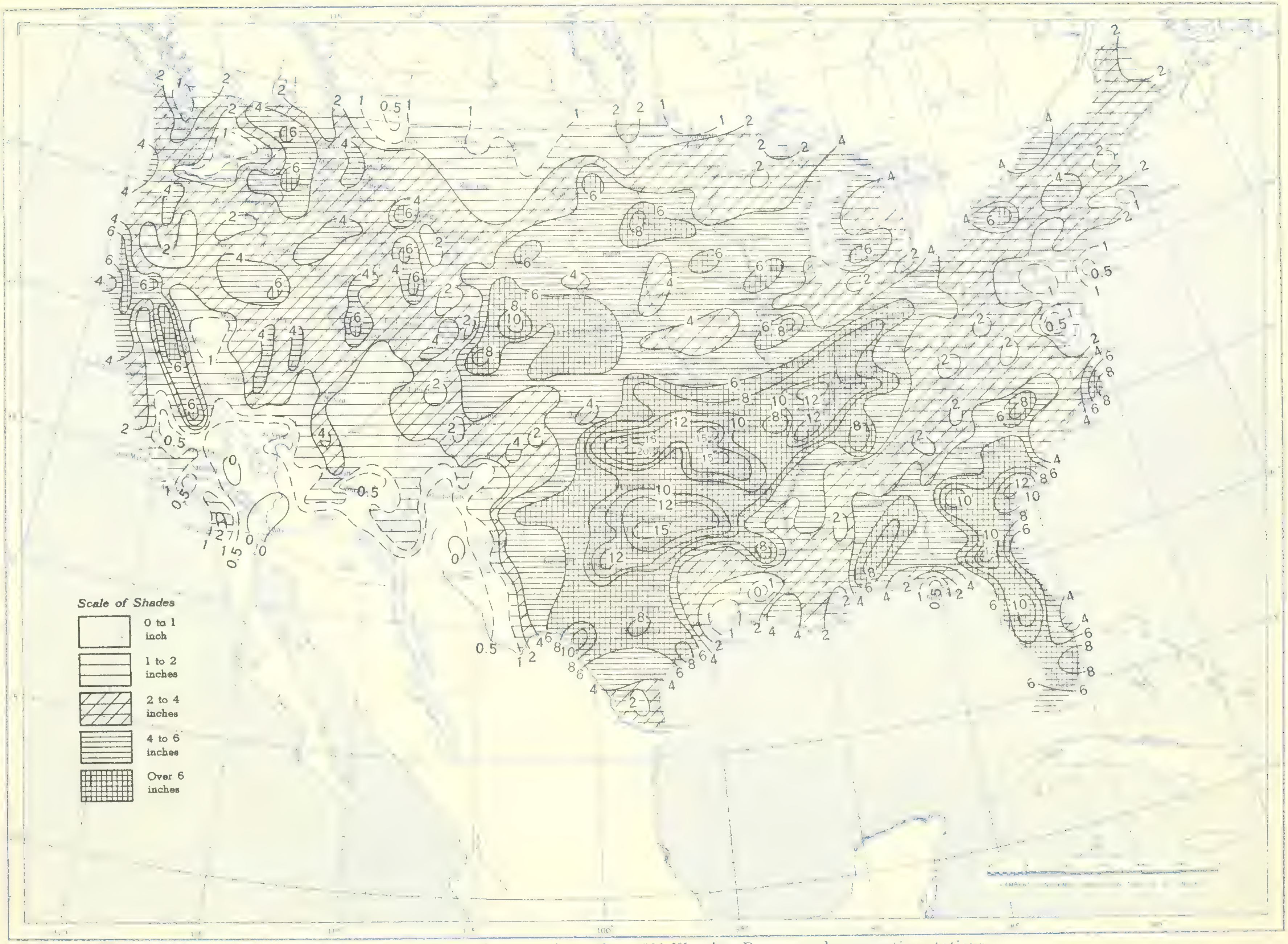


B. Departure of Average Temperature from Normal (°F.), May 1957.



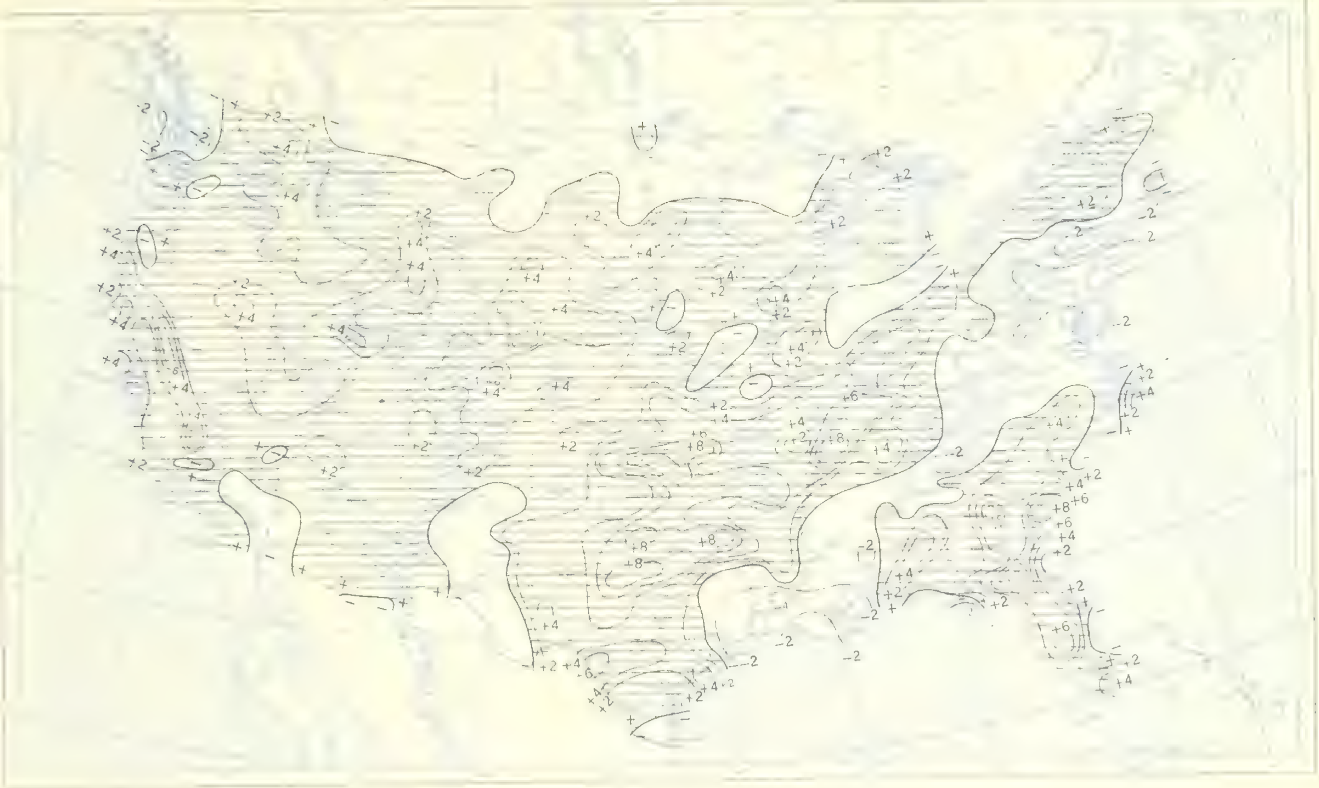
A. Based on reports from over 900 Weather Bureau and cooperative stations. The monthly average is half the sum of the monthly average maximum and monthly average minimum, which are the average of the daily maxima and daily minima, respectively.
B. Departures from normal are based on the 30-yr. normals (1921-50) for Weather Bureau stations and on means of 25 years or more (mostly 1931-55) for cooperative stations.

Chart II. Total Precipitation (Inches), May 1957.

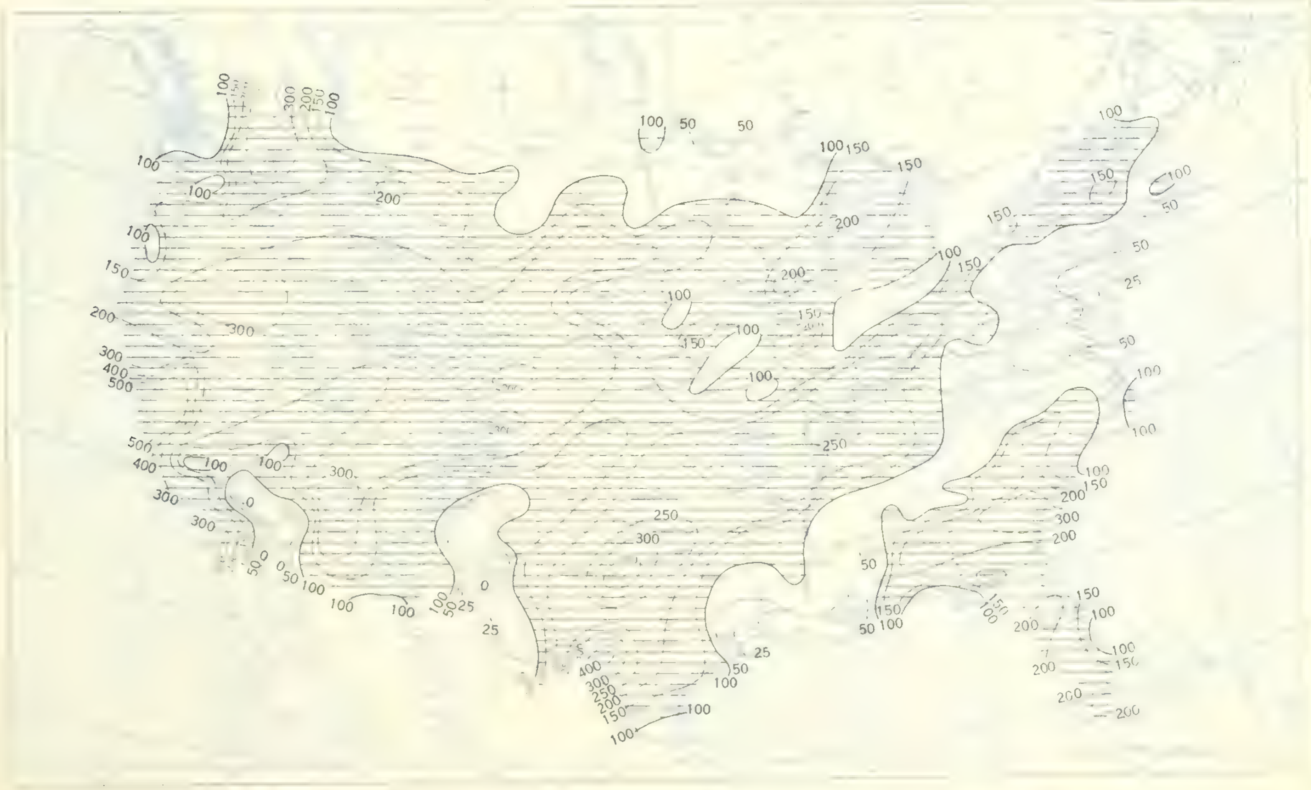


Based on daily precipitation records at about 800 Weather Bureau and cooperative stations.

Chart III. A. Departure of Precipitation from Normal (Inches), May 1957.

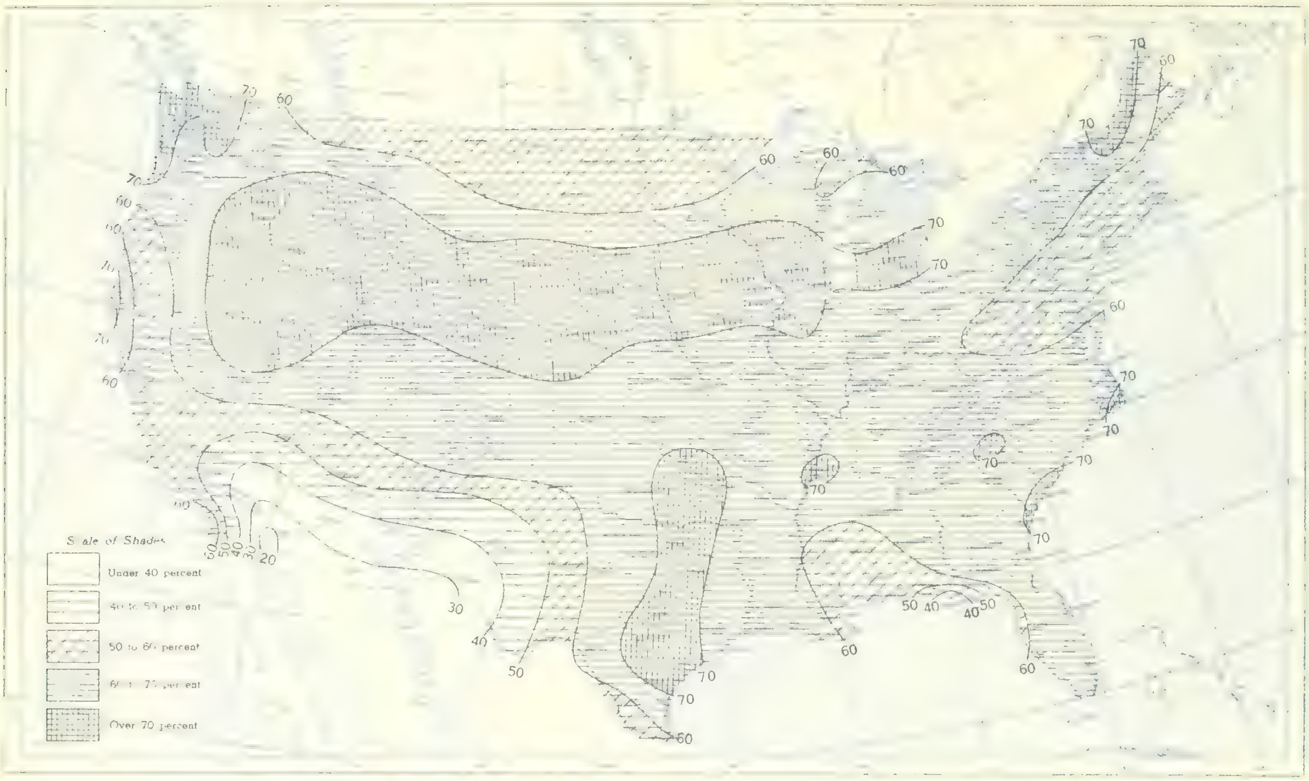


B. Percentage of Normal Precipitation, May 1957.

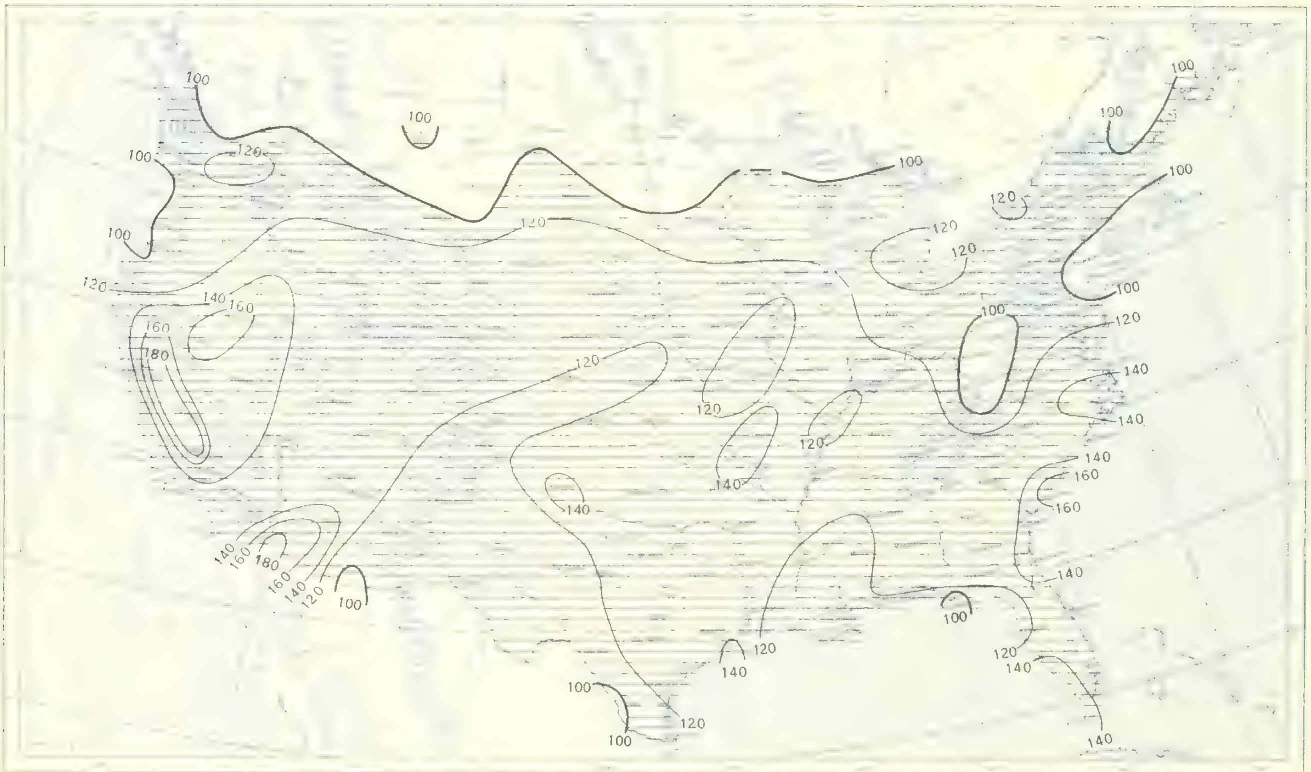


Normal monthly precipitation amounts are computed from the records for 1921-50 for Weather Bureau stations and from records of 25 years or more (mostly 1931-55) for cooperative stations.

Chart VI. A. Percentage of Sky Cover Between Sunrise and Sunset, May 1957.

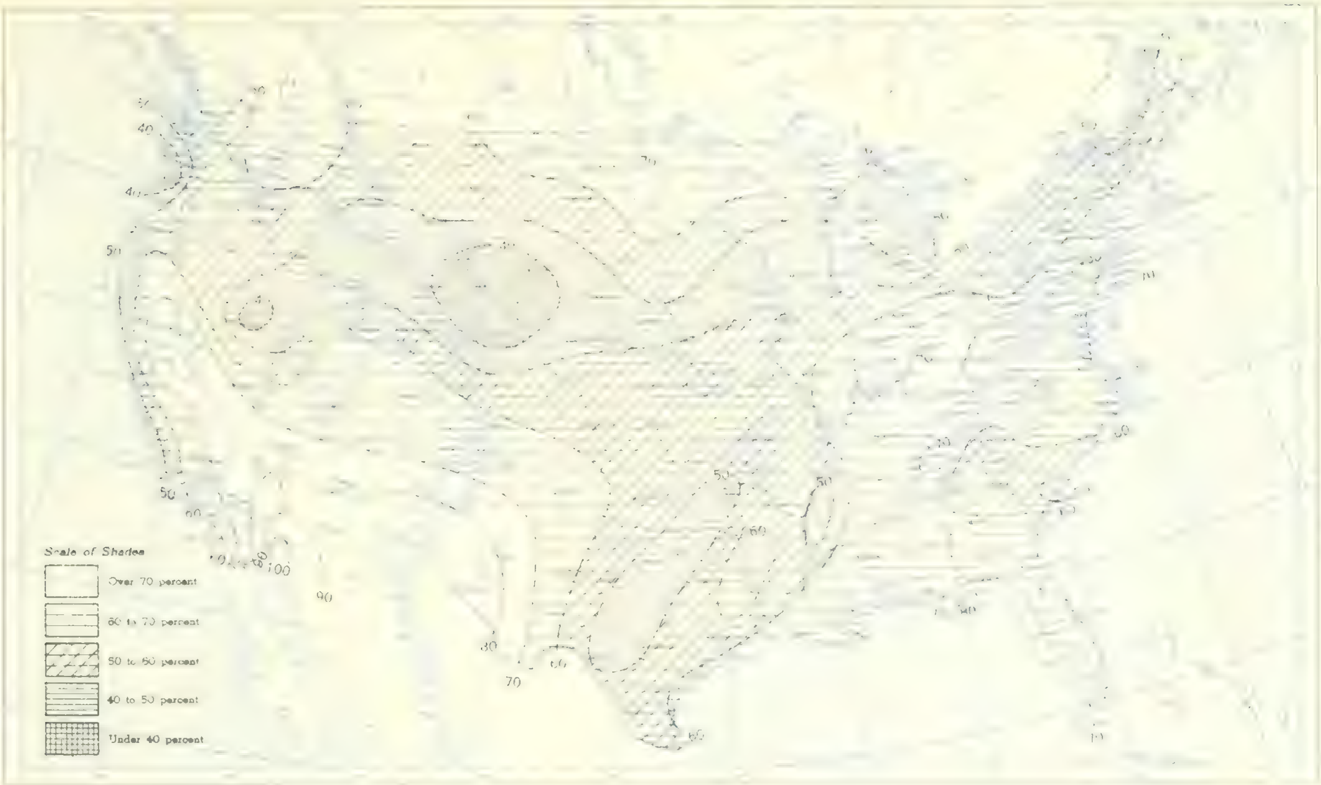


B. Percentage of Normal Sky Cover Between Sunrise and Sunset, May 1957.

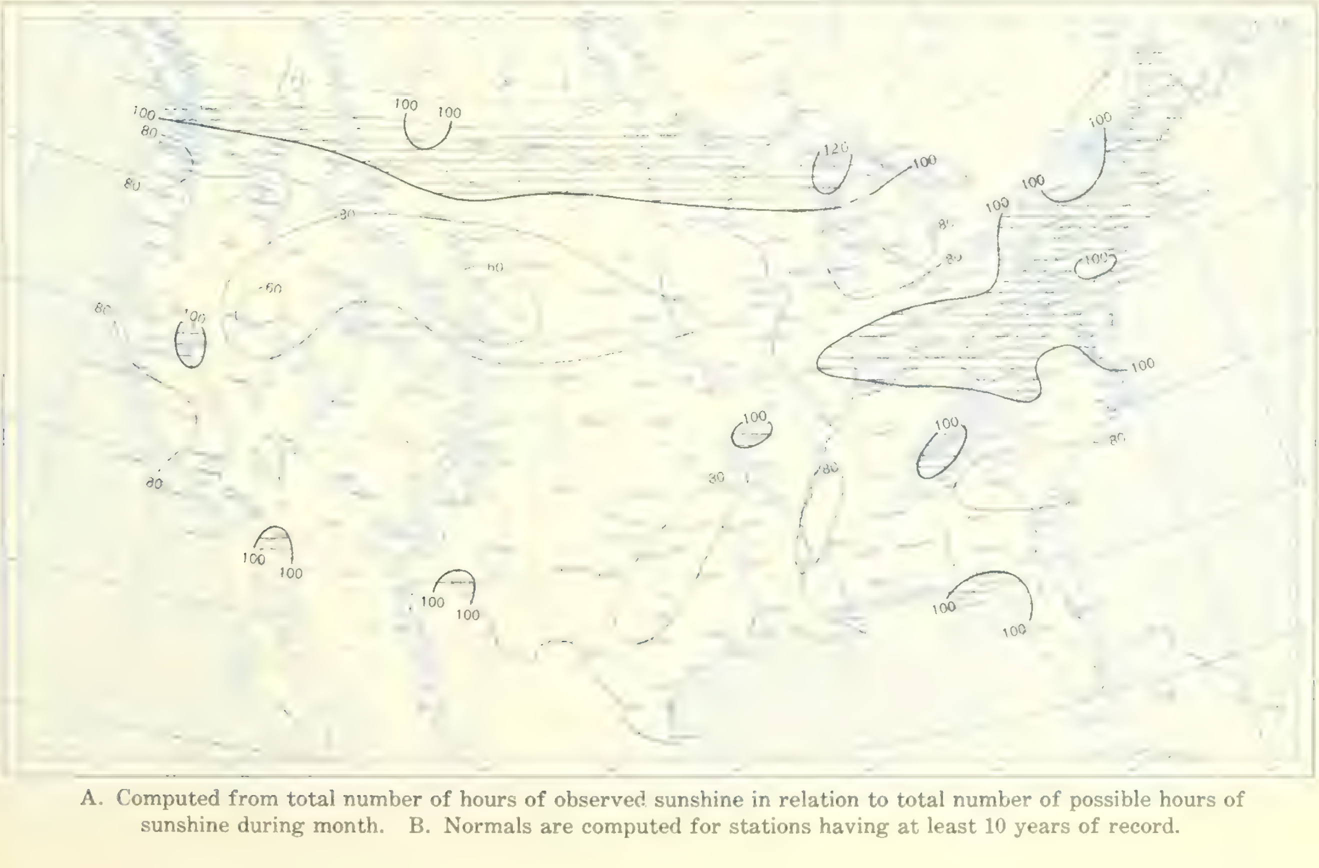


A. In addition to cloudiness, sky cover includes obscuration of the sky by fog, smoke, snow, etc. Chart based on visual observations made hourly at Weather Bureau stations and averaged over the month. B. Computations of normal amount of sky cover are made for stations having at least 10 years of record.

Chart VII. A. Percentage of Possible Sunshine, May 1957.



B. Percentage of Normal Sunshine, May 1957.



A. Computed from total number of hours of observed sunshine in relation to total number of possible hours of sunshine during month. B. Normals are computed for stations having at least 10 years of record.

Chart VIII. Average Daily Values of Solar Radiation, Direct + Diffuse, May 1957. Inset: Percentage of Mean Daily Solar Radiation, May 1957. (Mean based on period 1951-55.)

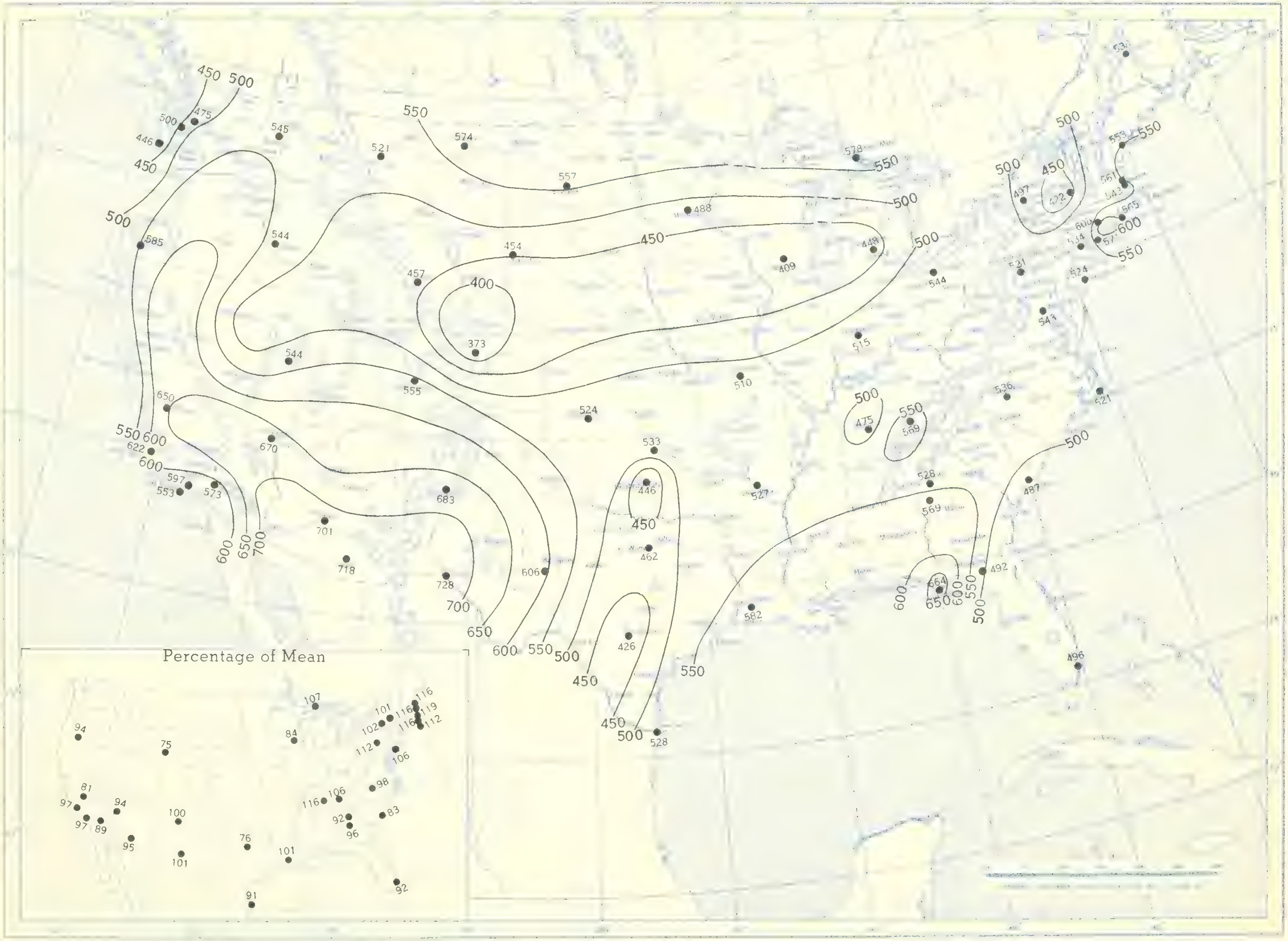
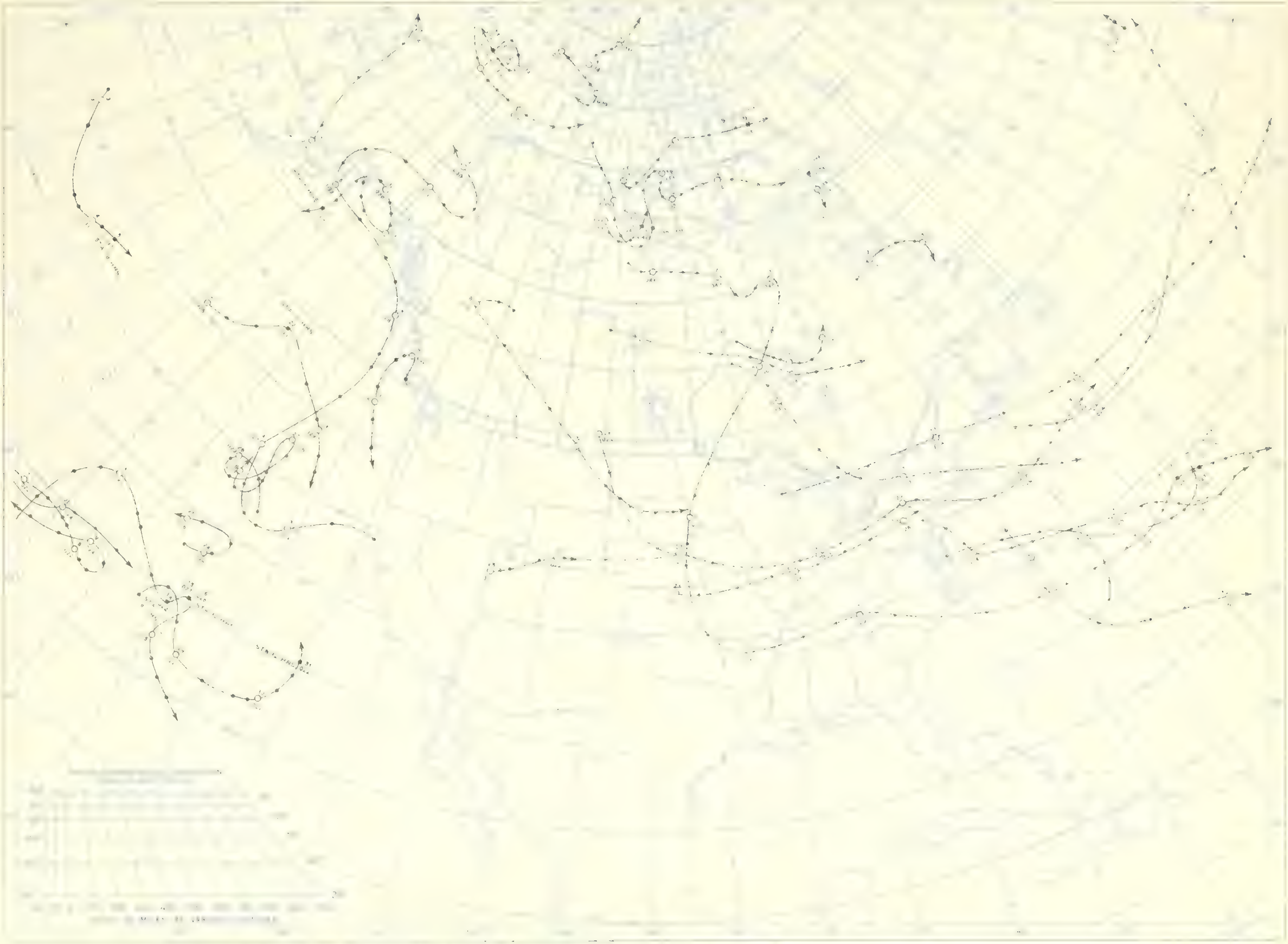
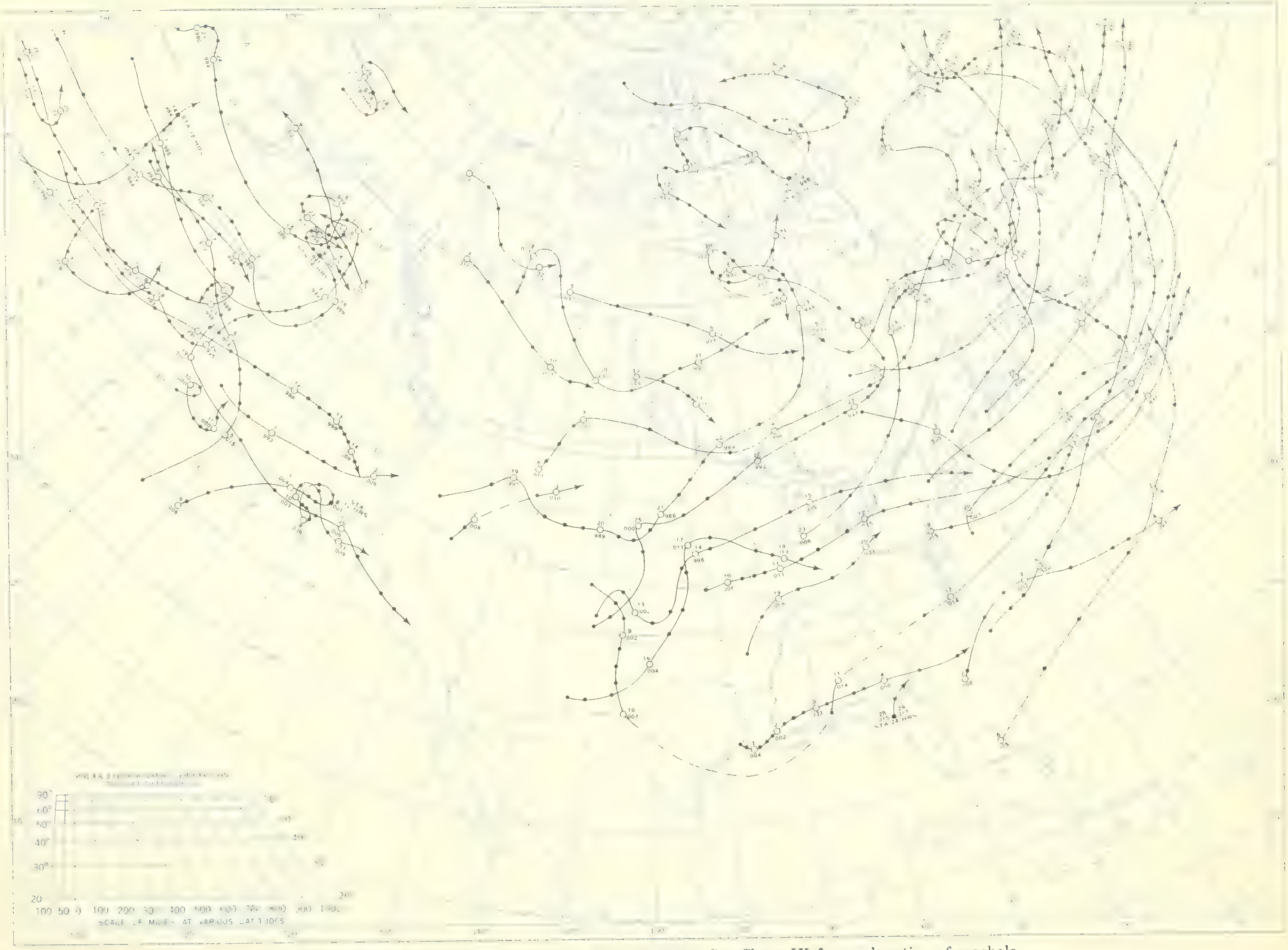


Chart shows mean daily solar radiation, direct + diffuse, received on a horizontal surface in langleys (1 langley = 1 gm. cal. cm.$^{-2}$). Basic data for isolines are shown on chart. Further estimates are obtained from supplementary data for which limits of accuracy are wider than for those data shown. The inset shows the percentage of the mean based on the period 1951-55.



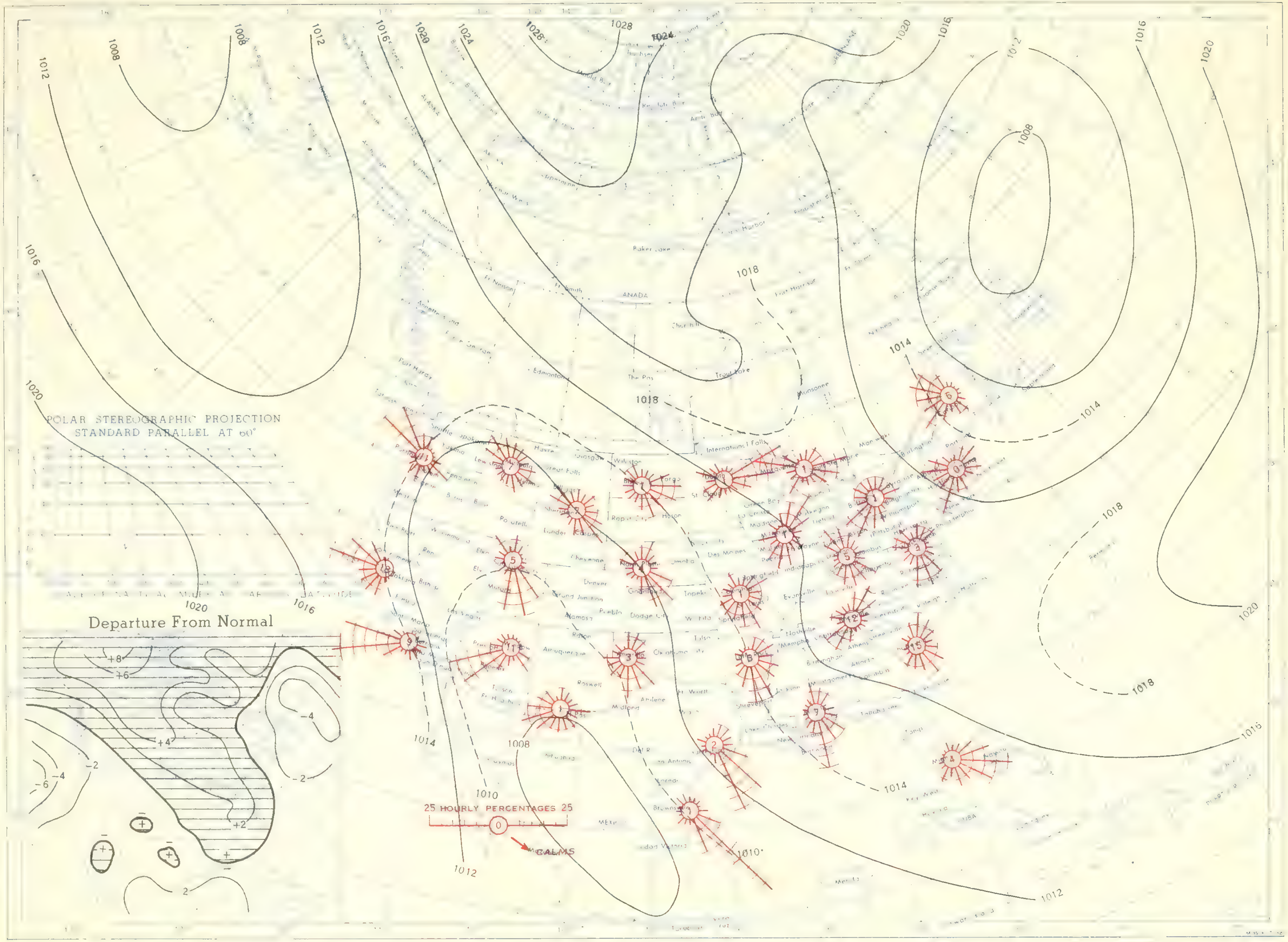
Circle indicates position of center at 7:30 a. m. E. S. T. Figure above circle indicates date, figure below, pressure to nearest millibar. Dots indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.

Chart X. Tracks of Centers of Cyclones at Sea Level, May 1957.



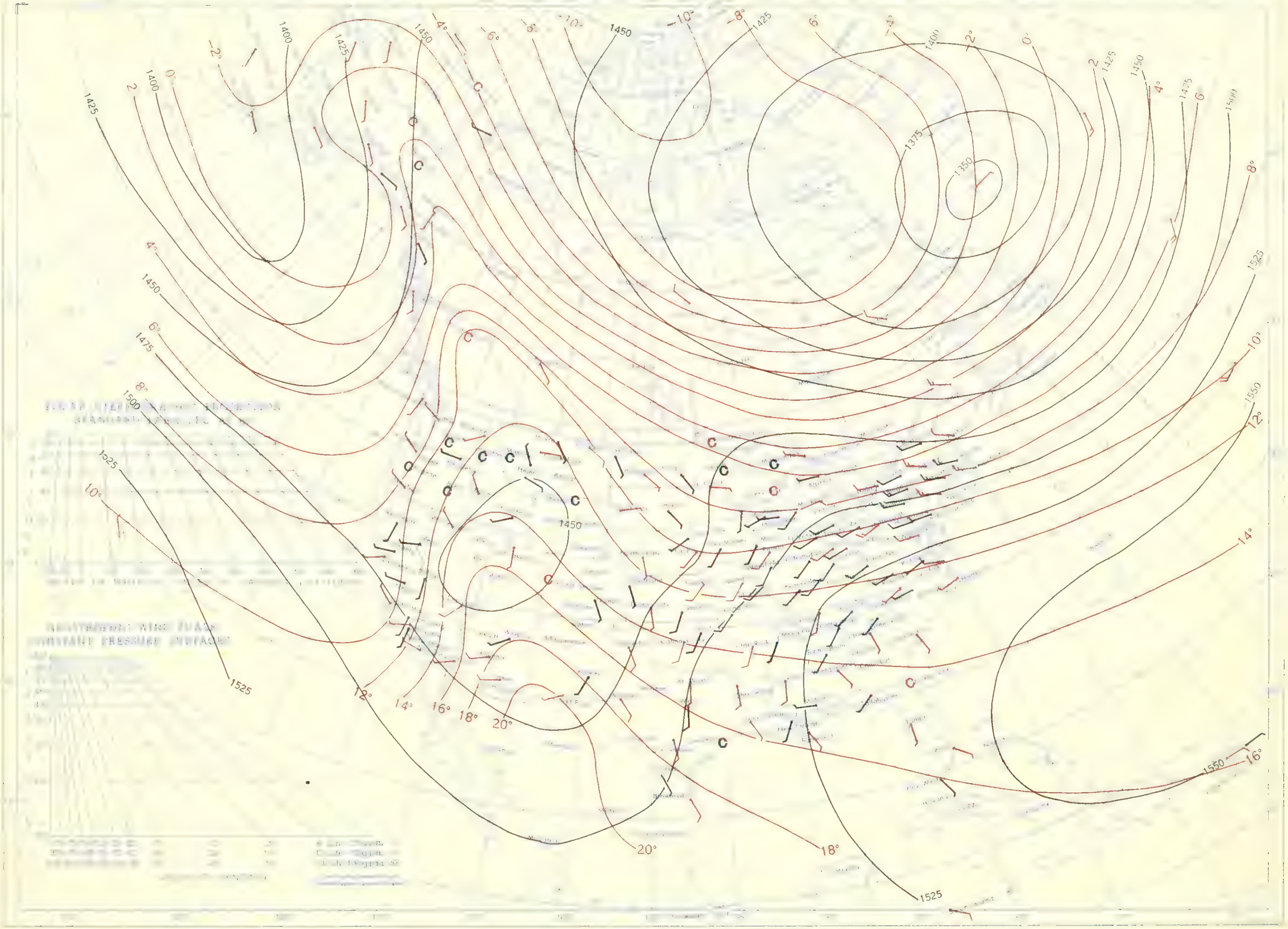
Circle indicates position of center at 7:30 a. m. E. S. T. See Chart IX for explanation of symbols.

Chart XI. Average Sea Level Pressure (mb.) and Surface Windroses, May 1957. Inset: Departure of Average Pressure (mb.) from Normal, May 1957.



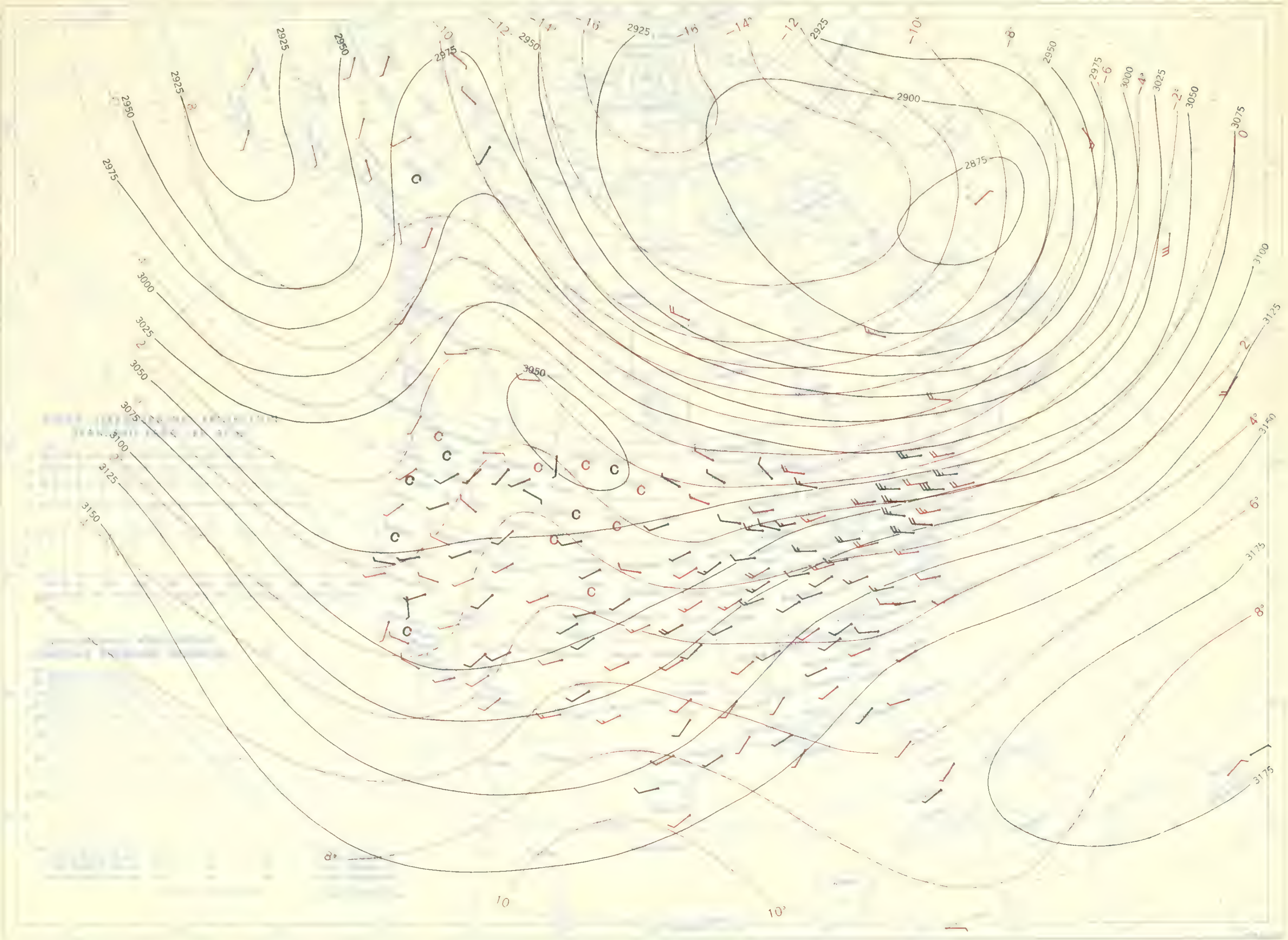
Average sea level pressures are obtained from the averages of the 7:30 a. m. and 7:30 p. m. E. S. T. readings. Windroses show percentage of time wind blew from 16 compass points or was calm during the month. Pressure normals are computed for stations having at least 10 years of record and for 10° intersections in a diamond grid based on readings from the Historical Weather Maps (1899-1939) for the 20 years of most complete data coverage prior to 1940.

Chart XII. 850-mb. Surface, 0300 GMT, May 1957. Average Height and Temperature, and Resultant Winds.



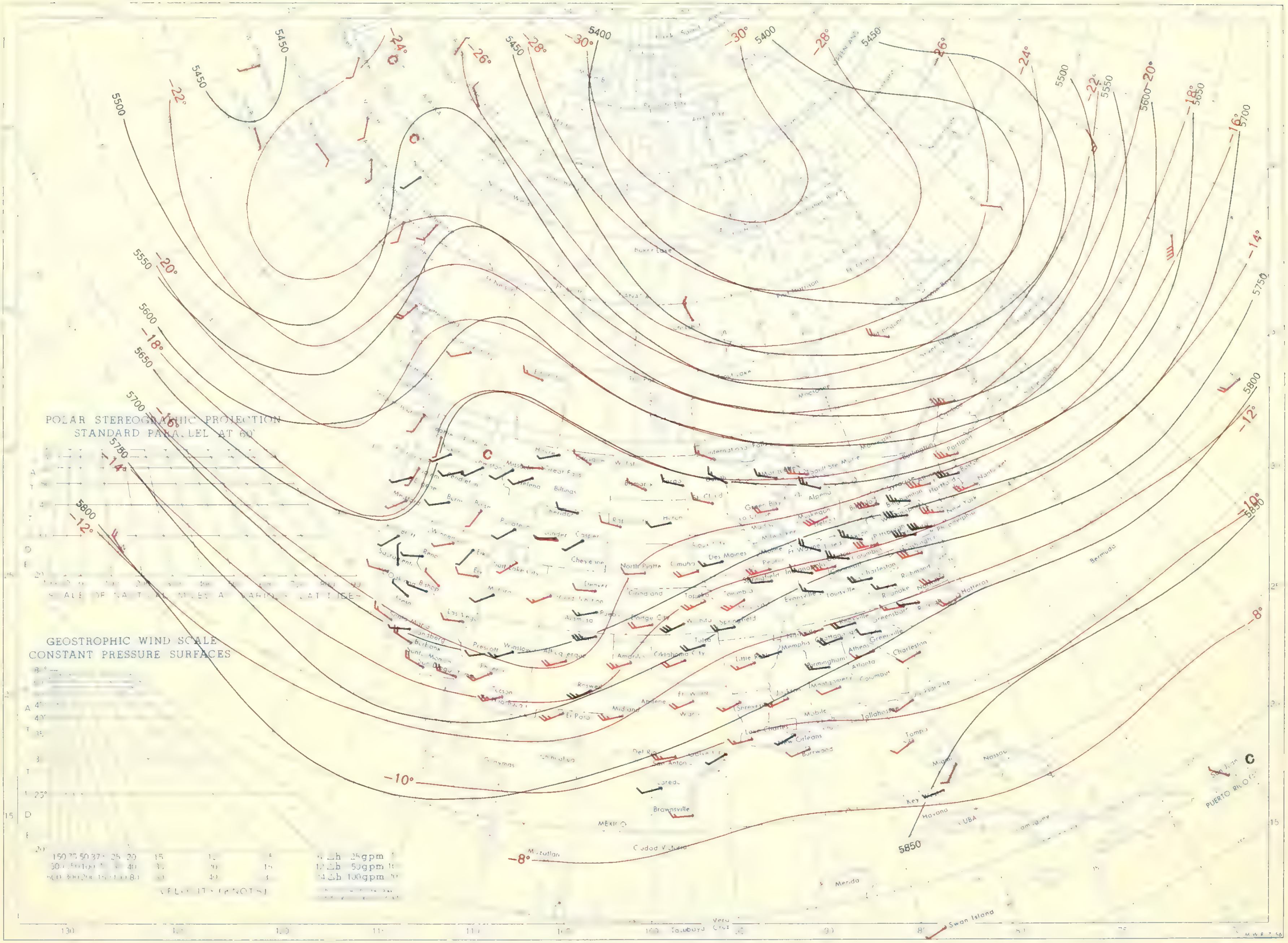
Height in geopotential meters (1 g.p.m. = 0.98 dynamic meters). Temperature in °C. Wind speed in knots; flag represents 50 knots, full feather 10 knots, and half feather 5 knots. Winds shown in red are based on rawins taken at the indicated pressure surface and time. Those in black are based

Chart XIII. 700-mb. Surface, 0300 GMT, May 1957. Average Height and Temperature, and Resultant Winds.



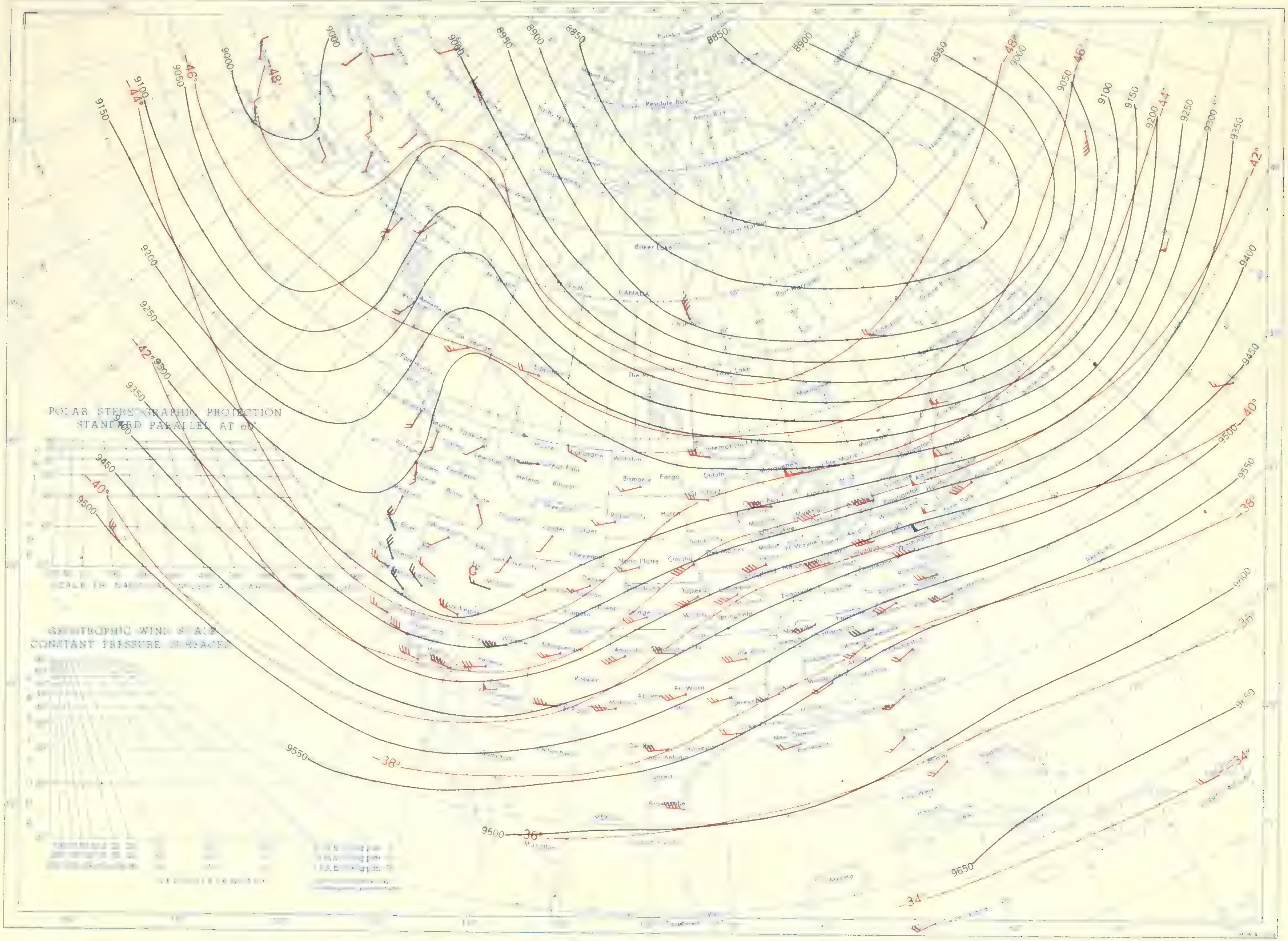
See Chart XII for explanation of map.

Chart XIV. 500-mb. Surface, 0300 GMT, May 1957. Average Height and Temperature, and Resultant Winds.



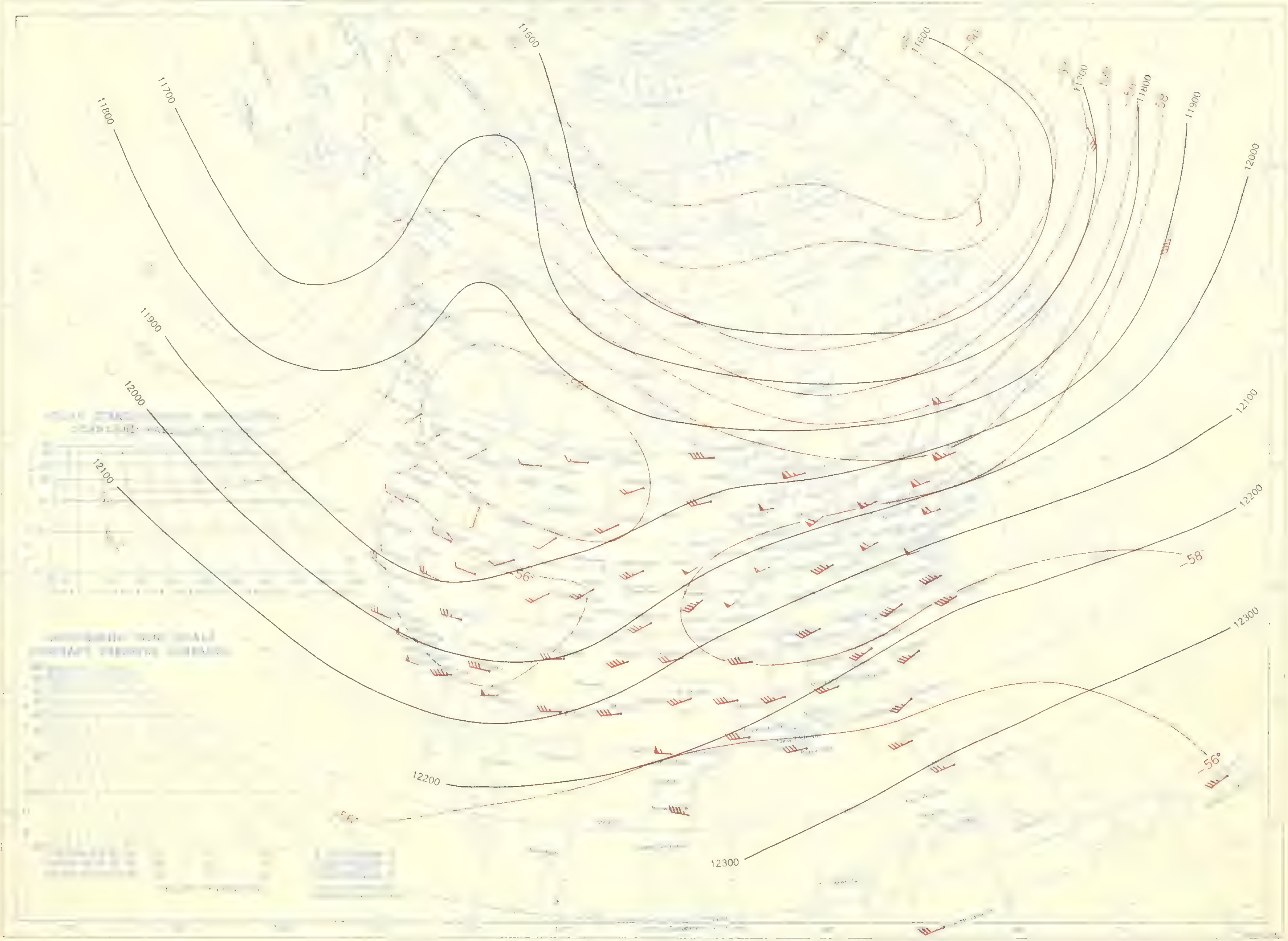
See Chart XII for explanation of map.

Chart XV. 300-mb. Surface, 0300 GMT, May 1957. Average Height and Temperature, and Resultant Winds.



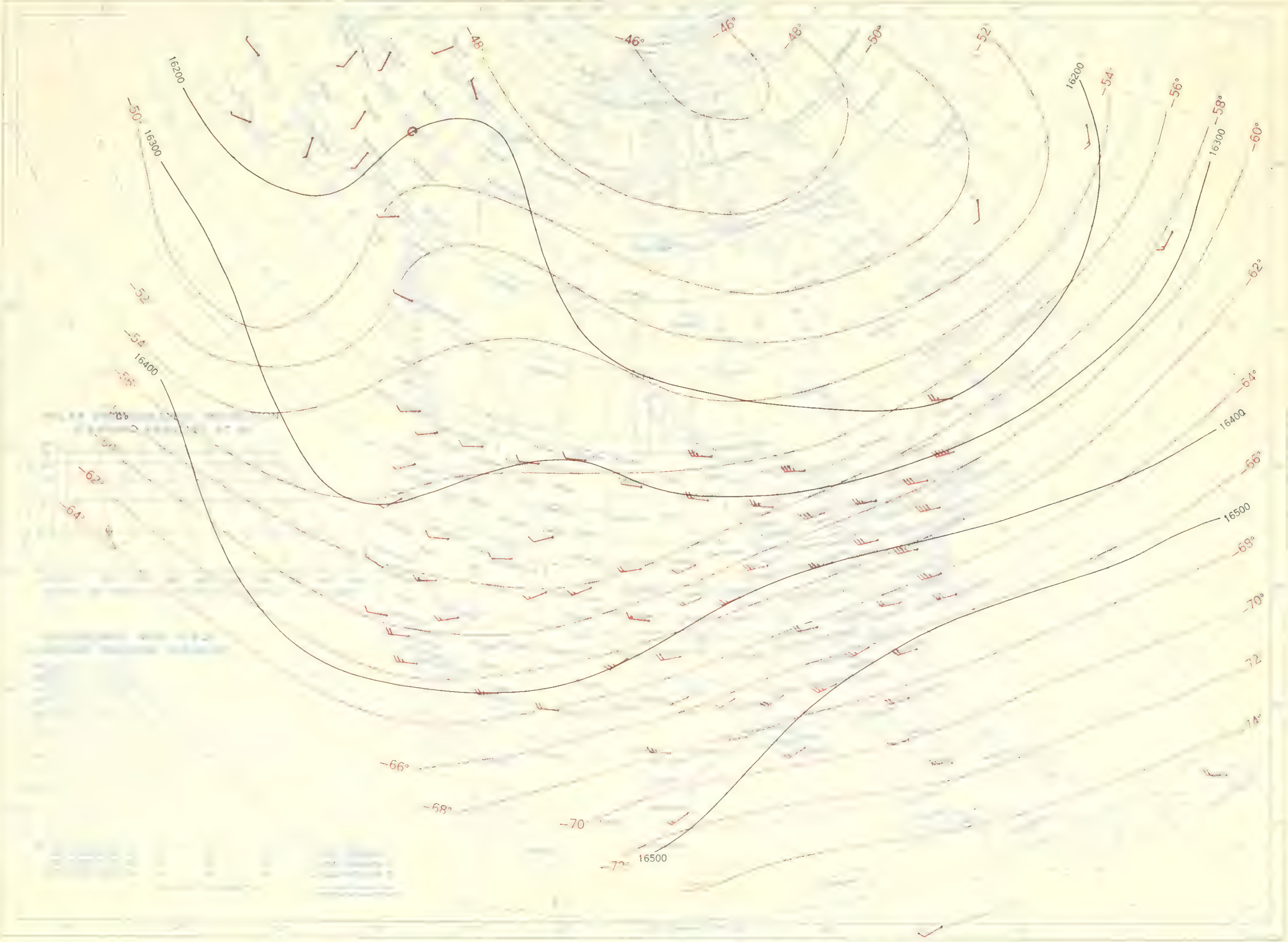
See Chart XII for explanation of map.

Chart XVI. 200-mb. Surface, 0300 GMT, May 1957. Average Height and Temperature, and Resultant Winds.



See Chart XII for explanation of map. All winds are from rawin reports.

Chart XVII. 100-mb. Surface, 0300 GMT, May 1957. Average Height and Temperature, and Resultant Winds.



See Chart XII for explanation of map. All winds are from rawin reports.

U. S. DEPARTMENT OF COMMERCE
SINCLAIR WEEKS, Secretary
WEATHER BUREAU
F. W. REICHELDERFER, Chief

CLIMATOLOGICAL DATA

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JUNE 1957
Volume 8 No. 6

ASHEVILLE: 1957

CONTENTS

SURFACE DATA

	Page
General Summary of Weather Conditions	225
Condensed Climatological Data - States	226
Climatological Data - Stations	227
Monthly and Seasonal Heating Degree Days	231
Storm Data and Unusual Weather Phenomena	235
General Summary of River and Flood Conditions	287
Flood Stage Data	295
Tropical Storms June 1957	298

UPPER AIR DATA

Rawinsonde Data	304

SOLAR RADIATION DATA

Solar Radiation Intensities	310
Blue Hill Data	311
Net Radiation	311
Daily Totals and Average Daily Totals by Weeks	312
DELAYED DATA	314
CHARTS I-XVII	

NOTE.--This publication contains all of the climatic data formerly printed in the MONTHLY WEATHER REVIEW.

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CLIMATOLOGICAL DATA

NATIONAL SUMMARY

Volume 8 No. 6 JUNE 1957

GENERAL SUMMARY OF WEATHER CONDITIONS

A hurricane disaster in southwestern Louisiana, more wet weather, floods and numerous severe local storms in the midcontinent area, continued drought in sections along the northeastern coast, a heat wave in the Northeast about the middle of the month and another in the Far Southwest during the last decade were the month's weather highlights. The month was cloudier than usual in most of the area east of the Continental Divide, while abundant sunshine in the Far West averaged 100 percent of the possible amount at Yuma, Ariz., and 93 percent at Boise, Idaho, for a new June record there.

TEMPERATURE.--Temperatures for June averaged well below normal in the Great Plains and extreme upper Mississippi Valley, well above in California, Nevada, and the Northeast, and about normal elsewhere.

In the Far Southwest temperatures were above normal almost every day along the California coast, and the month was the hottest June on record in downtown Los Angeles, Calif., where the temperature averaged 72.5°. In inland areas, however, a cold snap during the second week dropped minimum temperatures below normal levels with freezing in central and northern Nevada. Temperatures were unusually high over the entire Southwest the last week when new highs for June included 97.2° at San Diego, Calif., on the 18th, and 120° at Yuma, Ariz., on the 24th. El Paso, Tex., recorded 107° on the 28th, the highest temperature there for any month.

The heat wave in the Northeast was preceded by a cold snap in the first decade as temperatures fell to freezing on 1 or 2 days in parts of New York and New England, killing some tender plants in southern New Hampshire on the 8th and 9th and setting a new June low of 38° at Hartford, Conn., on the 10th. Rapidly rising temperatures after the 10th reached the 90° level in the middle Atlantic coastal area on the 12th and virtually the entire East by the 15th. In Washington, D.C., the mercury rose to 90° or above on 8 consecutive days (12th through the 19th), the longest June heat wave in the Nation's Capital since the 10-day record breaker in 1943 which continued from the 19th through the 28th. On the 16th the thermometer rose to 100° in Philadelphia, Pa., and 96° at Burlington, Vt., equaling the June record at the latter place.

Cool weather, without any unusual extremes, in the Great Plains was due mainly to frequent showers and much cloudiness which held daytime temperatures to below-normal levels most of the month.

PRECIPITATION.--June rainfall totaled less than one-half inch in most of the Southwest and in a few small spots along the Atlantic coast, but exceeded 2 inches elsewhere. In fact, totals exceeded 4 inches at nearly all stations from the eastern Great Plains to the Atlantic coast, and numerous stations in the Mississippi Basin reported 6 to over 10 inches. In north-central areas these totals established new records at many stations including Sioux City, Iowa, 8.67 inches; and Erie, Pa., 7.74 inches.

Rains during the week ending June 10 totaled 2 to over 4 inches in coastal areas from southeastern Louisiana to southern New Jersey. The rains helped relieve developing drought conditions in the Maryland-Virginia area and replenished soil moisture in some other dry spots in the Carolinas and Florida. The heavy rains in the Maryland-Virginia area fell on the 6th and 7th, and those farther south on the 7th and 8th.

During the following week, as a series of low pressure troughs crossed the country from west to east, almost daily rains occurred in northern and middle sections, with weekly totals exceeding 1 inch in an area extending from Arkansas and northeastern Texas northward to the Canadian Border from the Continental Divide to the Great Lakes. During the night of the 14th and 15th, 4 to over 10 inches fell in the Missouri-Illinois area in the vicinity of St. Louis, Mo. Downtown St. Louis measured 8.54 inches, Pacific, Mo., 11.75 inches, and Bellville, Ill., 13.75 inches. In Illinois the resulting floods were responsible for 10 deaths and forced 3,500 persons to evacuate their homes. On the 16th heavy rains up to 5 inches or more caused flash floods in the Big Sioux and lower James Rivers of South Dakota, and serious flooding in parts of eastern and north-central Kansas. Rains up to 5 inches also caused flooding in northeastern Oklahoma on the 11th and in central portions of the state on the 14th. On the 16th and 17th heavy rains in southwestern Minnesota caused considerable flooding in a 50-mile radius of Granite Falls and set new 24-hour rainfall records of 8.70 inches at Marshall, 8.67 at Minnesota, and 7.30 inches at Montevideo.

Heavy rains in Louisiana helped prolong flooding along the Red River in that state. About 50,000 acres of cropland along this river were expected to be lost for the season.

Heavy rains in the central and northern Great Plains and upper Mississippi Basin on the 21st and 22d in addition to those of the 17th caused flooding along numerous streams, with the greatest damage apparently in Minnesota and South Dakota. Along the Sioux and Vermillion Rivers of the latter state reports indicated 20,000 acres of crops destroyed and additional thousands damaged.

During the last week of the month rains produced by the southward movement of a front in the Midwest and the passage of hurricane Audrey from southwestern Louisiana to Lake Ontario, generally totaled over 2 inches in eastern Kansas, southern Missouri, the central Gulf States, and the Ohio Valley. On the 27th and 28th, 3 to over 11 inches falling in a belt extending from eastern Kansas to Central Indiana were responsible for floods which drowned several persons and caused heavy property and crop losses.

Large areas in the Great Plains and Mississippi Basin that were suffering from disastrous drought in June 1956 were plagued by too much rain in June 1957. Much of this area that received less than 50 percent of normal rainfall for the first half of 1956, received over 200 percent for the same period in 1957.

Due to below normal rainfall in April, May, and June, drought was becoming serious in some sections along the Atlantic coast from southern Maryland to southern New England by the end of the month.

DESTRUCTIVE STORMS.--Hurricane Audrey was by far the most destructive storm of the month as it moved from southwestern Louisiana to Lake Ontario. More than 400 persons lost their lives, and total damage was estimated at more than $50 million.

Tornadoes were again numerous, although not as frequent as in April and May. One of these storms killed at least 2 persons and damaged property to the extent of $1,000,000 in Springfield, Ill., on the 14th. Another killed at least 6 persons, injured more than a score and caused property damage estimated at more than a million dollars in Fargo, N. Dak., on the 20th.

Hail, as usual, took a heavy crop toll. The most notable storm of this type, however, occurred on the 23d, a few miles west of Fort Stockton, Tex., where 21 persons caught without shelter were injured by stones ranging up to baseball size.

CONDENSED CLIMATOLOGICAL SUMMARY

JUNE 1957

Section	Temperature						Precipitation			
	Monthly extremes						Monthly extremes			
	Station	Highest	Date	Station	Lowest	Date	Station	Greatest	Station	Least
		°F			°F			In.		In.
Alabama	2 Stations	99	20+	Russellville	55	26	Claiborne	12.43	Autaugaville	1.93
Arizona	do	120	24+	2 Stations	24	1+	Mormon Lake RS	2.42	20 Stations	.00
Arkansas	Ashdown	98	30	Gravette	49	24	Nashville Peach Sub Sta	13.54	Augusta	1.86
California	Cow Creek	123	25+	White Mountain 2	19	15	Cuyamaca	1.05	94 Stations	.00
Colorado	Eversoll Ranch	106	29	Climax 2NW	16	17	Springfield 7WSW	4.32	Wolf Creek Pass 4W	.07
Connecticut	3 Stations	97	16+	Mansfield Hollow Dam	30	10	Hartford Brainerd Fld	2.65	Norwich Pub Util Pl	.23
Delaware	Newark Univ Farm	100	18	Newark Univ Farm	44	9	Bridgeville 1NW	8.47	Wilmington Porter Resv	2.00
Florida	Jacksonville WB AP	98	27	Deer Park	59	14	Live Oak 2ESE	18.13	Key West WB City	.45
Georgia	Greenville 2W	100	16	Blairsville Exp Sta	47	1	Flat Top	13.73	Athens Col of Agri	1.00
Idaho	Swan Falls PH	103	4	Obsidian 2NNW	21	15	Pierce RS	4.04	Grand View	.03
Illinois	Palestine	98	17	Sycamore	36	3	E St Louis Parks Col	19.61	Rockford	1.10
Indiana	Kokomo Sewage Plant	100	16	Wabash	36	3	Rockville	13.15	Elkhart	2.95
Iowa	Eldora	98	6	Saratoga 2E	36	2	Jefferson 1S	10.24	Cascade	1.66
Kansas	Liberal	106	29	Leoti	39	2	Pittsburg 2E	17.35	Hugoton	2.04
Kentucky	Owensboro 2W	100	17	2 Stations	49	21+	Falmouth	10.66	Ashland Dam 29	1.75
Louisiana	Donaldsonville	97	10+	Antioch Fire Danger T	56	1	Mermentau	21.12	Ponchartrain Causeway	1.96
Maine	Belfast	95	24	2 Stations	28	9	West Buxton 2NNW	4.76	Ellsworth	1.26
Maryland	2 Stations	100	16	New Germany	41	5	Waldorf Police Brks	7.54	La Plata 1W	2.25
Massachusetts	West Medway	100	17	2 Stations	31	4+	Hubbardstown	6.83	Edgartown	.05
Michigan	Greenville	99	17	Grand Marais CAA AP	24	5	Boyne Falls St Nur	8.74	Stephenson 5W	1.32
Minnesota	St. Peter 2SW	93	21	4 Stations	30	2+	Marshall	13.83	Blue Earth	2.43
Mississippi	2 Stations	98	17+	2 Stations	55	25+	Dancy	14.77	Pascagoula High Sch	1.97
Missouri	do	96	16	do	42	3	Moselle	23.11	Booneville Waterwks	2.12
Montana	Lonesome Lake	97	4	Yellowstone Park Ent NE	24	23	Gallatin Gateway 32S	9.28	Hamilton	.38
Nebraska	Curtis	98	5	Nenzel 20S	37	1	Red Cloud	12.72	Harrison 10NE	1.75
Nevada	2 Stations	116	27+	Eureka	23	16	Jarbidge	1.99	2 Stations	.00
New Hampshire	Lebanon CAA AP	99	18	Grafton	27	9	Mt Washington	6.69	Portsmouth	1.11
New Jersey	Runyon	102	17	Charlotteburg	29	10	Pleasant Run	4.05	Charlotteburg	1.04
New Mexico	2 Stations	112	29	Gavilan	17	17	Hedrick Ranch	2.45	26 Stations	.00
New York	do	102	17+	2 Stations	29	9	New Albion	7.60	Patchogue	.16
North Carolina	do	100	14+	Transou	43	1	Pores Knob 4ESE	18.31	Edenton	1.11
North Dakota	3 Stations	90	5+	Drake	29	1	Amidon	11.80	Wishek	1.71
Ohio	Fremont	100	17	Charles Mill Dam	38	3	Millersburg 1W	11.01	Gallipolis 5W	1.25
Oklahoma	2 Stations	109	29	2 Stations	42	2+	Nowata	16.56	Regnier	1.52
Oregon	Arlington	106	4	Chiloquin	23	17	Government Camp	4.43	2 Stations	T
Pennsylvania	9 Stations	100	16+	Bradford 4W Res	28	9	Edinboro	8.74	Hawley	1.23
Rhode Island	Providence WB AP	95	16	Kingstown	35	10	Woonsocket	2.18	Block Island WB AP	T
South Carolina	Tilghman Forest Nurs	101	14+	2 Stations	54	9+	Sassafras Mountain	15.32	Parr	1.61
South Dakota	Vermillion 2N	97	30	Deerfield 5NW	26	15+	Flandreau	9.28	Provo	1.74
Tennessee	Palmetto	100	16	Crossville CAA AP	48	20	Haw Knob	15.57	Bethel	1.65
Texas	Presidio	117	28	Mount Locke	42	3	Alvin	13.55	2 Stations	.00
Utah	Zion NP	107	26	Cedar Breaks NM	17	16	Antelope Island	3.59	Hanksville CAA AP	.11
Vermont	2 Stations	95	16+	Mount Mansfield	26	5	Mount Mansfield	9.52	Mays Mill	2.25
Virginia	Alexandria Potomac Yds	99	16	Big Meadows	40	9	Stuart	11.09	Wallaceton Lk Drummond	1.33
Washington	Ice Harbor Dam	103	2	Rainier Paradise RS	23	20	Cedar Lake	6.70	Dallesport CAA AP	.04
West Virginia	Logan	101	17	Canaan Valley	39	29	Pickens 1	11.06	Huntington 1	1.43
Wisconsin	West Allis	95	17	2 Stations	27	2	Frederic	10.86	2 Stations	1.55
Wyoming	5 Stations	95	5+	Pole Mountain	20	15	Big Horn 5SW	6.36	Sage 4NNW	.27
Puerto Rico	Manati	97	10	Garzas Dam	55	24	Rio Blanco 1800 Ft	20.60	Mona Island	.71

+ And also on a later date or dates.

Note: Dates in Table 1 apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for times of observations).

State and station	Elevation (ground)	Pressure		Temperature								No. of days				Precipitation			No. of days		Snow, Sleet		Wind		Fastest mile			No. of days (sunrise to sunset)				
		Station Ø	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F or above	Min 32° F. or below	Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy	Sky cover tenths (sunrise to sunset)	Possible sunshine
	Ft.	Mb.	Mb.	°F	°F	°F	°F	°F		°F				°F	%	In	In	In			In	In	M p. h.		M p. h.			0–3	4–7	8–10	0-10	%
ALABAMA																																
Birmingham	610	989.8	1014.8	89	70	79.2	1.8	95	12	65	1+	11	0	68	75	7.70	3.49	3.85	13	7	0.0	0	7.0	S	56	SW	28	0	11	19	7.7	54
Mobile	211	1006.6	1014.7	88	72	80.0	.4	92	16+	68	1+	12	0	72	79	3.61	-2.48	1.38	12	12	0	0	8.6	S	--	--	--	2	18	10	6.7	--
Montgomery	198	1006.7	1014.6	90	70	80.3	.7	96	19	65	1	19	0	70	75	5.11	.42	4.18	10	11	0	0	6.7	E	35	SW	28	4	10	16	7.1	60
ARIZONA																																
Flagstaff	6993	------	------	77	43	60.0	1.7	89	24+	34	7	0	0	--	--	1.59	1.06	1.48	3	4	0	0	---	---	--	--	--	21	7	2	2.6	--
Phoenix	1114	968.5	1006.6	102	72	87.1	3.2	112	24	62	11	28	0	47	28	.26	.20	.26	1	1	0	0	5.6	E	*32	SE	3	22	3	5	2.5	92
Prescott	5014	845.6	1008.8	88	56	71.9	1.8	99	24+	46	11	17	0	33	--	.38	.15	.35	2	2	.0	0	10.8	SSW	38	N	3	20	9	1	2.5	92
Tucson	2558	921.4	1006.7	100	70	85.3	3.2	111	24	59	11	28	0	39	23	.17	-.13	.09	3	3	.0	0	8.4	SE	31	E	19	22	8	0	2.2	96
Winslow	4880	849.3	1006.5	91	57	74.3	2.9	102	28	44	17	19	0	30	23	.22	-.07	.22	2	3	.0	0	9.9	WSW	*33	WSW	5+	20	8	2	2.8	--
Yuma	199	1001.4	1006.2	107	74	90.7	2.9	120	24	67	11	30	0	41	22	.00	-.01	.00	0	0	.0	0	9.9	SSE	33	NW	9	22	8	0	1.8	99
ARKANSAS																																
Fort Smith	458	995.3	1011.8	88	68	78.1	-.2	95	11+	59	25	17	0	68	76	5.63	1.32	1.75	10	10	0	0	7.8	ENE	26	NW	12	9	9	12	6.1	54
Little Rock	257	999.7	1012.5	88	70	78.8	.3	93	16	61	25	13	0	68	73	3.39	-.04	.99	12	8	.0	0	8.9	S	38	SW	4	5	15	10	6.4	53
Texarkana	361	------	------	88	70	78.9	-1.0	94	28	64	4+	13	0	--	--	6.84	2.99	1.61	10	11	.0	0	8.5	SSW	--	--	--	--	--	--		--
CALIFORNIA																																
Bakersfield	489	993.2	1011.0	97	65	81.0	4.1	112	25	57	15	24	0	47	34	.32	.23	.32	2	0	.0	0	7.2	NW	*29	NNW	9	23	6	1	1.7	--
Bishop	4108	872.0	1009.8	94	53	73.2	3.8	104	24+	40	17	22	0	--	--	T	-.10	T	0	0	.0	0	---	---	--	---	--	22	6	2	2.1	-
Blue Canyon	5280	839.8	1012.2	73	54	63.2	4.2	85	27	40	15	0	0	--	--	.26	-.78	.26	1	0	0	0	---	---	--	---	-	20	6	4	3.1	-
Burbank	699	985.4	1011.7	85	61	72.9	5.4	102	18	57	1+	9	0	56	63	.08	.01	.08	2	0	.0	0	4.8	S	*21	NE	17	15	11	4	3.7	-
Eureka (U)	43	1015.2	1017.6	62	52	57.2	1.6	68	1+	49	1+	0	0	--	--	.30	-.36	.16	5	0	0	0	6.8	- -	23	NW	10	8	10	12	5.7	69
Fresno	331	999.3	1010.9	93	61	77.1	1.4	108	24	52	14+	21	0	48	40	.16	.05	.16	1	0	.0	0	7.2	NW	22	W	2+	22	6	2	1.9	95
Los Angeles (U)	312	------	------	83	62	72.5	4.7	104	18	58	1+	5	0	57	65	.08	.01	.08	2	0	.0	0	5.5	---	22	W	17	14	8	8	4.4	67
Los Angeles	99	1008.1	1011.7	77	62	69.5	4.8	100	18	57	1	2	0	58	71	.06	-.01	.06	2	0	.0	0	7.6	WSW	*21	WSW	4+	8	14	8	5.1	--
Mt. Shasta (R)	3544	892.0	1014.2	77	48	62.7	2.9	89	23+	39	14+	0	0	--	--	.01	-2.22	.01	1	1	.0	0	---	---	--	---	--	16	11	3	3.2	--
Oakland	3	1013.2	1013.6	77	56	66.1	4.5	99	24	50	13+	4	0	53	69	.04	-.11	.04	1	0	0	0	9.0	WNW	*23	WNW	14+	16	12	2	3.0	--
Red Bluff	341	999.0	1011.3	94	65	79.8	3.8	108	27	56	15	24	0	44	31	.01	-.45	.01	1	1	.0	0	9.5	NW	30	NW	14	18	11	1	2.8	96
Sacramento	17	1009.8	1011.0	91	58	74.9	4.6	106	24	51	13	19	0	51	49	T	-.11	T	0	0	.0	0	11.8	SSW	36	SW	12	22	6	2	2.1	97
Sandberg (R)	4517	862.2	1010.8	79	58	68.7	3.9	96	24	40	15	6	0	--	--	.09	.05	.09	2	0	.0	0	15.9	---	*51	NNW	20	23	5	2	1.9	--
San Diego	19	1008.5	1011.4	75	62	68.2	2.6	97	18	59	2+	3	0	58	75	.26	.22	.26	2	0	0	0	8.5	SSW	17	S	9+	10	9	11	5.3	58
San Francisco (U)	52	------	------	69	54	61.4	2.3	86	17+	51	3+	0	0	--	--	.06	-.09	.05	2	0	.0	0	10.7	---	31	W	20	23	7	0	2.1	88
San Francisco	8	1013.2	1013.8	74	54	63.6	3.9	94	24	49	4+	3	0	51	70	.01	-.12	.01	1	0	.0	0	12.9	WNW	43	W	7	18	10	2	2.8	--
Santa Maria	238	1004.4	1013.1	72	51	61.8	1.7	95	17	43	16	1	0	51	74	.26	.12	.26	1	0	.0	0	7.9	WNW	*29	WNW	14	14	12	4	3.6	--
COLORADO																																
Alamosa	7536	772.4	1013.1	77	43	59.8	1.2	87	28	29	17	0	1	--	--	.21	-.28	.19	3	6	.0	0	---	--	--	---	--	15	12	3	4.2	--
Colorado Springs	6173	811.0	1011.8	78	49	63.5	-2.0	92	29	40	17	1	0	43	53	1.08	-.71	.49	8	11	.0	0	8.8	SSE	*45	WNW	21	9	13	8	5.0	--
Denver	5292	835.8	1010.3	79	52	65.9	-.5	93	29	41	17	3	0	40	46	1.09	-.55	.54	6	6	.0	0	11.8	S	34	W	21	11	10	9	5.1	67
Grand Junction	4849	857.1	1009.9	84	56	69.9	-1.3	97	28	40	17	11	0	36	35	.61	.16	.30	5	5	.0	0	8.7	ESE	42	SE	15	13	12	5	4.4	78
Pueblo	4639	855.4	1010.8	83	53	67.8	-1.3	99	29	43	2+	5	0	47	54	.84	-.56	.70	4	6	.0	0	7.6	SE	41	NW	21	14	9	7	4.5	76
CONNECTICUT																																
Bridgeport	7	1014.7	------	81	62	71.6	4.7	95	16+	47	10	6	0	--	--	.40	-3.07	.23	4	3	.0	0	---	---	--	---	--	7	13	10	5.4	--
Hartford	169	1008.8	1014.7	84	59	71.6	2.7	96	16	38	10	7	0	60	70	1.99	-1.63	1.22	6	5	.0	0	11.6	S	45	W	29	3	15	12	6.6	62
Middletown (U)	133	1010.4	------	83	59	70.9	---	96	16	42	10	5	0	--	--	.95	----	.33	6	3	.0	0	---	---	%41	SSE	29	--	--	--	---	--
New Haven	6	1014.3	1014.9	79	60	69.9	4.1	96	17	42	10	2	0	--	--	.96	-2.85	.44	6	4	.0	0	6.9	---	26	SE	29	6	13	11	6.0	71
DELAWARE																																
Wilmington	78	1011.7	1015.1	84	64	74.2	2.4	98	16	45	9	6	0	64	74	3.45	-.57	1.23	13	5	0	0	9.7	S	-	---	--	6	13	11	6.1	--
DIST. OF COLUMBIA																																
Washington (U)	72	------	------	86	67	76.6	2.7	98	15+	53	8+	11	0	--	--	3.01	-.41	1.46	12	7	.0	0	6.0	---	26	NE	16	--	--	--	---	--
Wash. Nat'l. AP	14	1010.8	1015.3	86	67	76.6	3.2	97	15+	53	8+	12	0	65	70	3.02	-.39	1.60	13	7	.0	0	10.1	S	42	SW	28	8	11	11	5.8	64
FLORIDA																																
Apalachicola (U)	13	1013.0	------	87	75	81.0	1.1	90	30	70	1	1	0	--	--	6.84	1.37	3.65	12	9	.0	0	7.4	---	28	SE	7	8	15	7	5.5	71
Daytona Beach	31	1014.5	1016.2	88	70	79.0	-.1	95	28+	64	14+	11	0	70	82	4.23	-2.46	1.60	13	10	.0	0	9.1	SSW	*32	W	9+	6	12	12	6.3	--
Fort Myers	15	1014.7	------	90	73	81.2	.6	93	17+	67	1+	20	0	--	--	4.85	-4.35	1.75	11	18	.0	0	7.5	---	*25	ESE	21	4	17	9	6.3	--
Jacksonville	24	1014.3	1015.8	91	73	81.7	1.4	98	27	68	2	22	0	71	74	7.10	.28	3.96	10	5	.0	0	10.6	SE	35	E	25	3	18	9	6.2	60
Key West (U)	9	1013.9	------	91	78	84.5	1.9	94	14+	73	3	24	0	--	--	.45	-3.56	.28	6	8	.0	0	7.1	---	21	S	22	2	19	9	6.5	75
Lakeland (U)	214	------	------	89	73	80.9	.8	93	20+	68	2	15	0	--	--	3.96	-4.15	.95	17	14	.0	0	6.4	---	--	---	--	2	21	7	6.1	67
Miami (U)	8	------	------	86	76	80.9	.6	93	10	69	2	2	0	--	--	4.52	-1.03	2.46	13	10	.0	0	10.2	---	32	SE	18	3	21	6	5.7	62
Miami	7	1014.5	1015.6	88	74	81.2	-.1	94	10	68	2	7	0	70	78	5.82	-1.00	1.67	15	14	.0	0	7.9	SSE	23	SW	6+	2	17	11	6.6	--
Miami Beach	8	------	------	87	78	82.4	.9	97	10	70	1	3	0	--	--	3.00	-2.03	1.39	14	--	.0	0	---	---	--	---	--	11	10	9	---	--
Orlando	106	1011.2	1015.6	90	72	80.7	-.1	94	28+	68	1+	18	0	70	79	4.39	-3.46	1.01	16	10	.0	0	8.1	S	*36	S	27	3	19	8	6.1	--
Pensacola (U)	13	1011.6	------	87	76	81.4	1.8	92	30	70	25	4	0	--	--	2.90	-2.27	1.28	11	10	.0	0	9.0	---	33	SW	28	--	-	-	---	55
Tallahassee	64	1012.2	1015.0	88	71	79.7	.0	94	20	66	5	15	0	70	78	9.69	2.97	4.00	12	12	.0	0	5.4	ENE	--	---	--	2	16	12	6.6	--
Tampa	19	1014.2	1015.7	88	73	80.3	-.1	93	15	68	1	7	0	70	81	11.11	3.34	4.31	15	15	.0	0	9.7	E	*29	S	9	4	19	7	5.9	77
West Palm Beach	15	1014.6	1015.7	89	73	81.3	.7	93	29	68	3+	13	0	72	78	7.87	-.02	1.69	18	14	.0	0	8.8	E	*71	E	29	3	15	12	6.7	--
GEORGIA																																
Athens	798	986.6	1015.5	87	67	77.0	-1.9	95	13+	60	10	13	0	68	78	1.32	-2.52	.33	11	10	.0	0	8.0	SW	*40	WSW	28	4	12	14	6.6	--
Atlanta	975	975.0	1015.8	87	69	77.8	.1	94	16	63	1+	13	0	68	76	3.06	-.96	1.08	10	3	.0	0	8.9	E	55	SW	28	5	12	13	6.8	50
Augusta	143	1008.3	1015.0	89	68	78.1	-1.1	95	13+	60	1	17	0	70	80	2.78	-.96	1.00	12	10	.0	0	5.8	SE	*25	N	13	2	14	14	6.8	--
Columbus	385	1001.0	------	89	70	79.5	.5	96	16	65	6+	17	0	--	--	4.29	.34	1.69	15	12	.0	0	---	---	--	---	--	4	12	14	7.0	--
Macon	356	1001.5	1015.0	90	70	80.0	-.9	97	16	63	10	20	0	68	76	2.16	-1.59	.73	12	11	.0	0	8.5	NE	37	E	22	5	8	17	6.8	53
Rome	637	992.0	------	88	66	76.8	-.6	95	16+	56	1	11	0	--	--	4.86	.79	1.60	[illegible]	11	.0	0	---	---	--	---	--	4	10	16	7.1	--
Savannah	48	1012.7	1015.4	88	70	78.8	-.2	95	13	64	1+	15	0	70	81	5.60	.43	2.19	14	8	.0	0	8.2	SW	32	SW	28	3	15	12	6.6	66
Thomasville (U)	283	------	------	90	71	80.4	.7	97	21	68	1+	17	0	--	--	7.21	2.36	3.34	14	9	.0	0	---	---	--	---	--	--	--	--	---	--
IDAHO																																
Boise	2842	918.1	1012.4	80	52	66.0	.9	94	3+	38	16	6	0	43	48	.25	-.59	.17	5	1	.0	0	10.1	NW	47	S	4	12	7	11	4.9	93
Idaho Falls 46W (R)	4933	847.6	1012.9	76	45	60.3	.7	89	4	34	14	0	0	--	--	.83	.02	.32	9	2	.0	0	8.6	---	a32	WSW	24	--	--	--	---	--
Idaho Falls 42NW (R)	4790	------	------	76	44	60.0	.4	91	29	34	15	2	0	--	--	.53	-.55	.20	7	0	.0	0	10.0	---	a40	SW	12	--	--	--	---	--
Lewiston	1413	962.4	1013.3	79	52	65.7	-.6	93	23	44	15+	5	0	--	--	1.20	-.55	.94	8	3	.0	0	---	---	--	---	--	7	4	19	6.8	--
Pocatello	4444	861.5	1012.2	78	49	63.3	.3	91	29	38	14	2	0	42	51	.26	-.76	.07	7	3	.0	0	11.9	SW	42	W	13	9	8	13	5.7	67
ILLINOIS																																
Cairo (U)	314	1000.3	------	86	69	77.6	-.2	95	12+	58	2	9	0	--	--	9.13	5.29	2.24	14	14	.0	0	7.6	---	35	SW	13	3	13	14	7.0	58
Chicago	610	989.8	1012.4	80	62	71.2	1.8	96	17	47	3	3	0	58	67	5.94	1.79	1.99	13	7	.0	0	9.2	S	32	NW	19	5	7	18	6.7	68
Moline	589	989.8	1011.9	80	61	70.4	-.4	93	17	43	3	2	0	59	70	2.52	-2.11	.92	11	[illegible]	.0	0	9.1	S	33	SW	14+	4	12	14	6.5	59
Peoria	654	990.2	1012.3	81	63	71.7	.8	92	17	45	3	2	0	60	69	3.04	-.84	1.08	10	10	.0	0	10.2	S	29	SW	22	5	13	12	6.6	63
Springfield	[illegible]	989.5	1012.6	83	63	73.0	1.1	91	16+	47	3	2	0	62	69	5.65	1.47	2.28	11	10	.0	0	10.6	SSW	75	SW	14	4	13	13	6.7	60
INDIANA																																
Evansville	383	998.3	1013.7	85	66	75.5	.9	95	17	57	25	6	0	66	76	4.95	1.08	1.15	13	9	.0	0	7.8	SSW	57	NW	12	5	7	18	7.0	46
Fort Wayne	801	982.4	1013.2	79	60	69.6	.6	93	17	43	3	3	0	60	73	6.67	3.11	3.29	13	10	.0	0	11.2	S	40	W	18	7	7	16	6.5	61
Indianapolis	793	985.1	1012.6	82	63	72.1	.7	93	17	50	3	2	0	63	75	6.91	2.70	3.71	17	10	.0	0	10.7	SSW	49	SW	13	4	8	18	7.1	74
South Bend	768	985.1	1012.9	79	59	68.9	.2	93	17	42	3	3	0	60	75	3.21	-.62	.82	14	7	.0	0	9.9	SSW	*26	SSW	22	5	9	16	6.8	--

See footnotes at end of table.

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure		Temperature												Precipitation							Wind					No. of days (sunrise to sunset)				
												No. of days							No. of days		Snow, Sleet				Fastest mile							
		Ø Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F or above	Min. 32° F or below	Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max. depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy	Sky cover, tenths (sunrise to sunset)	Possible sunshine
	Ft	Mb	Mb	°F	°F	°F	°F	°F		°F				°F	%	In.	In.	In.			In.	In.	M. p. h.		M. p. h.			0–3	4–7	8–10	0–10	%
IOWA																																
Burlington	694	988.2	1013.0	81	61	71.0	-0.7	92	17	47	3	2	0	61	72	3.63	-2.01	1.11	10	9	0.0	0	9.4	SSW	35	N	26	5	12	13	6.5	73
Des Moines	948	981.0	1012.0	81	60	70.4	-.2	92	6	50	2	2	0	58	69	3.67	-1.32	1.32	15	11	.0	0	11.1	SSW	36	W	22	5	13	12	6.8	65
Dubuque	1065	986.5	1012.1	77	56	66.4	-1.4	89	17	44	2+	0	0	57	69	2.46	-2.63	.62	13	9	.0	0	----	---	---	---	--	4	11	15	7.2	--
Sioux City	1094	969.9	1010.8	82	58	70.0	-.3	93	6	47	2	6	0	56	64	8.67	4.26	3.89	12	10	.0	0	12.5	S	50	N	6	7	9	14	6.3	65
Waterloo	870	------	-----	78	57	67.9	-1.3	87	6+	44	2	0	0	--	--	4.03	-.73	1.31	14	8	.0	0	11.9	---	---	---	--	--	--	--	---	--
KANSAS																																
Concordia (U)	1375	962.1	------	82	62	71.9	-2.0	95	29	50	2	3	0	--	67	4.37	.14	1.15	12	14	.0	0	7.1	---	34	NW	14	11	9	10	5.5	71
Dodge City	2594	924.5	1010.4	83	59	70.7	-2.8	100	29	44	2	5	0	57	66	4.38	1.37	1.00	12	11	.0	0	15.8	S	72	NW	21	10	14	6	4.9	82
Goodland	3645	885.9	1010.4	81	53	66.9	-1.6	97	29	44	2+	3	0	53	66	2.99	-.03	1.22	12	14	.0	0	11.0	SSE	*35	NNW	7	11	14	5	4.4	--
Topeka	877	976.3	1011.6	83	61	72.2	-1.6	93	6+	47	3	3	0	62	73	5.10	.56	1.40	13	13	.0	0	11.2	S	40	W	14+	4	10	16	6.9	58
Wichita	1321	963.1	1010.7	83	62	72.7	-2.6	96	29	54	3+	3	0	63	75	10.46	5.47	2.46	14	13	.0	0	11.5	SSE	64	NW	11	8	10	12	5.9	72
KENTUCKY																																
Lexington	979	979.3	1014.6	83	65	73.8	.8	94	16	57	3	3	0	65	78	5.74	1.53	1.97	16	9	.0	0	9.3	S	---	---	--	7	9	14	6.6	--
Louisville	474	994.7	1013.7	83	66	74.8	.6	94	16	58	26	4	0	66	77	6.57	2.51	1.82	15	11	.0	0	9.0	S	58	W	11	6	8	16	6.6	57
LOUISIANA																																
Baton Rouge	64	1010.5	1013.6	90	72	80.9	1.3	95	9	66	2	19	0	72	80	4.56	-.46	1.51	13	14	.0	0	8.3	E	---	---	--	1	15	14	7.4	--
Lake Charles	12	1010.5	1012.0	88	73	80.9	.2	94	23	68	3	16	0	73	82	11.46	6.41	6.84	10	10	.0	0	8.7	ESE	*69	SE	27	1	16	13	6.9	--
New Orleans (U)	9	1011.5	------	88	75	81.6	-.3	93	30	70	3+	14	0	--	--	7.15	1.58	1.65	19	16	.0	0	5.8	---	27	S	27	5	14	11	6.3	56
New Orleans	3	1011.2	1013.4	88	73	80.6	.1	93	30	68	3+	14	0	73	80	7.41	1.78	1.74	16	13	.0	0	7.2	SSW	*35	S	27	6	14	10	6.1	--
Shreveport	252	1003.1	1012.1	89	71	79.6	-1.4	94	9+	65	6+	16	0	70	77	8.37	5.73	3.57	10	10	.0	0	8.4	S	---	---	--	5	13	12	6.5	60
MAINE																																
Caribou	624	989.8	1013.0	70	50	60.3	1.9	89	23	35	6+	0	0	52	75	3.98	.03	.84	13	3	.0	0	10.4	SSE	*29	S	30	3	9	18	7.4	--
Portland	61	1010.2	1014.5	76	52	64.1	2.3	91	24	37	9	1	0	55	75	2.38	-.94	1.14	8	5	.0	0	10.4	S	33	NE	25+	6	12	12	6.5	68
MARYLAND																																
Baltimore (U)	14	------	------	86	70	78.0	3.7	99	16+	53	8	12	0	--	--	4.18	.66	1.27	12	--	---	---	----	---	---	---	--	--	--	--	---	--
Baltimore	146	1010.5	1015.4	85	65	74.8	2.6	97	16+	51	8	11	0	65	75	4.08	.56	2.28	12	6	.0	0	10.3	S	52	NW	29	6	15	9	6.0	65
Frederick	294	------	------	85	63	73.7	1.1	99	18	50	8+	10	0	--	--	2.61	-1.35	.59	13	--	.0	0	----	---	---	---	--	--	--	--	---	--
MASSACHUSETTS																																
Blue Hill Obs. (R)	629	991.8	1014.9	80	57	67.4	3.4	91	15+	44	8	2	0	--	73	1.58	-2.60	.82	7	4	.0	0	13.1	SSW	42	WSW	19	5	14	11	6.3	62
Boston	15	1009.5	1014.2	81	62	71.3	4.1	95	15	51	8	5	0	57	66	1.62	-1.86	.52	7	3	.0	0	14.8	SW	*39	WNW	7+	6	11	13	6.3	75
Nantucket	43	1015.0	1015.8	72	57	64.4	3.5	86	16	43	4	0	0	59	84	.26	-2.98	.22	2	0	.0	0	11.9	SW	34	SW	29	8	7	15	6.4	72
Pittsfield	1153	972.0	------	79	55	66.7	3.7	90	18	38	8	1	0	--	--	2.91	-1.68	.75	12	6	.0	0	----	---	---	---	--	--	--	--	---	--
Worcester	986	978.3	------	78	57	67.4	2.0	91	17	44	4+	2	0	--	--	3.23	-.78	1.08	7	5	.0	0	12.2	---	*31	SSW	29+	5	13	12	6.3	--
MICHIGAN																																
Alpena (U)	587	989.8	------	68	53	60.6	-.9	86	21	41	2	0	0	--	74	5.42	2.87	1.64	13	4	.0	0	9.4	---	34	W	29	2	17	11	6.5	57
Detroit	619	987.1	1013.4	78	60	68.7	.6	90	22	40	3	2	0	57	69	3.23	.33	.92	14	6	.0	0	10.8	S	41	W	13	4	13	13	6.6	55
Detroit (Willow Run)	722	984.8	1012.7	79	59	69.2	.6	95	17	42	3	3	0	57	69	3.11	-.15	.68	14	6	.0	0	10.8	SW	*49	WSW	13	5	12	13	6.6	--
East Lansing (U)	856	------	------	80	58	69.0	1.6	95	17	41	3	3	0	--	--	2.88	-.49	.91	10	4	.0	0	4.4	---	12	S	22	--	--	--	---	68
Escanaba (U)	594	988.2	------	69	53	61.0	.3	84	15	39	2	0	0	--	76	1.73	-1.07	.71	8	5	.0	0	9.6	---	30	N	6	5	13	12	6.4	58
Flint	761	985.1	1012.9	77	56	66.5	-.9	92	17	36	3	3	0	58	74	4.39	1.38	1.43	13	7	.0	0	8.1	SW	*23	WSW	18	5	15	10	6.4	--
Grand Rapids	681	987.8	1012.5	78	57	67.5	.8	94	22	43	2	3	0	57	71	6.42	3.07	2.35	14	7	.0	0	10.4	S	39	W	17	4	11	15	7.1	61
Marquette (U)	677	983.7	------	70	50	60.0	.4	93	17	38	8	1	0	--	67	1.37	-2.09	.40	10	6	.0	0	8.0	---	29	SW	15	5	9	16	6.9	65
Muskegon	627	989.5	1012.6	75	57	66.0	1.6	90	17	41	2	1	0	56	68	4.26	1.39	1.27	9	6	.0	0	----	---	---	---	--	8	11	11	5.9	--
Sault Ste. Marie	721	988.8	1012.2	68	48	58.2	.1	84	17	35	5	0	0	51	79	3.74	.72	1.37	13	3	.0	0	11.2	E	29	NW	1	5	10	15	6.7	49
MINNESOTA																																
Duluth	1409	969.5	1010.8	68	47	57.3	-2.4	80	21	35	2	0	0	48	76	6.84	2.51	3.43	16	10	.0	0	11.7	E	43	NW	21	3	8	19	7.7	53
Intern'l. Falls	1179	968.5	1009.6	69	45	56.8	-3.3	80	19	30	12	0	2	48	74	5.92	2.19	2.48	20	6	.0	0	10.7	N	*29	W	15	2	11	17	7.9	--
Minneapolis	830	978.0	1011.1	77	58	67.3	-.9	90	21	46	2+	1	0	53	65	4.12	-.14	2.10	12	8	.0	0	11.8	S	40	NW	21	7	9	14	6.4	57
Rochester	1017	974.6	1011.2	76	56	65.8	-1.0	88	17	38	2	0	0	55	68	4.16	-.17	1.15	13	9	.0	0	10.6	S	---	---	--	4	12	14	6.7	--
St. Cloud	1034	972.6	1010.1	75	52	63.3	-1.7	86	20	40	2	0	0	53	71	8.54	4.69	3.33	12	8	.0	0	8.8	S	*55	WNW	21	6	10	14	6.5	--
MISSISSIPPI																																
Jackson	305	1001.9	1013.7	89	70	79.4	-.5	93	15+	65	2+	17	0	70	78	8.92	5.20	2.52	14	12	.0	0	6.1	SSE	52	SE	27	1	14	15	7.2	53
Meridian	294	1000.3	------	91	69	79.8	.7	96	17+	64	1	21	0	--	--	6.05	1.72	2.22	11	10	.0	0	----	---	---	---	--	3	16	11	6.4	--
Vicksburg (U)	234	1004.3	------	87	71	79.1	-.4	93	17	65	3+	13	0	--	--	7.60	4.29	1.98	12	8	.0	0	7.5	---	38	SE	27+	3	14	13	6.8	41
MISSOURI																																
Columbia	778	984.4	1012.4	83	63	73.4	.5	91	6+	50	3	5	0	63	74	2.35	-2.55	.57	14	13	.0	0	8.2	SSE	31	NW	11	6	10	14	6.7	60
Kansas City	741	978.0	1012.0	84	66	75.1	-.3	93	11	55	3	7	0	62	66	7.11	2.09	2.05	12	11	.0	0	10.6	S	56	NW	22	4	11	15	6.8	57
St. Joseph	809	977.0	------	83	62	72.8	-1.6	93	11	50	3	5	0	--	--	4.25	-2.21	2.41	12	14	.0	0	10.7	---	*40	W	14	4	14	12	6.3	--
St. Louis (U)	465	------	------	84	68	76.0	.2	93	17	58	3	5	0	--	--	14.10	10.30	8.74	15	11	.0	0	11.1	---	59	SW	12	9	10	11	5.9	50
St. Louis	552	992.6	1012.8	85	66	75.6	.5	94	17	56	3	6	0	64	70	10.48	6.11	4.75	14	10	.0	0	8.3	S	---	---	--	3	13	14	7.2	--
Springfield	1265	965.8	1012.5	82	63	72.7	-.2	90	6	49	2	1	0	65	79	6.97	1.41	1.43	18	16	.0	0	11.6	S	49	N	30	7	6	17	6.7	73
MONTANA																																
Billings	3568	889.6	1011.8	74	51	62.7	-1.3	91	5	41	15	1	0	49	65	4.49	1.88	1.24	16	13	.0	0	10.6	SW	42	NW	6	4	12	14	6.7	66
Butte	5530	829.3	1014.5	69	41	54.7	.2	85	30	32	14	0	1	37	--	1.80	-.48	.52	12	8	T	T	7.9	NW	*29	WNW	5	2	9	19	7.6	--
Glasgow (U)	2277	937.0	1010.7	76	51	63.3	-.3	88	3+	43	10+	0	0	46	59	2.86	-.62	.76	17	12	.0	0	8.2	W	*35	E	16	5	12	13	6.7	--
Great Falls	3664	886.2	1011.4	73	50	61.9	1.2	86	5	42	15	0	0	40	51	2.94	-.02	.95	14	8	.0	0	13.4	SW	47	NW	24	5	10	15	6.8	81
Havre (U)	2488	923.1	1010.8	75	51	63.0	.1	90	5	44	25	1	0	47	62	2.63	-.35	.87	14	5	.0	0	7.6	---	30	NE	16	5	12	13	6.5	48
Helena	3893	872.3	1012.3	73	48	60.5	1.1	87	5+	39	23	0	0	41	54	2.23	.08	.98	10	7	.0	0	8.9	W	32	W	13	5	5	20	7.0	57
Kalispell	2965	------	------	72	46	59.0	.6	87	5	34	15	0	0	--	--	1.87	-.56	.90	15	8	.0	0	----	---	---	---	--	5	12	13	7.0	--
Miles City	2629	927.5	1011.2	76	52	63.8	-1.4	90	3	43	15	1	0	50	--	3.01	.17	1.23	10	0	.0	0	10.1	NE	*25	NNW	17	3	12	15	7.0	--
Missoula	3200	901.1	1014.2	74	47	60.3	.1	92	5	38	22+	1	0	42	57	.86	-1.01	.33	11	3	.0	0	6.4	WNW	42	NW	23	5	7	18	7.2	61
NEBRASKA																																
Grand Island	1841	945.8	1010.7	81	58	69.4	-2.2	92	13	46	2	3	0	56	67	4.31	.65	2.45	13	15	.0	0	12.5	S	---	---	--	9	11	10	5.2	--
Lincoln (U)	1166	------	------	82	61	71.5	-1.3	93	5+	50	2	4	0	--	--	6.07	1.97	2.79	11	10	.0	0	10.0	---	46	S	21	10	10	10	5.6	63
Norfolk	1544	955.6	1010.5	81	67	68.8	-.5	93	6	44	2	6	0	55	64	3.11	-1.67	1.53	12	11	.0	0	----	---	---	---	--	9	8	13	6.1	--
North Platte	2779	913.0	1010.2	78	55	66.2	-2.6	89	5	45	2+	0	0	55	73	3.59	.67	1.19	10	11	.0	0	10.2	SSE	45	NW	16	10	10	10	5.6	59
Omaha	978	971.9	1011.5	81	61	71.0	-1.6	93	5	50	2	5	0	59	69	6.27	1.76	2.05	13	10	.0	0	9.8	SSE	49	N	6	9	9	12	5.9	59
Omaha, N. Omaha AP	1323	963.8	------	78	59	68.4	-2.1	91	5	47	2	1	0	--	--	6.94	2.43	2.10	13	11	.0	0	----	---	---	---	--	--	--	--	---	--
Scottsbluff	3950	876.7	1010.1	79	51	65.4	-1.1	94	29	42	14	4	0	50	63	4.23	1.45	1.69	12	13	.0	0	9.9	WNW	*44	W	20	10	7	13	5.9	--
Valentine (U)	2587	920.1	------	78	52	64.9	-1.9	95	20	40	1	4	0	--	--	2.80	-.36	1.00	12	12	.0	0	10.2	---	39	NW	22	8	11	11	6.0	68
NEVADA																																
Elko	5075	844.6	1013.1	78	42	60.1	-.2	92	28+	32	14+	3	2	39	51	1.05	.35	.70	3	4	T	T	6.5	SW	*23	WNW	28	14	9	7	4.4	--
Ely	6257	809.0	1012.4	79	42	60.0	.4	93	28	27	16	2	3	32	39	.41	-.09	.36	3	4	.0	0	10.3	S	35	S	4	11	15	4	4.2	82
Las Vegas	2162	941.8	1005.9	100	71	85.8	2.2	113	25	61	10+	26	0	27	14	T	-.13	T	0	0	.0	0	11.8	SW	*32	SSW	4+	26	2	2	1.6	93
Reno	4397	861.8	1013.2	85	45	64.9	3.4	97	24+	34	16	12	0	36	38	.06	-.36	.06	1	1	.0	0	7.9	WNW	38	WNW	14	19	8	3	3.0	98
Winnemucca	4299	867.3	1012.5	83	45	64.0	.0	95	25	32	16+	10	2	35	38	.31	-.48	.19	2	2	.0	0	8.0	W	36	S	1	13	9	8	4.7	74

See footnotes at end of table.

State and station		Pressure		Temperature												Precipitation							Wind					No. of days (sunrise to sunset)				
												No. of days							No. of days		Snow, Sleet				Fastest mile							
	Elevation (ground)	Station ø	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F or above	Min 32° F or below	Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy	Sky cover tenths (sunrise to sunset)	Possible sunshine
	Ft	Mb	Mb.	°F	°F	°F	°F	°F		°F				°F	%	In	In	In			In.	In.	M p h		M p h			0-3	4-7	8-10	0-10	%
NEW HAMPSHIRE																																
Concord	339	1003.5	1014.4	81	54	67.4	3.3	95	15+	35	8+	7	0	56	69	2.95	-0.67	0.85	10	5	0.0	0	6.9	SW	38	SW	29	4	14	12	6.3	65
Mt. Washington	6262	808.4	------	55	41	48.0	3.6	68	18	25	7+	0	5	--	88	6.69	.43	1.38	12	6	.1	T	27.2	W	%87	SSE	29	1	8	21	8.1	39
NEW JERSEY																																
Atlantic City (U)	8	1013.1	------	75	65	69.9	1.2	87	19	51	8	0	0	--	--	2.76	-.23	1.30	7	3	0	0	14.5	---	49	S	29	13	8	9	5.2	73
Newark	11	1013.7	1015.0	83	64	73.8	3.3	97	17	47	9	6	0	62	68	1.54	-2.26	.73	7	7	.0	0	8.3	SSW	*39	SSW	29	7	14	9	5.7	--
Trenton (U)	56	1007.6	1014.5	84	65	74.5	3.7	99	16	46	9	10	0	--	--	1.47	-2.40	.28	8	6	0	0	8.7	--	33	S	29	4	17	9	6.2	59
NEW MEXICO																																
Albuquerque	5310	846.9	1007.7	90	60	74.8	-.1	101	28	49	12	18	0	35	27	.04	-.68	.04	1	2	0	0	8.0	N	38	NW	27	18	5	7	3.5	84
Clayton	4969	843.9	1009.1	83	53	67.9	-1.7	99	29	41	3	6	0	--	--	.78	-1.13	.22	6	10	0	0	---	---	--	---	--	18	7	5	3.6	--
Raton	6379	806.3	1010.8	82	47	64.1	.2	95	28+	36	2	6	0	--	--	.11	-1.61	.07	4	9	.0	0	---	---	--	---	--	10	15	5	4.7	--
Roswell	3612	889.9	1007.5	94	61	77.9	1.1	108	29	45	3	22	0	44	36	.06	-1.41	.03	2	2	0	0	12.2	---	59	SW	11	18	9	3	3.1	--
NEW YORK																																
Albany	277	1009.5	1013.5	83	59	71.0	4.0	97	18	40	8	5	0	59	66	2.36	-1.01	.64	10	7	.0	0	8.7	S	45	W	29	4	9	17	6.7	61
Binghamton	1601	956.3	1014.7	78	57	67.8	3.6	92	18	40	8	1	0	50	73	3.30	-.35	1.16	14	10	.0	0	10.8	SSW	60	NW	13	3	9	18	7.2	67
Buffalo	693	986.2	1013.8	79	59	69.1	3.6	95	18	43	8	3	0	58	70	2.92	.22	1.73	11	3	.0	0	10.9	S	47	SW	29	3	15	12	6.6	71
New York (U)	10	1013.4	------	81	66	73.2	3.4	93	16+	54	9	4	0	--	--	1.29	-2.41	.35	7	5	.0	0	12.0	---	49	SW	29	11	11	8	4.8	76
New York	19	1013.0	1015.1	83	66	74.5	3.5	96	17	54	9+	6	0	61	68	1.64	-1.74	.51	7	4	.0	0	11.9	SSE	47	NW	30	7	15	8	5.5	
Rochester	543	994.2	1013.3	80	59	69.4	2.8	97	18	42	8	3	0	59	71	3.63	.78	1.65	14	6	.0	0	11.4	S	54	SW	29	3	17	10	6.2	71
Schenectady	217	------	------	83	60	71.7	3.7	97	18	46	8+	5	0	--	--	4.26	.40	1.38	12	4	0	0	----	---	--	---	--	18	11	1	3.0	--
Syracuse	424	992.4	1014.1	81	60	70.4	2.6	96	18	41	8	5	0	60	70	4.18	.50	.91	14	8	.0	0	7.5	S	43	W	29	6	10	14	6.4	67
NORTH CAROLINA																																
Asheville (U)	2203	937.6	------	82	63	72.5	1.2	90	16	55	1	1	0	--	--	6.65	3.13	3.19	14	10	.0	0	6.3	---	30	S	28	4	12	14	6.9	34
Cape Hatteras (R)	9	1014.4	1015.4	84	69	76.4	.8	91	15	61	11	1	0	69	79	6.03	1.66	2.84	11	8	.0	0	9.6	SW	26	W	13	14	8	8	4.8	74
Charlotte	725	988.1	1015.8	88	66	77.0	.4	97	15	57	9	11	0	68	78	5.29	1.78	1.57	11	8	.0	0	7.3	SSW	57	NW	19	6	8	16	6.6	66
Greensboro	891	984.8	1016.4	85	65	74.7	.1	95	16	54	9	7	0	66	80	5.33	1.71	1.85	14	10	.0	0	7.0	SW	24	NE	9+	4	11	15	6.6	65
Raleigh	433	1001.9	1015.7	86	65	75.6	-.1	95	13+	57	9	10	0	68	80	6.03	1.94	2.61	11	8	.0	0	6.7	S	*29	WNW	19	7	13	10	6.1	66
Wilmington	30	1014.3	------	86	69	77.6	.0	95	13	62	11	8	0	--	--	4.54	.05	2.21	11	6	.0	0	10.1	---	35	SW	28	9	10	11	5.7	64
Winston-Salem	967	980.9	1016.0	84	65	74.9	.0	93	13+	53	9	8	0	66	78	9.14	5.54	4.41	14	10	.0	0	7.2	NE	*27	SW	28	4	11	15	6.6	--
NORTH DAKOTA																																
Bismarck	1650	950.9	1010.4	75	51	62.8	-1.5	88	5	41	1	0	0	50	67	2.56	-.77	1.03	14	6	.0	0	10.5	WNW	40	E	16	5	10	15	6.9	56
Devils Lake (U)	1471	957.3	------	71	49	59.8	-2.6	83	19	39	1	0	0	--	68	4.14	.96	.96	12	6	.0	0	7.9	---	24	NE	17	5	10	15	6.9	58
Fargo	895	976.3	1010.5	74	52	62.7	-1.9	86	19	39	1	0	0	52	72	5.47	2.43	2.77	13	9	.0	0	14.8	N	60	N	22	7	6	17	7.0	58
Williston (U)	1877	943.4	1010.3	74	52	62.6	-.4	90	30	44	1	1	0	48	61	2.38	-1.21	1.02	17	5	.0	0	7.0	--	29	NW	25	3	10	17	7.4	62
OHIO																																
Akron	1210	976.9	1014.9	79	59	68.8	.4	94	17	44	3	2	0	60	77	4.86	1.02	2.71	11	10	.0	0	10.3	S	--	---	--	3	11	16	7.1	-
Cincinnati Obs.	761	------	------	84	64	73.9	1.1	96	16	55	3	4	0	--	--	6.31	2.26	2.69	12	11	0	0	5.3	---	26	NW	17	--	--	--	--	64
Cincinnati	869	982.4	1014.0	83	64	73.3	1.5	97	17	55	3+	3	0	63	73	2.68	-1.36	1.05	12	10	.0	0	9.2	SSW	*35	SW	13	4	7	19	7.2	-
Cleveland (U)	663	------	------	79	62	70.4	1.1	91	22	48	2	3	0	--	--	6.40	3.14	1.79	14	--	.0	0	---	---	--	---	--	--	--	--	---	--
Cleveland	787	986.1	1013.8	80	61	70.3	.9	92	17+	48	2+	3	0	60	72	5.85	2.80	2.34	12	8	.0	0	12.6	S	54	W	18	5	12	13	6.9	49
Columbus (U)	724	------	------	83	64	73.0	1.0	96	17	50	3	5	0	--	--	5.43	1.77	1.55	14	14	.0	0	---	---	--	---	--	--	--	--	---	--
Columbus	815	985.1	1014.3	84	61	72.3	1.6	97	17	49	3	5	0	61	72	5.20	.87	1.72	15	11	.0	0	7.7	SSW	34	SW	28	3	10	17	7.2	70
Dayton	1002	978.1	1014.0	81	62	71.6	.7	94	17	49	3	2	0	60	70	5.29	1.39	2.00	17	14	0	0	10.2	SSW	35	W	29	3	6	21	7.4	61
Sandusky (U)	603	991.7	------	80	62	70.8	.9	93	22	50	3	5	0	--	--	6.12	2.39	3.32	14	10	.0	0	7.3	---	44	W	28	9	13	8	5.4	64
Toledo	676	988.3	1013.5	79	58	68.6	.0	97	17	40	3	3	0	69	74	3.61	.06	1.65	10	10	.0	0	10.4	SW	49	SW	13	6	10	14	6.7	60
Youngstown	1178	972.6	1014.8	79	58	68.4	.4	91	17+	44	3	3	0	59	74	6.97	3.26	2.96	11	9	.0	0	10.6	SSW	*40	W	29	2	14	14	7.1	--
OKLAHOMA																																
Oklahoma City	1280	968.2	1010.8	84	65	74.2	-3.3	93	10	54	24	6	0	66	78	8.60	4.67	2.38	11	12	.0	0	13.3	SSE	72	SW	12	11	10	9	5.3	67
Tulsa	672	987.1	1011.1	85	67	76.3	-1.2	94	29	56	24	11	0	67	76	7.25	2.10	1.73	13	12	.0	0	9.6	S	29	NE	1	5	10	15	6.4	63
OREGON																																
Astoria	8	1017.6	1018.1	66	50	57.8	.2	70	16+	43	16	0	0	52	80	3.31	.65	1.56	13	0	.0	0	5.8	NW	*21	S	11	0	8	22	8.4	--
Burns (U)	4140	873.0	1013.9	77	46	61.2	.7	89	4+	34	15	0	0	39	48	.61	-.24	.38	4	3	.0	0	---	---	--	---	--	10	9	11	5.1	--
Eugene	361	1004.4	1017.9	74	49	61.6	.3	83	1+	41	16	0	0	--	--	.85	-.52	.52	4	2	.0	0	7.3	---	*23	NNE	24	3	13	14	6.8	--
Meacham	4050	------	------	68	46	56.9	2.8	86	5	38	14+	0	0	--	--	1.12	-1.49	.33	9	2	.0	0	---	---	--	---	--	4	8	18	7.3	--
Medford	1312	968.5	1015.6	83	52	67.3	2.4	94	4+	41	16	7	0	47	52	.03	-.94	.02	2	1	.0	0	7.0	NNW	*29	NW	5	11	10	9	5.0	--
Pendleton	1492	961.1	1014.1	81	55	67.9	1.2	95	5	47	15	4	0	45	48	.67	-.54	.38	5	4	.0	0	11.9	W	*46	WSW	5	6	9	15	6.3	--
Portland	21	1012.2	1017.3	72	53	62.1	-.5	79	1+	46	16	0	0	51	71	.73	-.99	.29	7	4	.0	0	7.1	WNW	21	S	5	2	9	19	7.6	53
Roseburg	505	998.3	1016.9	77	49	63.1	1.0	88	26	40	16	0	0	--	--	.23	-1.12	.17	3	2	.0	0	5.7	---	17	N	6+	8	13	9	5.5	72
Salem	195	1010.2	1017.5	74	49	61.7	-1.1	84	1+	42	16+	0	0	51	72	2.10	.88	1.30	7	2	.0	0	6.6	S	*21	N	9	2	9	19	7.5	--
Sexton Summit (R)	3836	------	------	70	47	58.1	2.1	84	4	38	14+	0	0	--	--	.24	-1.26	.20	3	0	.0	0	---	---	--	---	--	11	11	8	5.0	--
PENNSYLVANIA																																
Allentown	376	1001.5	1015.7	84	60	71.9	2.3	98	17	40	9	5	0	61	72	3.88	-.17	2.25	9	10	.0	0	8.7	WSW	--	---	--	5	15	10	6.0	--
Erie	732	------	------	78	58	67.9	2.4	92	18	42	3	2	0	--	--	7.74	4.87	2.80	12	7	.0	0	11.1	---	*28	SW	13	5	12	13	6.6	--
Harrisburg	335	1000.7	1015.0	84	64	73.6	2.5	97	18	49	9	9	0	61	68	3.38	-.26	1.27	10	9	.0	0	6.7	WSW	34	SW	29	9	7	14	6.3	54
Philadelphia (U)	26	------	------	84	66	75.2	2.6	98	17	50	9	10	0	--	--	1.83	-2.14	.55	10	--	---	--	---	---	--	---	--	--	--	--	---	--
Philadelphia	10	1010.3	1014.8	86	64	74.9	2.8	100	16	44	9	13	0	62	68	2.41	-1.46	1.31	13	4	.0	0	9.2	WSW	36	S	28+	3	13	14	6.6	62
Pittsburgh (U)	749	------	------	83	63	73.2	1.5	93	16+	51	9	5	0	--	--	4.75	.92	1.10	15	--	.0	--	---	---	--	---	--	--	--	--	---	43
Pittsburgh	1151	984.1	1013.8	80	61	70.4	1.8	90	16+	49	2+	3	0	59	70	4.07	.00	1.23	14	7	.0	0	9.6	WSW	*40	W	18	5	10	15	7.0	70
Reading (U)	266	1002.8	1014.2	84	64	74.0	2.7	98	16	43	9	9	0	--	--	3.05	-.71	1.33	[illegible]	12	.0	0	9.4	---	46	S	29	4	12	14	6.5	48
Scranton	940	981.4	1015.5	81	57	69.3	1.5	93	18	39	9	4	0	58	68	4.01	-.42	1.18	10	8	.0	0	9.1	SW	40	SW	29	6	11	13	6.3	72
Shippingport (U)	736	------	------	81	59	69.9	----	92	18+	46	3	5	0	--	--	5.36	----	1.87	12	8	.0	0	2.4	---	%63	NW	28	--	--	--	---	--
Williamsport	527	995.8	------	83	60	71.6	2.4	97	18	43	9	6	0	--	--	5.74	2.32	1.96	13	--	.0	0	---	---	--	---	--	5	14	11	6.6	--
RHODE ISLAND																																
Block Island	110	1010.4	1014.7	73	59	66.1	3.1	88	16	45	4	0	0	--	--	T	-2.86	T	0	0	.0	0	---	---	--	---	--	12	8	10	5.4	--
Providence	55	1008.6	1014.8	81	60	70.5	4.9	95	16	43	10	5	0	59	69	.39	-2.78	.23	4	2	.0	0	12.9	S	*40	SSW	29	12	9	9	5.3	75
SOUTH CAROLINA																																
Charleston (U)	9	------	------	85	73	79.1	-.5	92	27+	67	10	3	0	--	--	5.93	1.64	2.17	9	--	.0	0	9.6	---	32	SE	9	--	--	--	---	54
Charleston	41	1013.4	1015.5	86	69	77.4	-.5	92	13	64	2	5	0	70	83	6.83	2.11	3.18	14	8	.0	0	9.7	SW	--	---	--	4	15	11	6.6	--
Columbia	217	1006.5	1014.8	90	69	79.2	-.3	98	13	61	11	18	0	69	76	1.86	-2.19	.59	10	9	.0	0	7.2	SW	*40	SW	28	6	12	12	6.4	64
Florence	146	1009.8	------	89	69	78.8	-.2	96	13+	63	10	14	0	--	--	4.93	.05	1.19	10	7	.0	0	---	---	--	---	--	6	12	12	6.1	--
Greenville	1018	978.4	1015.1	87	67	76.9	.3	95	13+	59	9	12	0	67	77	3.61	.61	.88	18	12	.0	0	8.2	SW	43	E	17	3	10	17	7.1	53
Spartanburg	801	------	------	86	68	76.9	-.3	94	12+	58	9	9	0	--	--	3.38	.38	1.16	15	12	.0	0	7.4	---	*32	WNW	6	--	--	--	---	--
SOUTH DAKOTA																																
Huron	1282	963.8	1010.5	77	54	65.6	-2.6	90	30	42	1	1	0	56	75	4.05	.99	.89	14	13	.0	0	10.4	S	40	NW	28	7	12	11	6.4	71
Rapid City	3165	898.7	1011.3	74	52	62.7	-1.0	88	30	44	18	0	0	49	64	3.43	.07	.92	18	13	.0	0	9.2	S	36	N	24	4	13	13	6.9	56
Sioux Falls	1420	959.7	1010.7	78	55	66.7	-1.3	92	30	44	1	1	0	52	65	5.41	1.16	4.32	10	9	.0	0	9.6	S	*40	N	6	8	9	13	6.5	--
TENNESSEE																																
Bristol	1519	961.9	------	86	64	74.7	2.4	93	13	57	20	8	0	--	--	6.68	3.01	1.49	13	10	.0	0	---	---	--	---	--	4	12	14	6.9	--
Chattanooga	670	987.5	1014.6	87	66	76.5	.7	95	16	58	1	9	0	67	79	3.68	-.53	.92	12	10	.0	0	6.5	S	49	SW	28	6	9	15	6.8	55
Knoxville	950	980.5	1015.3	86	67	76.7	.9	95	16	62	21	7	0	67	76	5.86	2.39	1.90	15	12	.0	0	6.7	WSW	38	SW	28	6	11	13	6.5	58

See footnotes at end of table.

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure		Temperature											Average relative humidity	Precipitation							Wind					No. of days (sunrise to sunset)			Sky cover, tenths (sunrise to sunset)	Possible sunshine
												No. of days							No. of days		Snow, Sleet				Fastest mile							
		Station ø	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F. or above	Min 32° F or below	Average dew point		Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max. depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy		
	Ft	Mb	Mb	°F	°F	°F	°F	°F.		°F.		#		°F	%	In.	In.	In.			In.	In.	M p. h.		M. p. h			0–3	4–7	8–10	0–10	%
TENNESSEE (Cont'd.)																																
Memphis (U)	271	------	------	86	71	78.4	-0.3	94	16	66	2+	8	0	--	--	6.22	2.97	1.54	14	--	0.0	0	---	---	--	---	--	--	--	--	---	--
Memphis	263	998.7	1013.3	87	70	78.3	.0	94	17+	61	25	10	0	69	77	6.64	3.31	1.64	14	9	.0	0	8.6	S	35	W	13	8	9	13	6.5	54
Nashville	577	994.7	1014.3	87	68	77.3	.4	95	16	60	20+	10	0	69	79	7.06	3.87	2.49	13	9	.0	0	6.6	S	29	N	1+	6	13	11	6.3	56
Oak Ridge (R)	905	981.2	------	87	67	77.0	2.8	94	16+	58	20	10	0	--	--	4.80	.89	2.01	13	13	.0	0	3.7	---	46	---	17	7	7	16	6.6	--
TEXAS																																
Abilene	1759	949.9	1009.6	89	67	77.8	-2.0	102	29+	56	2	17	0	65	68	2.30	-.49	.82	7	3	.0	0	12.9	SSE	40	SE	15	12	10	8	4.7	--
Amarillo	3590	886.2	1008.9	86	59	72.3	-1.3	106	29	49	2	14	0	54	60	.53	-2.72	.35	3	3	.0	0	12.4	S	41	SE	16	16	8	6	4.3	75
Austin	615	990.2	1011.4	90	72	80.9	-.6	97	28+	63	2	21	0	71	77	5.25	2.05	3.03	5	4	.0	0	9.5	S	32	NE	1	2	20	8	6.4	56
Brownsville	16	1007.8	1010.4	90	75	82.5	-.1	95	27	66	2	21	0	74	79	6.34	3.29	3.34	9	4	.0	0	13.5	SE	31	E	6	4	21	5	5.6	59
Corpus Christi	41	1009.5	1010.6	89	74	81.4	-.8	94	27	64	1+	13	0	74	82	5.34	2.46	2.38	8	5	.0	0	10.4	SSE	26	S	5	1	23	6	6.3	79
Dallas	487	992.9	1011.3	91	72	81.5	-.4	100	28	64	24	22	0	69	70	3.02	-.43	1.07	7	6	.0	0	13.7	SSE	39	NW	12	9	13	8	5.2	68
Del Rio	1091	976.0	1009.6	92	72	82.0	-.7	102	28	62	3	23	0	69	67	1.22	-1.20	.75	4	5	.0	0	12.3	---	31	E	12	5	21	4	5.4	61
El Paso	3920	883.2	1007.6	95	69	81.9	1.7	107	28	56	4	23	0	36	23	.02	-.60	.01	2	3	.0	0	13.5	WSW	49	W	29	21	7	2	2.3	93
Fort Worth	544	990.5	1011.0	90	71	80.2	-1.2	99	29+	63	24+	19	0	68	72	3.96	.57	2.79	9	5	.0	0	12.8	S	*43	NNW	23	11	12	7	4.8	--
Galveston (U)	7	------	------	85	77	81.1	-.4	89	24	69	18	0	0	--	--	4.89	1.54	1.49	12	--	.0	0	13.0	---	61	N	27	--	--	--	---	63
Galveston	5	1009.5	1011.9	86	77	81.5	-.3	89	11+	70	1+	0	0	74	78	4.70	1.35	1.73	12	9	.0	0	13.6	SSE	--	---	--	2	21	7	6.3	--
Houston (U)	41	1006.8	------	88	74	81.1	-.7	93	11	68	3	13	0	--	--	3.49	-.59	1.09	13	9	.0	0	9.9	---	38	SE	12	2	17	11	6.7	52
Houston	50	1009.1	1011.5	88	73	80.5	.0	93	11+	68	3+	13	0	73	81	3.96	.27	.70	12	9	.0	0	10.7	SSE	--	---	--	0	19	11	6.7	--
Laredo	500	993.9	1009.0	97	75	86.3	.5	108	28	62	3	26	0	70	63	.23	-1.86	.17	3	6	.0	0	13.1	SE	*24	SE	9+	10	16	4	4.3	--
Lubbock	3243	899.8	1008.6	88	63	75.1	-1.3	107	29	53	1+	16	0	58	62	4.96	2.43	4.30	7	7	.0	0	15.9	S	*59	W	8	18	6	6	3.4	--
Midland	2854	912.3	1009.0	90	66	77.9	-2.2	104	29	54	2	18	0	59	59	2.55	.59	1.11	6	3	.0	0	11.6	SSE	*58	NNE	23	18	6	6	3.6	--
Port Arthur	16	1010.2	1012.0	89	74	81.1	1.0	92	11+	67	2+	17	0	73	80	11.01	6.23	7.53	13	9	.0	0	11.8	S	72	NW	27	2	17	11	6.5	54
San Angelo	1903	943.8	1009.7	88	68	78.2	-2.4	102	28	57	2	15	0	64	66	1.74	-.08	.47	8	4	.0	0	12.1	S	*29	NE	23	13	9	8	4.7	--
San Antonio	792	985.8	1009.2	90	72	81.0	-1.0	97	28	60	2	19	0	70	75	3.49	.29	2.01	10	6	.0	0	9.2	SSE	42	NW	1	4	13	13	6.5	65
Victoria	110	1006.1	1010.8	89	73	81.0	-2.1	93	27	64	2	18	0	73	78	5.03	1.79	2.12	8	7	.0	0	8.4	SSE	%50	NW	1	2	18	10	6.4	--
Waco	500	990.5	1010.7	91	72	81.2	-.6	98	29	66	25	21	0	70	71	1.03	-2.16	.49	6	5	.0	0	13.2	S	*32	WNW	12	8	12	10	5.8	--
Wichita Falls	1020	973.9	1009.9	89	68	78.4	-1.2	102	30	58	24	19	0	66	70	3.37	-.03	1.51	8	4	.0	0	10.3	SSE	*31	WSW	12	15	7	8	4.4	--
UTAH																																
Milford	5028	843.2	1011.9	85	48	66.3	.5	99	28	32	16	12	1	--	--	.66	.21	.65	2	3	.0	0	---	---	--	---	--	15	8	7	3.6	--
Salt Lake City	4220	865.9	1011.3	81	52	66.8	-.3	98	29	40	16	10	0	44	49	1.47	.56	.63	10	5	.0	0	8.4	SSE	28	W	15	11	10	9	4.9	85
VERMONT																																
Burlington	331	998.3	1013.0	79	58	68.2	2.7	93	18	39	9	3	0	57	68	7.35	3.78	2.27	12	10	.0	0	9.1	SSW	42	SW	29	3	12	15	7.0	55
VIRGINIA																																
Lynchburg	947	981.8	------	83	64	73.2	.4	94	16	50	9	6	0	--	--	5.30	1.42	2.10	13	9	.0	0	7.6	---	31	S	28	7	11	12	6.2	56
Norfolk	26	1013.6	1015.1	87	69	77.7	3.0	97	19	58	11	16	0	67	74	3.56	-.60	2.70	9	6	.0	0	8.1	ENE	41	NE	9	15	6	9	5.0	75
Richmond	162	1009.5	1015.7	86	67	76.2	1.9	96	18	54	11	14	0	67	77	3.92	.05	1.63	11	7	.0	0	7.3	S	50	S	28	7	13	10	6.2	54
Roanoke	1174	974.2	1016.0	84	64	73.7	1.0	96	16	52	9	7	0	64	78	5.35	1.65	1.16	15	7	.0	0	6.6	SE	--	---	--	3	12	15	6.9	--
WASHINGTON																																
Olympia	190	1009.8	1017.1	71	49	60.0	1.1	82	1	40	22	0	0	48	70	1.78	.50	.40	9	1	.0	0	6.7	SW	*28	SSW	5	1	9	20	7.9	--
Seattle (U)	14	------	------	70	55	62.2	.4	77	4+	51	14+	0	0	--	--	1.58	.33	.52	11	1	.0	0	8.3	---	34	S	11	2	8	20	8.0	43
Seattle	14	1016.3	1017.1	--	--	----	---	--	--	--	--	--	--	49	64	----	----	----	--	--	---	---	7.3	SW	--	---	--	--	--	--	---	--
Seattle-Tacoma	386	1003.7	1016.6	69	52	60.4	.5	76	4+	47	16	0	0	50	73	1.18	-.12	.48	10	1	.0	0	10.9	SW	*35	SW	5	2	6	22	8.1	--
Spokane	2357	945.1	1013.5	74	51	62.1	.7	89	4	41	16	0	0	46	60	2.74	1.57	1.52	9	6	.0	0	8.6	SSW	29	W	12	7	8	15	6.4	69
Stampede Pass (R)	3958	880.1	1018.1	57	42	49.4	-1.0	78	5	36	13+	0	0	--	--	3.71	-.26	.99	18	3	.0	0	---	---	--	---	--	3	3	24	8.4	--
Tatoosh (R)	101	1014.6	1017.5	58	51	54.3	.3	62	16+	47	26	0	0	51	90	4.44	1.86	1.41	15	0	.0	0	8.7	SW	37	S	11	2	8	20	8.2	46
Walla Walla (U)	949	978.3	1013.5	80	57	68.5	.6	97	1	48	16	4	0	--	--	1.05	-.16	.98	7	4	.0	0	6.3	---	36	SW	5	7	7	16	6.3	81
Yakima	1061	974.6	1013.2	81	50	65.6	.2	95	1	40	22	3	0	44	49	1.26	.67	.93	5	4	.0	0	6.9	NW	*26	W	12	6	12	12	6.1	--
WEST VIRGINIA																																
Charleston	950	979.6	1014.7	85	64	74.3	2.3	96	17	55	21	8	0	63	72	1.69	-2.24	.83	12	8	.0	0	6.4	SW	35	WSW	28	2	15	13	7.3	--
Elkins	1970	------	------	80	57	68.7	2.2	90	17	48	1	1	0	61	--	5.81	.55	1.76	15	5	.0	0	3.7	SSE	21	WSW	28	2	10	18	7.6	--
Huntington (U)	565	------	------	86	65	75.5	1.4	99	17	57	21+	9	0	--	--	2.14	-2.20	.99	9	--	.0	0	---	---	--	---	--	--	--	--	---	--
Parkersburg (U)	615	------	------	84	64	73.9	1.5	96	16	54	2	6	0	--	--	4.42	.24	1.25	14	10	.0	0	5.5	---	33	NW	28	7	11	12	6.2	61
WISCONSIN																																
Green Bay	689	988.8	1011.6	75	53	64.1	-.6	90	17	36	2	1	0	55	74	2.48	-1.09	1.31	9	8	.0	0	10.1	SW	36	S	22	4	15	11	6.3	59
La Crosse	652	986.8	1011.0	78	59	68.1	-.5	91	17	43	2	1	0	55	64	4.38	.51	1.07	14	9	.0	0	8.2	S	*35	NW	13	4	13	13	6.8	--
Madison	857	977.0	1011.9	79	56	67.5	.1	91	17	37	2	2	0	56	70	6.41	2.39	1.45	15	7	.0	0	10.7	WSW	34	SW	23	6	9	15	6.7	57
Milwaukee	672	987.8	1012.6	75	55	65.0	.1	90	16+	39	3	2	0	56	75	4.01	.79	1.28	13	8	.0	0	11.6	NNE	40	S	22	6	10	14	6.2	64
WYOMING																																
Casper	5322	835.8	1009.8	75	48	61.5	-.5	89	29+	39	14	0	0	44	61	1.93	.45	.51	13	10	.0	0	11.6	WSW	*46	W	6+	5	13	12	6.3	--
Cheyenne	6131	811.0	1010.8	73	48	60.4	.1	90	29	38	23	1	0	42	56	2.01	-.09	1.26	10	9	T	0	12.2	WNW	49	NW	13	8	11	11	5.9	57
Lander	5563	834.1	1011.4	73	47	60.1	-1.4	87	4	36	14	0	0	43	59	2.49	1.14	.74	9	10	.0	0	6.7	---	45	SW	9	6	16	8	5.5	73
Sheridan	3942	882.2	1011.7	72	48	60.3	-1.1	88	5	36	15	0	0	48	67	4.39	1.79	1.38	19	11	.0	0	8.2	NW	50	NW	2	6	11	13	6.3	54
PACIFIC AREA																																
Canton Island	9	1008.8	1009.1	89	79	84.0	-.3	91	29	75	10	10	0	76	79	3.38	.58	1.70	15	0	.0	0	12.6	E	*35	SE	14	2	4	24	8.7	--
Guam (Taguac)(R)	361	------	------	88	73	80.5	---	91	7	68	17	7	0	--	--	3.46	----	.79	22	--	.0	0	---	---	--	---	--	--	--	--	---	60
Hilo	31	1015.2	1017.0	83	67	75.0	.6	85	9+	64	1	0	0	67	77	4.74	-2.01	.98	23	0	.0	0	9.5	WSW	*25	ESE	16	1	14	15	7.1	35
Honolulu	7	1016.3	1016.9	85	72	78.5	.6	87	5+	67	2	0	0	65	64	.12	-.11	.07	5	0	.0	0	11.1	ENE	29	E	14+	12	15	3	4.7	76
Koror (R)	94	1006.4	1010.2	88	76	81.6	.4	90	9+	73	28+	2	0	77	87	12.60	.15	2.95	25	5	.0	0	---	---	--	---	--	0	2	28	9.3	--
Lihue	115	1011.5	1017.0	85	71	77.6	1.4	87	9	65	3+	0	0	68	73	1.90	.25	.54	18	0	.0	0	9.8	NE	27	NE	30	12	11	7	4.8	75
Majuro	10	1009.8	1010.2	[illegible]	77	81.3	---	88	10+	72	15	0	0	76	84	11.03	----	3.20	24	0	.0	0	---	---	--	---	--	0	3	27	9.3	--
Ponape (R)	120	1004.7	1010.2	87	75	81.1	.1	90	26	72	17+	1	0	76	86	20.58	4.21	2.49	28	1	.0	0	---	---	--	---	--	0	2	28	9.4	--
Truk (Moen Is.)	8	1010.2	1010.5	87	77	81.6	1.1	93	29	73	18+	1	0	77	84	10.96	-2.26	1.90	25	0	.0	0	---	---	--	---	--	0	3	27	9.4	--
Wake Island	11	1014.9	1015.3	87	76	81.8	.5	90	26	73	1	1	0	74	78	2.25	.45	.39	25	0	.0	0	11.5	ENE	*21	E	16+	10	17	3	4.9	--
Yap (R)	53	1008.5	1010.5	89	77	83.1	1.0	92	8+	74	14+	19	0	76	86	11.48	1.09	3.16	21	1	.0	0	---	---	--	---	--	1	5	24	8.7	--
WEST INDIES																																
San Juan, P.R. (U)	47	------	------	85	76	80.2	.7	92	10	71	16	2	0	--	--	6.38	1.22	1.88	15	2	.0	0	---	---	--	---	--	--	--	--	---	--
San Juan P.R.	15	1013.6	1016.1	88	73	80.2	---	92	11	69	1	8	0	70	80	6.51	----	1.84	18	6	.0	0	8.0	ENE	24	NE	2+	2	13	15	7.4	54
Swan Island	31	1010.2	------	86	78	82.2	.1	88	1	72	4+	0	0	--	--	6.34	.19	1.87	12	5	.0	0	---	---	--	---	--	3	10	17	7.2	--
ALASKA																																
Anchorage	92	1006.8	1011.6	67	49	58.0	4.3	77	4	41	6	12	0	48	68	.56	-.33	.32	5	1	.0	0	7.6	WNW	*23	S	10	6	10	14	6.3	68
Annette	110	1010.2	1014.1	59	48	53.2	-1.1	75	1	41	1	2	0	48	82	6.97	2.28	1.93	15	0	.0	0	9.4	S	*28	ESE	22	2	6	22	8.3	--
Barrow	22	1014.2	1014.6	37	30	33.5	-.4	56	30	26	2	0	25	32	92	1.05	.77	.46	8	0	.1	7	14.1	E	36	E	10	1	3	26	9.1	--
Barter Island	39	1013.2	1015.0	38	29	33.5	---	63	26	24	13	0	27	30	87	.19	----	.13	3	0	.9	5	10.8	E	*29	E	10	0	7	23	8.4	--
Bethel	10	1010.2	1011.4	68	48	57.8	5.2	79	5+	42	1	16	0	47	71	.73	-.47	.34	7	3	.0	0	9.3	NNW	*23	NE	8	5	9	16	7.3	--
Cold Bay	90	1008.5	1012.1	54	44	48.9	3.2	65	24	38	8	0	0	43	82	.35	-2.29	.29	5	0	.0	0	14.7	SE	*38	SE	2	3	2	25	8.6	--
Cordova	40	1010.8	1012.6	62	44	52.9	3.6	76	26	37	1+	4	0	47	79	.69	-3.50	.36	12	0	.0	0	4.5	SW	*17	SW	5+	3	4	23	8.0	--
Fairbanks	436	993.2	1010.1	77	51	64.1	4.8	89	10	36	24	25	0	50	59	.21	-1.16	.08	5	3	.0	0	5.1	N	*18	W	13	7	13	10	5.6	--
Juneau	15	1011.5	1012.4	65	45	54.9	1.3	79	5	38	1	8	0	46	75	1.44	-1.74	.70	15	0	.0	0	7.6	N	27	SE	20	4	6	20	7.8	33
King Salmon	44	1010.2	1011.7	67	43	54.9	3.5	82	4	36	24	10	0	45	70	.31	-1.33	.25	4	0	.0	0	9.8	SSW	*36	E	25	5	7	18	6.9	--
Kotzebue	10	1011.9	1012.4	58	43	50.3	7.0	81	8	34	3	2	0	43	78	.17	-.32	.05	7	0	.0	T	9.6	W	*29	WNW	23	6	14	10	5.9	--
McGrath	334	998.0	1010.6	75	51	62.9	7.2	88	6	39	22	24	0	46	56	.42	-1.64	.24	5	2	.0	0	5.1	SSW	*17	S	12+	9	11	10	5.6	--
Nome	13	1012.2	1012.7	58	44	50.7	4.9	81	11	36	2	4	0	43	75	.52	-.56	.17	7	0	.0	0	8.9	SW	23	SE	3	11	7	12	5.6	41
Northway	1713	947.9	1010.2	69	47	57.9	2.2	77	6+	39	27	16	0	--	--	2.12	.12	.59	13	9	.0	0	---	---	--	---	--	7	11	12	6.0	--
St Paul Island	22	1011.9	1013.2	48	39	43.5	2.0	56	25	33	23	0	0	41	90	.77	-.54	.41	6	0	.0	0	---	---	--	---	--	3	3	24	8.5	--
Yakutat	28	1011.9	1013.0	59	45	51.8	2.3	70	2	34	2	1	0	47	82	1.29	-3.67	.62	9	0	.0	0	5.6	WSW	*24	SE	26	2	9	19	7.9	--

Data from airport unless otherwise specified. U indicates Urban, R indicates Rural, sites.

* Data entered in column "Fastest Mile" is the fastest mile observed. This station is not equipped with automatic recording wind instrument.

+ And also on a later date or dates.

% Peak gust. a Maximum hourly average.

# Number of days maximum 70° or above for Alaskan stations.

ø Station pressures apply to elevation shown in Table 10b of the annual issue of this publication.

MONTHLY AND SEASONAL HEATING DEGREE DAYS

(Base 65)

1956 - 1957

State and Station	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total for Season	Normals July-June
KENTUCKY														
Lexington	0	8	78	138	650	630	1034	683	670	288	105	2	4286	4979
Louisville	0	4	63	131	624	624	1016	644	618	264	86	0	4074	4439
Pikeville (U)	0	---	52	97	534	527	*826	†497	507	171	57	0	----	----
LOUISIANA														
Baton Rouge	0	0	0	5	271	184	275	142	157	54	5	0	1093	1595
Lake Charles	0	0	0	1	225	189	280	137	162	55	4	0	1053	1543
New Orleans (U)	0	0	0	0	185	124	211	101	111	31	2	0	765	1175
New Orleans	0	0	0	0	215	158	218	109	136	37	1	0	874	1317
Shreveport	0	0	0	23	334	344	548	249	308	91	15	0	1912	2117
MAINE														
Caribou	125	204	438	620	1000	1554	1973	1380	1194	856	482	178	10004	10173
Greenville (U)	116	175	409	597	974	1400	1849	1286	1149	785	422	129	9291	----
Portland	62	63	307	519	806	1157	1580	1062	965	610	331	109	7571	7681
MARYLAND														
Baltimore (U)	0	0	60	128	469	567	983	658	566	240	64	3	3738	4203
Baltimore	0	2	109	218	580	655	1069	719	660	300	99	9	4420	4787
Frederick	1	0	147	295	644	724	1122	759	717	338	142	14	4903	4854
MASSACHUSETTS														
Blue Hill Obs. (R)	35	31	247	395	690	990	1383	944	928	547	285	51	6526	-
Boston	15	6	174	330	560	893	1284	842	798	466	201	21	5590	5791
Nantucket	21	29	143	354	561	774	1163	854	836	579	365	78	5757	6102
Pittsfield	67	51	327	499	814	1083	1521	1070	974	570	329	81	7386	7694
MICHIGAN														
Alpena (U)	71	74	354	422	857	1153	1490	1135	1118	692	452	165	7983	8073
Detroit	0	11	172	240	716	929	1355	958	867	497	281	52	6078	6404
Detroit (Willow Run)	3	15	177	245	744	957	1393	972	866	499	258	45	6174	6469
East Lansing (U)	9	27	184	252	765	992	1385	1000	892	502	269	39	6316	----
Escanaba (U)	68	65	345	422	893	1275	1623	1239	1161	737	444	138	8410	8657
Grand Rapids	14	33	197	289	757	1018	1393	1025	932	539	300	42	6539	7075
Marquette (U)	161	89	362	363	920	1255	1607	1241	1192	692	462	186	8530	8529
Muskegon	22	30	211	307	729	1013	1340	1038	969	574	321	58	6612	7089
S. Ste. Marie	131	115	423	490	952	1390	1748	1344	1232	793	481	227	9326	9475
MINNESOTA														
Duluth (U)	153	116	415	493	1097	1518	1954	1487	1292	786	500	280	10091	9574
Duluth	122	112	426	477	1100	1532	1978	1504	1328	769	475	224	10047	9937
International Falls	114	112	483	534	1138	1722	2183	1646	1389	811	424	239	10795	10600
Minneapolis	9	22	202	271	920	1267	1698	1241	1065	545	263	33	7536	7853
Rochester	9	38	234	297	984	1293	1703	1188	1079	572	318	61	7776	8095
St. Cloud	27	42	308	395	1011	1386	1863	1404	1207	662	349	75	8729	8893
MISSISSIPPI														
Jackson	0	0	0	30	377	298	481	241	328	114	24	0	1893	2202
Meridian	0	0	0	39	395	290	463	248	329	107	21	0	1892	2333
Vicksburg (U)	0	0	0	13	321	264	492	233	263	93	18	0	1697	2000
MISSOURI														
Columbia	0	7	31	81	635	893	1222	707	701	348	88	3	4716	5113
Kansas City	0	0	17	63	622	866	1215	719	649	342	69	0	4562	4888
St. Joseph	0	6	36	115	703	965	1328	826	729	389	106	3	5206	5336
St. Louis (U)	0	0	17	68	570	769	1142	667	633	301	70	0	4237	4469
St. Louis	0	0	27	75	600	816	1175	686	664	317	72	0	4432	4699
Springfield	0	4	23	85	626	784	1109	622	655	310	57	9	4284	4693
MONTANA														
Billings	7	50	140	425	820	1050	1663	1050	936	673	275	109	7198	7106
Glasgow	34	66	220	540	956	1363	2001	1465	1093	713	250	84	8785	8690
Great Falls	40	77	203	532	790	1107	1770	1189	962	661	259	124	7714	7555
Havre (U)	20	56	210	538	885	1218	1924	1319	1006	628	220	86	8110	8213
Helena	49	85	216	608	967	1145	1962	1202	1013	679	302	145	8373	8250
Kalispell	61	106	302	651	1056	1144	1760	1209	998	648	259	183	8377	8055
Miles City	1	44	144	424	913	1129	1815	1258	991	662	231	91	7703	7850
Missoula	54	90	226	626	1024	1078	1686	1078	906	599	256	161	7784	7873
NEBRASKA														
Grand Island	0	14	93	213	803	1022	1478	902	876	517	227	14	6159	6311
Lincoln (U)	0	5	53	145	719	938	1397	857	793	438	162	6	5513	5865
Norfolk	0	12	128	241	842	1122	1576	1008	939	550	234	20	6672	7065
North Platte	0	31	120	315	890	1040	1512	903	935	615	290	50	6701	6546
Omaha	0	5	78	161	752	1004	1463	904	821	431	209	5	5833	6160
Scottsbluff	0	28	99	376	955	975	1421	843	890	690	332	72	6681	6841
Valentine	0	31	139	350	957	1051	1673	1034	1018	670	320	70	7313	7075
NEVADA														
Elko	23	77	195	625	1028	1199	1489	877	834	661	454	175	7637	7335
Ely	36	82	159	637	1025	1176	1432	855	893	712	535	176	7718	7443
Las Vegas	0	0	0	85	427	590	657	276	243	93	32	0	2403	2425
Reno	20	43	116	528	838	1063	1211	724	693	572	348	78	6234	6036
Tonopah	2	0	48	470	750	937	1195	665	685	492	335	46	5625	5813
Winnemucca	9	38	150	562	922	1138	1336	741	760	601	364	104	6725	6369
NEW HAMPSHIRE														
Concord	50	50	323	532	799	1170	1592	1062	942	517	284	66	7387	7612
Mt. Washington	615	608	847	932	1313	1623	2106	1541	1582	1247	933	501	13848	----
NEW JERSEY														
Atlantic City (U)	1	0	70	183	527	605	1019	721	701	394	173	29	4423	4741
Newark	9	2	117	244	565	767	1140	795	705	367	132	17	4860	5252
Trenton (U)	8	2	123	240	565	728	1115	783	713	364	133	19	4793	5068
NEW MEXICO														
Albuquerque	0	0	0	195	915	880	771	468	543	317	123	3	4215	4389
Clayton	0	22	26	246	755	815	1010	607	763	551	260	46	5101	5138
Roswell	0	0	0	107	603	715	720	353	409	240	33	6	3186	3424
NEW YORK														
Albany	22	16	262	464	749	1066	1511	1006	908	491	264	36	6795	6962
Binghamton	51	44	290	448	804	1043	1471	1058	995	586	343	51	7184	7537
Buffalo	12	13	218	300	687	947	1370	951	894	508	321	38	6259	6838
New York (U)	9	2	102	216	545	732	1104	774	712	376	133	10	4715	5050
New York	8	1	80	205	516	716	1104	755	696	369	120	3	4573	4989
Rochester	19	27	239	342	715	993	1408	979	944	520	311	48	6545	6863
Schenectady	14	9	231	420	700	1015	1438	967	856	466	217	24	6357	----
Syracuse	21	9	225	373	710	979	1428	965	920	507	300	37	6474	6520
NORTH CAROLINA														
Asheville (U)	0	3	82	197	586	481	774	505	601	235	60	3	3527	4072
Asheville	0	0	---	---	---	---	---	---	---	---	---	---	----	----
Cape Hatteras (R)	0	0	2	7	264	259	609	395	433	126	44	0	2139	2392
Charlotte	0	0	46	87	449	365	643	420	442	123	35	3	2613	3205
Greensboro	0	0	75	172	551	493	796	528	547	193	48	8	3411	3810
Raleigh	0	0	58	129	489	428	748	494	499	162	59	5	3071	3369

Data from airport unless otherwise specified.
U indicates Urban, R indicates Rural, sites.
* Jan. 1-29. Jan. 30-31 missing due to flooding
† 26 days. No obs. on 1st and 17th.

MONTHLY AND SEASONAL HEATING DEGREE DAYS

(Base 65°)

1956 - 1957

State and Station	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total for Season	Normals July-June
ALABAMA														
Birmingham	0	0	2	62	436	322	530	281	402	120	31	0	2186	2780
Mobile	0	0	0	1	292	200	302	155	209	64	7	0	1230	1612
Montgomery	0	0	0	26	373	273	428	198	295	82	11	0	1686	2137
ARIZONA														
Flagstaff	51	134	103	594	928	1071	1091	771	845	735	583	156	7062	7525
Phoenix (U)	0	0	0	310	167	308	322	114	92	42	9	0	1364	1492
Phoenix	0	0	0	47	211	356	334	117	107	48	7	0	1230	1698
Prescott	0	0	0	247	651	819	832	506	554	423	275	19	4326	4533
Tucson	0	0	0	47	223	378	340	128	167	50	18	0	1351	1776
Winslow	0	0	0	246	858	999	810	486	530	345	183	13	4470	4702
Yuma	0	0	0	13	103	214	265	67	31	13	0	0	706	951
ARKANSAS														
Ft. Smith	0	0	0	42	499	599	818	423	479	181	16	0	3057	3188
Little Rock	0	0	0	32	433	492	773	409	426	140	22	0	2727	2982
Texarkana	0	0	0	29	377	390	665	283	363	110	16	0	2233	2362
CALIFORNIA														
Bakersfield	0	0	0	92	250	541	622	263	223	98	31	0	2120	2115
Bishop	0	0	6	307	526	722	1013	540	478	327	179	4	4102	4222
Blue Canyon	43	50	94	535	433	616	1058	703	832	604	498	116	5582	5719
Burbank	0	2	0	59	74	200	427	198	161	151	81	2	1355	1808
Eureka (U)	279	246	254	353	489	577	665	440	459	426	309	228	4725	4632
Fresno	0	0	0	135	347	627	692	321	308	156	64	0	2650	2532
Los Angeles (U)	0	0	0	34	42	136	328	146	123	111	44	0	964	1451
Los Angeles	0	0	0	42	63	188	337	172	158	144	53	0	1157	2015
Mt. Shasta (R)	31	59	146	546	652	882	1163	715	731	542	387	105	5959	5913
Oakland	83	78	36	208	329	547	611	361	346	213	130	37	2979	3163
Red Bluff	0	0	0	137	273	545	687	371	340	173	74	0	2600	2546
Sacramento (U)	2	0	0	123	294	581	626	328	289	152	73	0	2468	2600
Sacramento	2	0	0	151	349	639	665	353	325	158	70	0	2712	2822
Sandberg(R)	22	13	10	324	412	604	912	475	632	480	418	62	4364	4243
San Diego	0	0	0	35	75	156	259	146	161	122	53	4	1011	1574
San Francisco (U)	238	182	91	169	172	372	494	302	330	222	215	128	2915	3069
San Francisco	105	84	58	198	296	501	584	334	342	242	194	77	3015	3421
San Jose	9	7	6	138	255	439	536	293	278	183	112	15	2271	2410
Santa Maria	126	153	82	215	225	359	564	289	351	327	215	113	3019	2934
COLORADO														
Alamosa	38	143	236	641	1185	1384	1316	910	990	771	549	161	8324	8659
Colorado Springs	2	33	74	372	898	971	1204	724	856	766	400	97	6397	6254
Denver	1	20	66	277	829	901	1206	674	795	701	333	74	5877	6132
Grand Junction	0	0	8	281	914	1235	1236	948	670	478	252	45	6067	5796
Pueblo	0	13	19	251	836	916	1131	643	734	601	230	35	5409	5709
CONNECTICUT														
Bridgeport	12	5	140	303	597	839	1224	864	764	447	175	0	5370	5896
Hartford	20	15	243	423	698	973	1360	926	816	457	212	30	6173	6139
New Haven	18	14	165	363	639	872	1253	875	809	496	228	38	5770	6026
DELAWARE														
Wilmington	1	1	120	249	589	727	1120	764	703	344	129	16	4763	4910
DISTRICT OF COLUMBIA														
Washington (U)	0	0	79	158	520	594	985	652	584	241	68	5	3886	4258
Washington	0	1	88	188	560	638	988	657	587	240	66	4	4017	4333
FLORIDA														
Apalachicola (U)	0	0	0	1	188	152	199	93	131	26	1	0	791	1307
Daytona Beach	0	0	0	0	165	169	127	72	124	8	3	0	668	868
Fort Myers	0	0	0	0	108	86	57	14	32	0	0	0	297	405
Jacksonville	0	0	1	0	195	165	202	115	149	21	4	0	852	1243
Key West (U)	0	0	0	0	9	6	3	0	3	0	0	0	21	77
Miami (U)	0	0	0	0	50	49	23	0	22	0	0	0	144	173
Miami	0	0	0	0	37	46	18	0	17	0	0	0	118	178
Miami Beach	0	0	0	0	20	28	9	0	9	0	0	0	66	123
Orlando	0	0	0	0	137	113	91	40	62	0	0	0	443	650
Pensacola (U)	0	0	0	1	243	181	243	124	178	47	2	0	1019	1435
Tallahassee	0	0	0	15	266	223	233	126	189	45	3	0	1100	1519
Tampa	0	0	0	0	120	95	82	38	57	0	0	0	392	674
West Palm Beach	0	0	0	0	54	74	23	0	25	0	0	0	176	248
GEORGIA														
Athens	0	0	17	77	455	359	602	345	433	118	31	0	2437	2800
Atlanta	0	0	5	49	436	324	585	291	410	109	31	0	2240	2826
Augusta	0	0	18	41	373	300	492	251	348	103	39	0	1965	2138
Columbus	0	0	3	23	396	316	454	216	329	83	15	0	1835	2396
Macon	0	0	5	23	348	274	454	199	300	68	15	0	1686	2049
Rome	0	0	13	95	521	425	646	376	474	138	31	0	2719	3138
Savannah	0	0	8	20	302	232	391	193	254	65	20	0	1485	1710
IDAHO														
Boise	11	33	97	458	883	1059	1343	848	699	483	224	81	6219	5890
Lewiston	5	34	93	474	837	884	1441	822	652	430	148	57	5877	5483
Pocatello	7	43	138	550	1018	1163	1518	929	803	616	324	109	7218	6976
ILLINOIS														
Cairo (U)	0	0	5	50	507	608	985	553	511	169	37	2	3427	3756
Chicago (U)	2	2	72	140	683	927	1342	---	---	---	---	---	----	----
Chicago	3	3	86	153	724	993	1425	877	846	473	228	23	5834	6310
Chicago University	3	5	95	166	720	966	1396	892	862	519	264	41	5929	----
Moline	0	13	109	189	790	1109	1492	902	861	448	191	23	6127	6364
Peoria	0	6	74	129	747	1026	1434	847	824	431	158	9	5685	6087
Springfield	0	6	65	116	706	937	1324	799	761	386	125	6	5231	5693
INDIANA														
Evansville	0	4	55	121	673	688	1085	650	623	258	82	2	4241	4360
Ft. Wayne	0	8	141	222	738	935	1402	903	859	490	209	31	5938	6287
Indianapolis	0	7	104	143	711	808	1280	793	742	396	131	9	5124	5611
South Bend	2	23	149	214	749	966	1406	927	885	515	228	28	6092	6524
IOWA														
Burlington	0	9	83	137	749	1070	1462	881	841	431	160	14	5837	6101
Des Moines	0	14	103	162	807	1111	1518	952	867	457	179	13	6183	6446
Dubuque	3	18	173	239	889	1207	1622	1022	974	500	285	60	6992	7271
Keokuk (U)	0	6	58	101	691	1003	1364	801	744	371	90	0	5229	----
Sioux City	0	9	114	197	838	1151	1593	1008	901	498	209	15	6533	7012
KANSAS														
Concordia (U)	0	3	41	127	698	879	1347	797	735	421	138	4	5190	5323
Dodge City	0	10	16	128	688	869	1229	696	749	429	148	19	4981	5058
Goodland	0	24	60	269	866	953	1368	832	914	626	320	39	6271	6367
Topeka (U)	0	1	25	80	639	879	1246	771	677	370	86	4	4778	4919
Topeka	0	8	34	109	674	925	1291	796	705	388	110	8	5048	5209
Wichita	0	5	12	96	628	856	1190	705	646	359	103	8	4608	4571

Data from airport unless otherwise specified.
U indicates Urban, R indicates Rural, sites.

MONTHLY AND SEASONAL HEATING DEGREE DAYS

(Base 65°)

1956 - 1957

State and Station	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total for Season	Normals July-June
NORTH CAROLINA (Cont'd.)														
Wilmington	0	0	12	29	353	265	571	351	366	121	35	0	2103	2323
Winston-Salem	0	0	68	172	526	466	775	519	531	179	44	9	3289	3721
NORTH DAKOTA														
Bismarck	17	48	287	485	1034	1369	1958	1432	1145	692	307	93	8867	9033
Devils Lake (U)	48	49	373	541	1121	1574	1991	1557	1248	756	335	155	9748	9940
Fargo	14	39	291	404	1025	1494	1935	1465	1159	668	286	88	8868	9274
Grand Forks	35	47	363	509	1069	1603	1999	1531	1221	713	317	143	9550	----
Pembina	---	41	382	482	1029	1640	2043	1653	1290	741	238	181	9720	----
Williston (U)	40	58	264	537	981	1401	1963	1391	1098	711	262	103	8809	9068
OHIO														
Akron	5	27	209	279	735	877	1344	935	858	479	219	36	6003	6203
Cincinnati (U)	0	1	50	93	556	604	1048	674	608	288	91	0	4013	4532
Cincinnati	0	8	90	138	663	904	1147	740	698	335	113	0	4836	5195
Cleveland	4	13	159	198	665	828	1295	891	825	471	221	29	5599	6006
Columbus	0	8	114	173	651	745	1211	792	745	379	138	9	4965	5615
Dayton	0	8	106	171	697	790	1267	829	775	402	152	12	5209	5597
Sandusky (U)	0	1	136	180	683	844	1319	912	829	491	220	28	5643	5859
Toledo	1	13	190	256	745	923	1385	934	868	509	236	45	6105	6394
Youngstown	8	24	214	298	719	874	1339	939	854	492	234	40	6035	6172
OKLAHOMA														
Oklahoma City	0	0	0	72	531	713	978	542	560	284	72	9	3761	3644
Tulsa	0	0	0	41	509	689	957	505	513	235	36	3	3488	3584
OREGON														
Astoria	138	150	228	448	602	696	896	625	594	476	327	209	5389	4995
Burns (U)	27	73	187	592	856	1093	1443	958	813	588	342	141	7113	6918
Eugene	46	50	111	428	689	745	1011	613	551	392	216	104	4956	4779
Meacham	74	151	229	670	902	1020	1471	963	930	697	429	245	7781	7888
Medford	9	21	69	421	739	945	957	578	557	386	188	27	4897	4547
Pendleton	1	22	63	429	824	872	1424	804	651	372	132	28	5622	5204
Portland (U)	17	29	64	346	569	711	1002	589	524	332	143	59	4385	4143
Portland	22	47	120	407	662	746	1041	648	578	390	190	95	4946	4632
Roseburg	30	36	87	415	656	746	924	576	508	378	193	75	4624	----
Salem	33	47	102	407	670	765	986	618	554	393	201	103	4879	4574
Sexton Summit (R)	97	135	164	582	499	749	1083	693	828	593	428	214	6065	6217
PENNSYLVANIA														
Allentown	12	9	178	335	694	864	1230	892	792	420	184	30	5640	5880
Harrisburg	7	0	146	295	631	762	1139	809	730	358	137	13	5027	5258
Philadelphia (U)	4	0	73	177	491	659	1025	710	644	326	113	16	4238	4523
Philadelphia	2	2	107	222	556	718	1103	765	695	346	126	15	4657	4866
Pittsburgh (U)	0	6	127	183	595	682	1124	757	694	355	118	13	4654	5048
Pittsburgh	4	19	180	250	683	785	1234	843	778	409	173	22	5380	5905
Reading (U)	6	0	127	243	604	741	1113	785	690	353	133	21	4816	5060
Scranton	28	29	241	394	736	943	1337	946	886	485	264	41	6330	6047
Williamsport	10	11	176	346	688	899	1263	889	799	418	185	20	5704	5898
RHODE ISLAND														
Block Island	15	11	130	306	571	772	1131	853	812	548	307	60	5516	5843
Providence	13	13	194	394	630	885	1304	866	804	463	222	35	5823	6125
SOUTH CAROLINA														
Charleston (U)	0	0	3	13	250	194	414	238	276	48	14	0	1450	1769
Charleston	0	0	12	38	347	260	465	245	307	90	29	0	1793	1973
Columbia	0	0	23	45	372	283	531	283	350	102	31	0	2020	2435
Florence	0	0	21	39	359	275	531	310	345	91	34	0	2005	2507
Greenville	0	0	43	113	458	372	657	416	451	131	28	0	2669	3060
Spartanburg	0	0	40	108	456	374	655	404	447	124	32	0	2640	3044
SOUTH DAKOTA														
Huron	1	19	186	345	970	1230	1766	1240	1045	611	304	41	7758	7902
Pierre	0	22	151	341	937	1221	1743	1177	1025	645	319	44	7625	----
Rapid City	1	37	119	364	950	1083	1678	1042	966	714	336	106	7396	7535
Sioux Falls	0	27	165	284	957	1243	1729	1157	1039	591	292	37	7521	7848
TENNESSEE														
Bristol	0	5	79	132	595	539	831	524	578	221	50	0	3554	4148
Chattanooga	0	0	15	96	514	416	688	398	475	143	37	0	2782	3384
Knoxville	0	0	31	75	524	415	728	425	496	168	33	0	2895	3590
Memphis	0	0	0	48	439	482	788	414	447	145	25	0	2788	3137
Nashville	0	0	10	73	512	450	845	487	511	175	45	0	3108	3513
TEXAS														
Abilene	0	0	0	36	396	489	647	328	333	155	36	6	2426	2657
Amarillo	0	9	7	127	634	702	871	515	616	381	140	26	4028	4345
Austin	0	0	0	0	250	285	454	168	185	79	16	0	1437	1713
Brownsville	0	0	0	0	108	89	102	30	25	9	0	0	363	617
Corpus Christi	0	0	0	0	156	180	216	64	53	22	0	0	691	1011
Dallas	0	0	0	14	355	433	651	288	347	120	17	0	2225	2272
Del Rio	0	0	0	3	216	327	382	117	87	64	2	0	1198	1407
El Paso	0	0	0	65	494	624	478	205	242	102	19	0	2229	2641
Ft. Worth	0	0	0	21	374	468	656	311	381	142	21	0	2374	2361
Galveston (U)	0	0	0	0	147	154	204	104	106	32	2	0	749	1211
Galveston	0	0	0	0	169	172	206	103	111	34	2	0	797	1233
Houston (U)	0	0	0	0	174	189	254	119	118	37	1	0	892	1276
Houston	0	0	0	0	204	220	256	129	138	45	3	0	995	1388
Laredo	0	0	0	0	135	183	208	64	22	41	1	0	654	781
Lubbock	0	0	1	101	584	646	766	421	473	289	67	22	3370	3587
Midland	0	0	0	54	439	536	617	301	293	175	25	10	2450	----
Port Arthur	0	0	0	4	231	203	260	127	150	50	5	0	1030	1517
San Angelo	0	0	0	33	365	473	594	273	239	147	30	5	2159	2107
San Antonio	0	0	0	3	229	271	370	126	132	71	7	0	1209	1579
Victoria	0	0	0	0	180	212	281	108	102	44	3	0	930	1126
Waco	0	0	0	15	314	378	568	238	270	107	16	0	1906	2025
Wichita Falls	0	0	0	37	425	549	793	430	449	197	34	5	2919	3025
UTAH														
Milford	0	0	53	453	1017	1156	1203	802	716	531	347	68	6346	6445
Salt Lake City	0	12	58	398	915	1077	1203	685	667	489	238	70	5812	5866
VERMONT														
Burlington	41	46	298	480	807	1196	1649	1112	1035	582	350	72	7668	7865
VIRGINIA														
Lynchburg	0	5	72	216	575	527	912	610	569	238	69	17	3810	4153
Norfolk	0	0	21	69	422	390	778	564	508	173	59	1	2985	3454
Richmond	0	3	75	146	519	493	915	600	546	201	63	5	3566	3955
Roanoke	0	6	86	202	573	526	901	599	600	246	52	10	3801	4152
WASHINGTON														
Olympia	80	75	236	493	695	756	1007	724	647	425	224	152	5514	5501
Seattle (U)	32	43	147	379	567	669	891	633	561	376	147	84	4529	4438
Seattle-Tacoma	70	89	208	474	663	760	995	706	629	441	213	135	5383	5275
Spokane	17	66	149	592	963	1055	1547	1011	841	506	186	129	7062	6852

Data from airport unless otherwise specified.
U indicates Urban, R indicates Rural, sites.

MONTHLY AND SEASONAL HEATING DEGREE DAYS

(Base 65°)

1956 - 1957

State and Station	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total for Season	Normals July-June
WASHINGTON (Cont'd.)														
Stampede Pass (R)	239	273	410	834	1043	1081	1506	1069	1085	818	509	464	9331	9149
Tatoosh Island (R)	300	294	304	452	536	675	832	672	638	522	383	316	5924	5724
Walla Walla (U)	0	15	52	382	794	830	1370	751	623	332	109	25	5283	4848
Yakima	2	22	131	511	890	1044	1515	904	722	402	104	64	6311	5845
WEST VIRGINIA														
Charleston	0	7	115	156	583	558	1002	657	645	268	89	3	4083	4417
Elkins	11	35	189	302	751	700	1113	761	762	376	172	15	5187	5773
Huntington (U)	0	2	83	123	552	548	991	624	627	261	79	1	3891	4073
Parkersburg (U)	0	9	110	159	596	643	1093	706	672	305	102	5	4400	4750
WISCONSIN														
Green Bay	46	46	300	367	935	1311	1718	1229	1078	616	385	91	8122	8259
La Crosse	4	16	187	238	913	1247	1630	1116	1000	494	254	34	7133	7650
Madison (U)	5	10	133	---	---	----	----	1047	949	497	298	39	----	7300
Madison	10	20	170	285	870	1216	1605	1047	977	512	302	47	7061	7417
Milwaukee	27	18	188	287	840	1139	1544	1036	1006	598	381	88	7152	7205
WYOMING														
Casper	3	56	139	464	1049	1131	1506	916	934	782	408	135	7523	7638
Cheyenne	19	69	136	445	989	994	1365	838	976	839	519	155	7344	7562
Lander	9	48	131	486	1068	1204	1553	903	924	802	414	166	7708	8303
Sheridan	7	62	159	483	915	1073	1705	1093	933	742	352	160	7684	7903
ALASKA														
Anchorage	265	271	563	1128	1448	1881	1545	1437	1119	830	500	201	11188	10789
Annette	259	245	339	680	737	908	1087	898	792	659	454	346	7404	7096
Barrow	801	1036	982	1702	2276	2316	2146	2526	2519	1741	1408	937	20390	19994
Barter Island	---	---	---	---	---	---	2144	2496	2522	1757	1362	939	----	----
Bethel	263	308	613	1185	1812	2220	1490	1583	1483	947	634	211	12849	12880
Cold Bay	463	412	518	801	1061	1179	943	1022	1069	865	740	476	9549	----
Cordova	370	407	574	946	1006	1300	1376	1143	975	821	600	357	9875	9615
Fairbanks	135	278	685	1481	2097	2895	1969	1891	1446	968	506	75	14426	14158
Juneau	263	337	500	843	793	1279	1369	1105	992	785	521	296	9083	8888
King Salmon	296	313	577	1181	1601	1907	1378	1421	1214	827	594	297	11606	----
Kotzebue	396	474	724	1514	2195	2480	1787	1980	2006	1292	947	435	16230	16151
McGrath	187	303	667	1469	2183	2752	1890	1903	1526	993	526	95	14494	14390
Nome	474	462	673	1220	1828	2123	1565	1694	1676	1130	823	439	14107	14086
Northway	252	394	838	1634	2142	2975	2421	2042	1736	1182	694	206	16516	15506
St. Paul	648	577	605	828	1070	1293	1060	1251	1280	974	868	638	11092	10839
Yakutat	346	367	549	877	886	1210	1268	1065	985	828	630	391	9402	9354

Data from airport unless otherwise specified. U indicates Urban, R indicates Rural, sites.

Note: "Heating Degree Days" has been discontinued in the June issues of this publication, the data appearing therein being shown in the last three columns of the above Table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TEXAS Perrin Air Force Base (10 miles northwest of), Grayson County	1	6 a.m.			0	0			Funnel aloft	Reported moving northeastward.
TEXAS Lenz Community, Karnes County	1	10:45 a.m.			0	0			Funnels aloft	2 funnels reported moving east-southeastward.
TENNESSEE Halls (near), Lauderdale County	1	2 p.m.						1	Electrical	Lightning struck office and warehouse building 1 mile north of Halls, damaging roof and walls, knocking out a number of ventilator windows, shorting electrical system, and starting minor fire.
TEXAS Uvalde, Uvalde County	1	2:50 p.m.			0	0			Funnel aloft	Funnel aloft reported.
TEXAS Munday (2 1/2 miles south of), Knox County	1	3-3:45 p.m.			0	0			Tornado (suspected) and funnels aloft	Tornado reported touching ground and 2 funnels aloft also reported.
ALABAMA Adamsville, Jefferson County	1	Afternoon			1	1	1	1	Electrical	Boy killed at front door of home and another injured while playing in school yard.
FLORIDA West Palm Beach area, Palm Beach County	1	Afternoon			0	0			Funnel aloft	Cloud sighted 5 miles east of Airport.
OREGON Northern third of from Willamette Valley eastward	1	Afternoon - evening	300	*100			4	5	Electrical, wind, rain, and hail	Storm reached its most destructive force in central Columbia Basin, particularly southern Morrow and Sherman Counties. Hail up to 2-1/2 inches in diameter cut swath, 1/2 to 1 mile wide and several miles long, much of it through fall grain. Windows broken and roofs damaged on several farm homes and outbuildings. Lightning caused numerous power and telephone service interruptions. Winds lodged some grain and hay. Rains and wind together caused serious erosion to summer fallow fields. Lightning damage $10,000; hail $270,000; wind $20,000; rain $30,000. Storm moved northeastward.
TEXAS Colorado City (6 miles west of), Mitchell County	1	5:05 p.m.			0	0			Funnel aloft	Reported moving southward.
TEXAS Buford, El Paso County	1	5:10 p.m.			0	0			Funnel aloft	Reported moving northeastward.
TEXAS Louise (3 miles north of), Wharton County	1	7:10 p.m.			0	0			Funnel aloft	Reported moving northeastward.
TEXAS Waco (32 miles northwest of), Bosque County	1	7:12-7:30 p.m.			0	0			Funnel aloft	Reported moving northeastward.
TEXAS Maryneal, Nolan County	1	7:30 p.m.			0	0			Funnels aloft	2 funnels reported.
TEXAS Sulphur Springs, Hopkins County	1	8:15 p.m.			0	0			Tornado (suspected)	Moved northeastward.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
IDAHO Cottonwood and Moscow areas, Idaho and Latah Counties	1	10 p.m. - midnight				2			Electrical	Damage to home in Cottonwood estimated at $1500. Near Moscow, lightning believed to have hit moving automobile, causing driver to lose control, resulting in heavy damage to car and injury of 2 occupants. Lightning fire destroyed unoccupied horse shed.
WASHINGTON Yakima, Kittitas, Chelan, and Douglas Counties	1	Evening					4	7	Hail, electrical, and rain	Series of thunderstorms developed along eastern slope of Cascades and moved eastward over State. Most severe hailstorms occurred in Manson and Bridgeport areas, near Lake Chelan, and in Zillah, Selah, and Tieton-Naches districts near Yakima. Extensive fruit damage in these areas. Scattered hailstorms damaged wheat and vegetable crops in other localities of eastern Washington. Irrigation ditches and roads damaged by runoff in some instances. Power and communication facilities damaged by lightning in Columbia Basin.
TEXAS Mineral Wells, Palo Pinto County	1				0	0			Tornado (suspected)	
TEXAS Sealey, Austin County	1				0	0			Funnel aloft	
	1									Minor storms also reported at Union City, Tenn.; and Kenedy, Tex.
TEXAS Galveston Bay area, Galveston County	2	8 a.m. - 7 p.m.			0	0	2		Waterspouts	Six or 7 observed, 3 a short distance offshore over Gulf of Mexico, 4 over Galveston Bay. 1 over Galveston Bay appeared to be unusually large, about 300 feet in diameter. Negligible damage in northern part of Texas City.
TEXAS Mineral Wells (4 to 5 miles south of), Palo Pinto County	2	11:57 a.m.			0	0			Funnel aloft	Reported moving westward.
TEXAS Meachum Field (southeast of), Tarrant County	2	12:40 p.m.			0	0			Funnel aloft	
TEXAS Pottsboro (4 miles north of), Grayson County	2	1:45 p.m.			0	0			Tornado (suspected) and funnel aloft	Tornado reported touching ground and funnel aloft also reported.
TEXAS Lake Medina, Medina County	2	2 p.m.			0	0			Funnel aloft	
TEXAS Sherman (10 miles north-northeast of), Grayson County	2	2:10 p.m.			0	0			Tornado (suspected)	
TEXAS Waco (15 miles southwest of), McLennan County	2	2:55 p.m.			0	0			Funnel aloft	
VIRGINIA Roanoke area, Roanoke County	2	4:30 p.m.					4		Rain	Flash flooding from heavy thundershower. Damage to streets, lawns, and basements.
TEXAS Houston (15 miles east-southeast of), Harris County	2	4:58 p.m.			0	0			Funnel aloft	

See footnotes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TEXAS Texas City (10 miles northwest of), Galveston County	2	6:52 p.m.			0	0			Tornado (suspected)	Reported moving northward.
	2									Minor storms also reported in Coolidge area, Ariz.; in Baltimore area, Md.; and at Arvada, Wyo.
TEXAS Comfort (20 miles east of), Kendall County	3	3:16 p.m.			0	0			Funnel aloft	Reported moving northward.
TEXAS Between Keene and Alvarado, Johnson County	3	4:40 p.m.			0	0			Funnel aloft	Reported moving northwestward.
TEXAS Between Wharton and Bay City, Wharton and Matagorda Counties	3	6:02 p.m.			0	0			Funnel aloft	
SOUTH DAKOTA Harding, Perkins, and Corson Counties	3	Evening			0	0	3	4	Tornado, hail, and wind	Electric and telephone poles downed, apparently by tornado, west of Bison. Funnel not seen. Hail and wind damage extended from Ludlow to McIntosh. Storm moved southeastward.
TEXAS Houston (17 miles west of), Harris County	3				0	0			Tornado (suspected)	
	3									Minor storm also reported at Clearmont, Wyo.
TEXAS Waldeck, Fayette County	4	7-8 a.m.				1	2		Electrical	Lightning struck kitchen stove flue, knocked out kitchen wall, smashed windows throughout home, smashed pots and pans, and deafened occupant.
TEXAS Jefferson County Airport (40 miles west of), Liberty County	4	11:36 a.m.			0	0			Funnel aloft	
TEXAS Nome, Jefferson County	4	11:40 a.m.			0	0			Funnel aloft	
ARKANSAS Rector (4 miles east of), Clay County	4	Noon	6	*3			4	4	Hail and wind	Hailstones as large as baseballs reported. Estimated 600 acres of cotton destroyed. Several buildings destroyed or damaged by wind. Storm moved northeastward.
TEXAS Freeport (6 to 10 miles south of), Brazoria County	4	12:25 p.m.			0	0	1		Waterspout	Touched water surface; moved north-northeastward.
MISSOURI Jefferson City, Cole County	4	2 p.m.			1				Electrical, wind, and rain	Inmate at State Prison Farm killed by lightning. Local flooding.
TEXAS Ft. Worth (40 miles east of), Dallas County	4	2:05 p.m.			0	0			Funnel aloft	

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TEXAS Waco (15 miles southwest of), McLennan County	4	2:40 p.m.			0	0			Funnel aloft	
ARKANSAS Benton State Hospital, Saline County	4	Afternoon			1				Electrical	Patient at Benton Unit of Arkansas State Hospital killed by lightning.
TENNESSEE Union City, Obion County	4	3 p.m.					3	1	Rain and electrical	Heavy rains resulted in flooding of several business establishments. Lightning damaged police radio antenna.
TEXAS Coolidge Limestone County	4	4:05 p.m.			0	0			Funnels aloft	2 funnels reported.
TEXAS Lufkin (40 miles northwest of), Cherokee County	4	5:30 p.m.			0	0			Funnel aloft	
TEXAS Fort Worth (20 miles northeast of), Tarrant County	4	5:44 p.m.			0	0			Funnel aloft	
TEXAS Hallettsville (10 miles south of) Lavaca County	4	6 p.m.			0	0			Tornado (suspected) and funnels aloft	Tornado on ground and 3 funnels aloft reported.
TEXAS Orange, Orange County	4	6:07 p.m.			0	0			Funnel aloft	Sighted for about 40 minutes, moving northward.
TEXAS Houston, Harris County	4	6:15 p.m.			0	0			Funnel aloft	Sighted south of downtown Houston.
IOWA Spencer (10 miles south of), Clay County	4	8 p.m.			0	0			Funnel aloft	Reported by 2 citizens; moved south-southeastward.
	4									Minor storms also reported at Peterson, Iowa; Columbus, Kans.; Campbell, Mo.; Buffalo, S. Dak.; Jackson and Moscow, Tenn.; and Norfolk, Va.
NORTH CAROLINA Southern mountains	4-5				1		5	5	Rain and electrical	Rains of 3 to 5 inches in 2 days caused flash floods, erosion, cave-ins, highway failures, etc., over large area centered around French Broad River basin. Heaviest damage around Rutherfordton. Man killed by lightning in Cherokee County.
NORTH CAROLINA Onslow County	4-10							6	Rain	Heavy daily rains, up to 4 inches in 24 hours and 10 inches for period, caused flooding and waterlogging of soils in low, flat country. County tobacco crop cut about one-third and much damage to vegetables.
FLORIDA Miami, Dade County	5	7:40 a.m.			0	0			Waterspout	
TENNESSEE Athens, McMinn County	5	9 a.m.						1	Rain	Several of the lower sections of the city were under water and many streets running brimfull of water. Storm moved northeastward.
TEXAS Matagorda Peninsula, Matagorda County	5	11 a.m.			0	0	1		Waterspouts	5 waterspouts, all touching water.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TEXAS Corpus Christi (9 miles west of), Nueces County	5	11:40 a.m.			0	0			Funnel aloft	
TEXAS Bertram, Burnet County	5	12:17 p.m.			0	0			Funnel aloft	
IDAHO Twin Falls, Twin Falls County	5	2:45 p.m.			0	0			Tornado	Tornado reported southwest to west of Twin Falls Airport and moved northward. It touched ground shortly then lifted again. Thunderstorm in progress at time. No damage reported.
GEORGIA Colquitt County	5	3 p.m.	2	200	0	0	3	3	Tornado, rain, and hail	Trees blown down and roofs blown off several houses in small area. Crop damage caused by heavy rain and hail that accompanied storm. Funnel cloud seen. Storm moved northeastward.
SOUTH DAKOTA Marshall, Brown, and Spink Counties	5	3:30-5 p.m.			0	0	3	4	Hail, rain, and funnel aloft	Funnel cloud near Westport at 3:50 p.m. Damage from accompanying hail and heavy rain. Aberdeen streets and basements flooded.
NEBRASKA Max (near), Dundy County	5	4 p.m.	4	*2			1	3	Hail	Hailstones 1/4 to 1/2 inch in diameter; ground covered 3/4 inch. Storm moved southward.
FLORIDA West Palm Beach area, Palm Beach County	5	Afternoon			0	0			Funnel aloft	Cloud sighted 8 miles south of Airport.
OREGON Northern half from Willamette Valley eastward to border	5	Afternoon - Evening	300	*150	1	3	5	5	Wind, electrical, rain, and hail	Wind estimated by damage caused, exceeding 100 m.p.h., at times near eastern end of Columbia Gorge, knocked over 15 steel towers carrying high voltage transmission lines causing $230,000 damage. Wind also leveled all buildings on 1 sheep ranch, lodged considerable grain and hay, and damaged number of roofs. Rain and hail battered mid-Columbia Basin fall wheat and barley and Willamette Valley strawberries and cherries. Much hay damaged throughout storm area. Lightning again caused utility service interruptions and damage, started several forest fires too small to be of any consequence, killed young girl in Willamette Valley, and injured at least 3 persons over State. Wind damage $260,000; lightning $35,000; rain $60,000; hail $325,000. Storm moved northeastward.
WASHINGTON Southeastern counties	5	Afternoon - Evening				2	5	6	Wind, rain, electrical, and hail	High wind, heavy rain, and hail damaged property and crops over large area in southern half of eastern division. Wind speeds ranging from 50 to 80 m.p.h., damaged hop yards and blew down trees which damaged residences and other buildings. Several persons injured by lightning. Heavy rain in Benton County flooded basements, damaged irrigation ditches, railroad grades, and highways. Hail damaged fruit and wheat. Storm continued eastward from Benton County to Idaho border. A large number of power and communication outages reported.
IOWA Dewitt, Clinton County	5	5 p.m.			0	0			Funnel aloft and wind	Trees and buildings damaged. Storm moved southeastward.
IDAHO Northern counties	5	5 - 7:30 p.m.				1			Hail, wind, and electrical	Extensive hail damage, especially to wheat and fruit, in area around Moscow, and lesser damage in Benewah, Lewis, and Nez Perce Counties. Many power outages, phone service disrupted and 1 woman injured by lightning. Wind toppled many trees, breaking lines. House at Craigmont destroyed by fire believed to have been started by lightning.
NEBRASKA Broken Bow (9 miles east of), Custer County	5	6:30-7:30 p.m.	5	880			3	3	Hail	Hailstones size of marbles to eggs. Roofs damaged and windows broken. Storm moved northeastward.

See footnotes at end of table

STORM DATA AND UNUSUAL WEATHER PHENOMENA

JUNE 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
ILLINOIS Wheaton, Du Page County	5	9:30 p.m.					5		Electrical	Fire destroyed a coal company yard.
NEBRASKA Custer County (south-central portion)	5	Evening					2	3	Hail	Hailstones size of marbles to golf balls.
NORTH DAKOTA LaMoure and near Verona, La Moure and Ransome Counties	5				0	0	3	4	Tornado and hail	House and barn damaged by tornado 11 miles southeast of Verona. Heavy hail 18 miles north of Verona.
	5									Minor storms also reported at Haleyville, Ala.; in Brooks County, Ga.; in Black Hawk, Clinton, Dubuque, Grundy, Hardin, and Jackson Counties, Iowa; Near King City, Mo.; at Anderson, S. C.; and at Goshen, Utah
MISSOURI Liberty, Clay County	5-6	During night							Wind, rain, and hail	Many trees downed. Wind and hail damage to wheat.
WYOMING Greybull River area	5-9						°4	C	Rains, melting snow	Damage from floods.
SOUTH CAROLINA Conway, Horry County	6	3 p.m.			1		1	1	Electrical	
NORTH CAROLINA Cabarrus County	6	3:45 p.m.				1	4		Electrical	Lightning burned barns, knocked out transformers. Man slightly injured.
NEBRASKA Hay Springs (3 miles west of), Sheridan County	6	Afternoon					2	3	Hail	Average diameter of hailstones 1 inch.
NORTH CAROLINA Duplin County	6	Afternoon						4	Hail	Scattered crop damage in Warsaw-Kenansville area.
OHIO Huron and Erie Counties	6	4 p.m.					°4	C	Hail	Hail varying in size from 1/4 to 1 inch in diameter fell in localized area in Milan and East Norwalk doing much damage to greenhouses and limited damage to trees. Storm moved northeastward.
NEBRASKA Keya Paha County (western portion)	6	4:45 p.m.			0	0	3	1	Wind or tornado (suspected)	Possible tornado. Large barn and other farm buildings blown down.
SOUTH DAKOTA BonHomme and Yankton Counties	6	5-7 p.m.			1	2	4		Electrical and wind	Lesterville farmer killed while fighting lightning-caused fire. Near Tyndall, wind unroofed house, overturned trailer, and blew in glass windows.
MONTANA Stillwater County (central portion)	6	5:30 p.m.	50	*12-14			5	5	Hail	Storm followed Yellowstone River for width of county. Heaviest damage at Park City and Reed Point. Hailstones up to size of golf balls. Storm moved eastward.
MONTANA Carbon County (northern and eastern portions)	6	6 p.m.	10	*1			1	5	Hail	Some hailstones up to 3/4 inch. Grain and hay crops destroyed. Hail drifts up to 12 inches. Storm moved southeastward.
NEBRASKA Brewster (east of), Blaine County	6	8:30-9 p.m.					2		Hail	Hailstones size of marbles to golf balls. Considerable crop damage.
NEBRASKA Waco to Gresham, York County	6	9:30 p.m.	5	Narrow	0	0	3	2	Tornado	Tornado moved north-northeastward.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
GEORGIA Quitman (south of), Brooks County	6	Late p.m.						3	Hail	Hail caused extensive damage and in some cases complete destruction to tobacco, cotton, corn, and truck crops over 8-mile long belt south of Quitman. Hailstones 3/4 inch in diameter covered ground.
INDIANA Lyons, Greene County	6	Evening	6	*1-1/2			°4	C	Wind and hail	South of Lyons, high winds damaged roofs of several barns. Many trees and utility lines blown down. Hail measured up to 1-1/2 inches in diameter. Hail caused minor damage. Storm moved eastward.
PENNSYLVANIA Franklin County	6	Evening					4		Electrical, hail, and rain	Barn and contents burned near Chambersburg resulting in $15,000 fire. Heavy hail damaged fruit extensively, but no estimate of loss reported. Heavy rain caused much local flooding. Storm moved eastward.
SOUTH DAKOTA Eastern portion	6	Evening							Hail	Numerous crop insurance claims filed. Total damage not known. Kingsbury and Miner counties reported most claims.
IOWA Atlantic, Cass County	6	Midnight				1	3	1	Electrical	Lightning struck home and injured occupant.
SOUTH CAROLINA Darlington area, Darlington County	6				1		3	3	Hail, wind, and electrical	Crop damage by hail.
	6									Minor storms also reported at Oakland, Iowa; near Ainsworth, Nebr.; at Delaware, Sandusky, and Tiffin, Ohio; at Butler, Pa.; in Tripp County, S. Dak.; and at Brigham City, Utah.
MISSOURI Afton-Lemay area, St. Louis County	6-7								Rain	Near 6-inch rain in Afton-Lemay area caused local flooding on Gravois Creek.
KANSAS Pawnee County	7	1-3 a.m.							Wind, electrical, hail, and rain	Brilliant electrical display, but no lightning damage reported. Intermittent hail damage in eastern part of county. Heavy rain and wind damaged crops considerably. Barley losses estimated at 10 percent. Storm moved eastward.
MISSOURI Callao, Macon County	7	4:15 a.m.							Electrical	Large barn hit by lightning and destroyed.
TEXAS Dayton, Liberty County	7	10:05 a.m.			0	0			Funnel aloft	Reported moving northwestward.
INDIANA Brazil, Clay County	7	12:40 p.m.			0	0			Funnel aloft	State police reported funnel cloud which did not touch ground.
MISSOURI Sullivan-St. Clair area, Franklin County	7	2:30 p.m. -midnight			1	1			Rain, hail, wind, and electrical	Torrential rains. Hail up to 1 inch in diameter. Strong surface winds. Plane crashed in storm near St. Clair, killing pilot and injuring passenger. Storm moved east-northeastward.
TEXAS Houston (south-southeast of), Harris County	7	3:30-3:38 p.m.			0	0			Funnel aloft	
MISSOURI Mound City (2 miles northwest of), Holt County	7	3:50 p.m.							Rain, hail, wind, and electrical	Very heavy rain and hail. Powerlines, phone lines, and trees downed.
IOWA Hamburg, Fremont County	7	Afternoon					4	1	Rain	Many basements flooded.
MISSOURI Fillmore, Andrew County	7	4 p.m.		400	0	0	2		Tornado	Touched ground briefly. Damaged farm building. Tornado moved northeastward.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MISSOURI Chillicothe, Livingston County	7	4:16 p.m.	20	*2-5					Electrical, wind, rain, and hail	Small hail. Up to 3-inch rains. Extensive erosion and flooding of crop land. Lightning hit several homes. Storm moved northeastward.
KANSAS northeastern portion	7	5-8 p.m.			0	0	4		Wind, rain, hail, and funnels aloft	Northern Jackson, Leavenworth, Brown, and Doniphan Counties received some damage from severe winds and hail. Fruit trees and strawberry beds chief loss. Some power-and transmission lines downed. 2 funnels aloft sighted west of Hiawatha. Losses from soil erosion estimated at $25,000. Thunderstorms reported as far west as Dickinson County. Storm moved eastward.
MISSOURI Columbia (6 miles south of), Boone County	7	5:35 p.m.			0	0			Funnel aloft	
MISSOURI St. Joseph, Buchanan County	7	6:30-7:30 p.m.			0	0			Rain, winds, hail, and funnels aloft	2.03 inches of rain at WBAS in 1 hour. Several unconfirmed funnel clouds in vicinity. Local flooding of homes and business buildings. Hail 3/8 inch in diameter.
MISSOURI Butler, Bates County	7	7 p.m.			0	0			Funnel aloft	
MISSOURI Audrain County	7	7 p.m. - midnight			0	0			Funnels aloft, rain, wind, and electrical	Some trees downed. 1.70-inch rain at Mexico in 1-1/2 hours. Funnels aloft 15 miles southeast of Mexico and 2 aloft near Benton City-Shamrock area. Storm moved eastward.
MISSOURI Gower area, Clinton County	7	8-8:30 p.m.			0	0	3		Tornado	Touched ground very briefly in pasture near town; moved northeastward.
COLORADO Kiowa County	7	Evening							Rain and wind	Heavy rain accompanied by wind, washed out newly-planted crops east of Eads. 1 farmer lost 400 acres and his neighbors suffered similar losses.
COLORADO Kirk, Yuma County	7				1				Electrical	Lightning struck home in Kirk, causing leak in propane gas connections. Explosion resulted from lighted match outdoors. Explosion demolished the home and killed a housewife.
TEXAS Liberty, Liberty County	7				0	0			Funnel aloft	
	7									Minor storms also reported at Piasa, Ill.; at Creston and Mt. Pleasant, and near Centerville and Zion, Iowa; and at Kirkwood, St. Joseph, and Salisbury, Mo.
FLORIDA Northern and west coast areas	7-8				5				Rain	Heavy rains associated with weak tropical disturbance that moved out of Gulf of Mexico across northern Florida caused much local flooding and considerable damage to crops. At Perry, Taylor County, some 200 persons evacuated from flooded residential area. Several highways closed by high water and numerous small bridges washed out. Watermelons, tobacco, and other crops damaged considerably by high water and/or bright sun that followed. High tides along west coast south to Ft. Myers undermined some beach properties. Small fishing vessel capsized in Gulf, 5 persons lost. Shrimp boat off Ft. Myers sunk, several other boats driven ashore and left stranded on beach south of Tampa.
MISSOURI Farmington, St. Francois County	8	9:15-9:30 a.m.			0	0			Funnel aloft	
MISSOURI Fulton (6-1/2 miles northwest of), Callaway County	8	11:40 a.m.			0	0			Funnel aloft	

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MISSOURI McCredie, Calloway County	8	11:40 a.m.			0	0			Funnel aloft	
MISSOURI Columbia (10 miles northeast of), Boone County	8	Noon			0	0			Funnel aloft	
TEXAS Bolivar Peninsula, Galveston County	8	12:30 p.m.			0	0			Funnel aloft	
IDAHO Twin Falls, Canyon, and Lemhi Counties	8	Afternoon							Electrical and hail	In vicinity of Middleton, numerous electrical appliances damaged by lightning and phone service disrupted. Near Buhl, a brief but heavy hailstorm damaged crops, especially apples. Church steeple in Salmon hit by lightning and badly damaged.
FLORIDA Newberry, Alachua County	8	3 p.m.	Short		0	0	3		Tornado	Unroofed 1 house, blew down 2 tobacco barns, uprooted several trees. Funnel cloud sighted moving northwestward.
FLORIDA Ocala (20 miles east of), Marian County	8	3 p.m.	Short	50	0	0	3		Tornado	Unroofed 1 house. Tornado lifted and lowered along path. Funnel cloud seen moving northwestward.
FLORIDA Orange Park and Doctors Inlet Clay County	8	3-4 p.m.	Short	25	0	0	4		Tornado	Several buildings demolished and numerous trees blown down. Funnel cloud seen moving northwestward
FLORIDA Georgetown, Putnam County	8	3-4 p.m.			0	0			Tornado	Funnel cloud seen. Damages confined to wooded areas.
FLORIDA Jacksonville (East Springfield section), Duval County	8	4-5 p.m.	Short		0	0	4		Tornado	Paint shop demolished and church unroofed. Tornado moved northwestward.
FLORIDA Jacksonville Naval Air Station, Duval County	8	5:15 p.m.	Short		0	0	4		Tornado	Funnel cloud seen moving northwestward. Naval Air Station salvage yard hit.
KANSAS Cottonwood Falls (southeast of), Chase County	8	5:50 p.m.			0	0			Funnel aloft	Funnel cloud aloft sighted.
GEORGIA Jekyll Island, Glynn County	8	8:15 p.m.	Short	Narrow	0	0	4	1	Tornado (suspected)	What was thought to be small tornado hit section of Jekyll Island 10 miles southeast of Brunswick. Island Administration Building completely destroyed.
NORTH CAROLINA Catawba County	8	Night					4	3	Rain	Heavy rains in Hickory-Newton area caused erosion, wash-outs, flooded basements, highway damage, and crop damage.
SOUTH DAKOTA Harding County	8	Night			0	0	3		Tornado	Reportedly struck vacant farm 3 miles east of Ludlow; demolished 2 buildings.
	8									Minor storms also reported near Stough, Ala.; in Mt. Harmony community, Ark.; near Vicksburg, Miss.; and at Aurora, Festus, Grandview, and Washington, Mo.
ARKANSAS Morrilton (near), Conway County	9	6:15 a.m.				1			Electrical	Man struck by lightning while working in garden.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

JUNE 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
ALABAMA Huntsville, Madison County	9	12:45 p.m.				1	3	1	Electrical and rain	In northern Huntsville, woman hit inside her home. Electric storm preceded heavy rain.
NEW MEXICO Roswell, Chaves County	9	1 p.m.			0	0	2	1	Dust devil	
TENNESSEE Giles County (northeastern portion)	9	2 p.m.							Rain, electrical, and hail	Heavy rains at Campbellsville sent small streams out of banks, washed away small bridges, and backed water under stores and houses. Hail accompanied rain at Pisgah, Rose Hill, and Campbellsville causing some damage to tobacco and gardens.
TENNESSEE Tabernacle Community, Tipton County	9	2:30 p.m.			1		1	1	Electrical	Lightning struck tree, killing 12-year old girl underneath.
SOUTH DAKOTA Bennett County	9	Afternoon			0	0			Tornado	Touched ground in pasture 5 miles north of Cody, Nebr.
SOUTH DAKOTA Sully County	9	Afternoon			0	0			Funnel aloft	Sighted aloft; roar heard for miles.
SOUTH DAKOTA Spink County	9	Afternoon			0	0			Funnels aloft	2 funnels aloft sighted near Cottonwood Lake.
NEBRASKA Cody (north of), Cherry County	9	3 p.m.			0	0			Funnel aloft	Reported moving northeastward.
MONTANA North-central Teton and western Choteau Counties	9	4:30 p.m.	12	*1			1	3	Hail	Crop damage only light as crop not far enough advanced. Hail depth up to 5 inches. Hailstones 1/2 to 3/4 inch in diameter. Storm moved southeastward.
MISSOURI Kansas City (2 miles northwest of), Clay County	9	4:45 p.m.			0	0			Funnel aloft	
SOUTH DAKOTA Hughes County	9	5 p.m.			0	0			Funnel aloft	Aloft 10 miles south of Harrold.
OKLAHOMA Bixby, Tulsa County	9	5:30 p.m.	1-1/4	900	0	0	3	1	Funnel aloft, rain, wind, and electrical	Funnel aloft reported by 1 person, but not confirmed. Wind ripped roofs off several buildings and lightning struck gas line and damaged house. Storm moved southeastward.
SOUTH DAKOTA Faulk County	9	5:30 p.m.	1		0	0	4		Tornado	Approached Faulkton very slowly. Destroyed house and barn on outskirts.
KANSAS Central counties	9	Late afternoon - Evening							Hail	Numerous hail damage claims for crop losses reported over Rooks, Osborne, Russell, Lincoln, Saline, and Reno Counties.
KANSAS Russell County	9	6:50-7:40 p.m.	5	*2-3	0	0			Wind, hail, and funnels aloft	Some 800 insurance claims processed after this storm. Many store windows broken, parts blown from roofs, outbuildings blown over, much tree damage, and many power-and transmission lines broken. Wind-driven hail also contributed to losses, but crops in rural areas not seriously affected. CAA observer reported 2 funnels aloft, south of Russell, 1 for 5 minutes and the second for less than 1 minute. Gusts of wind reached 70 m.p.h. Storm moved northeastward.
NEBRASKA Oshkosh (south of), Garden County	9	7-9 p.m.	3-1/2	*2			4		Hail	Hailstones 3/8 inch diameter. Storm moved eastward.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons: Killed	Number of persons: Injured	Estimated damage by categories †: Property (exclusive of crops)	Estimated damage by categories †: Crops	Character of storm	Remarks
TEXAS Childress (38 miles west-north-west of), Hall County	9	7:45 p.m.			0	0			Tornado (suspected)	
KANSAS Barber County (southern portion)	9	7:54-8 p.m.	1/4	75	0	0	4	3	Wind and tornado	Most damage resulted from severe winds, but funnel cloud dipped low enough that windows were blown out of buildings by vacuum. TV antennas bent over. Storm moved northeastward.
WYOMING Pavillion, Fremont County	9	8 p.m.			1				Electrical	
KANSAS Pratt County	9	9-9:20 p.m.			0	0			Wind and funnels aloft	Strong winds over the western part of county caused minor damage. 1 funnel sighted aloft about 10 miles west of Coats in extreme southwestern part of county. This funnel advanced northeastward about 20 miles to near Pratt before it dissipated. The other funnel also west of Pratt, but of short duration. Powerlines and buildings on 2 farms west of Pratt damaged by wind.
KANSAS Harper County	9	9-10 p.m.							Wind	Severe gusts of wind damaged buildings, trees, and numerous antennas near Attica.
KANSAS Meade County	9	10 p.m.			0	0			Funnel aloft and winds	Funnel cloud aloft observed 20 miles southwest of Meade. No damage.
KANSAS Harvey County	9	10 p.m.			0	0			Funnel aloft and wind	Funnel aloft 3 miles south of Newton confirmed by Ground Observer Corps. Considerable damage from winds.
OKLAHOMA Harper and Ellis Counties	9	10 p.m.			0	0			Funnels aloft, wind, rain, and hail	Unconfirmed reports of funnels aloft received. Wind demolished barn near May and damaged warehouse roof at Shattuck. Trees and TV antennas damaged. Heavy rain and up to 1-inch hail caused up to 25 percent crop loss.
KANSAS Reno and Rice Counties	9	10:10-11:30 p.m.	1-1/2	1200			4	4	Wind	Wind gusts reached 88 m.p.h., damaging trees and utilities in northeastern Hutchinson. Crops in northeastern Reno and southern Rice Counties laid flat. Storm moved northeastward.
KANSAS Dickinson or Marion Counties	9	11:10 p.m.			0	0			Funnels aloft	During severe thunderstorm, 2 funnels that did not touch ground observed 6 miles south of Herington.
OKLAHOMA Seminole and Holdenville, Seminole and Hughes Counties	9	P.m.							Wind, rain, and hail	Strong winds damaged utilities, TV antennas, trees, etc., and hail up to 1 inch in diameter damaged roofs.
OKLAHOMA Waynoka, Woods County	9	P.m.			0	0			Funnels aloft	2 funnels aloft sighted at Waynoka.
TENNESSEE Como area Henry and Weakley Counties	9	P.m.							Rain	Heavy rains caused severe washing of roads, flooding of bottom lands, and running over of levies.
TENNESSEE Blount County	9							1	Rain and electrical	Heavy rains flooded low-lying roads and yards. Lightning shattered powerline insulators and destroyed 1 transformer.
TENNESSEE Grimsley, Fentress County	9					2		1	Electrical	Lightning struck 2 homes, causing sizable fire damage at 1 and minor injury to 2 children in the other.
TENNESSEE Henry County	9						3	1	Rain and electrical	Heavy rains severely damaged roads throughout county and washed out 12 bridges. Lightning struck TVA substation, disrupting power service.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TENNESSEE Halespoint Community, Lauderdale County	9							1	Wind	Strong winds blew down trees and limbs, broke window panes and damaged 2 barns.
	9									Minor storms also reported at Birmingham, Bear Creek, Double Springs, Hackleburg, Haleyville, and in Marshall County, Ala.; at Jasper, Mo.; near Johnstown, Nebr.; at Blackwell, Enid, Guthrie, Perry, Sallisaw, Stilwell, Tenkiller Lake, Weatherford, and Woodward, Okla.; and at New Hope and in Gum Springs Community, Tenn.
OKLAHOMA Payne County	10	12:30 a.m.						1	Electrical, wind, and rain	Lightning struck at several points in Payne County. Home in Stillwater received $350 damage to electrical appliances and structure, tree, and transformer also struck. In rural areas, 4 cows killed under tree, television burned out, and wind blew tree down.
OKLAHOMA Wilburton, Latimer County	10	6:30 a.m.			1		1	1	Electrical	Lightning struck tree in Boy Scout encampment. Boy sleeping on iron cot in tent under tree killed.
SOUTH DAKOTA Brown and Spink Counties	10	7-9 a.m.					3		Hail and rain	Golf-ball sized hail damaged airplane at Redfield. Basements flooded at Aberdeen for second time in week.
OKLAHOMA McAlester, Pittsburg County	10	A.m.						0	Electrical and rain	Several lightning strikes noted and 2 roofs of business buildings collapsed from heavy rain.
MINNESOTA Winona (10 miles northeast of), Winona County	10	1:30 p.m.			0	0			Funnel aloft	Pilot reported funnel aloft, disappeared into lower clouds.
SOUTH DAKOTA Lake and Minnehaha Counties	10	1:40 p.m.			0	0			Tornado, funnels aloft, and hail	3 funnel clouds seen. 1 touched ground. Hail killed chickens and broke windows in Franklin and Buffalo Trading Post areas.
MAINE North Yarmouth, Cumberland County	10	Afternoon			0	0	1	1	Dust devil	"A freak wind" lifted a chicken shelter into air and carried it 25 feet. Shelter weighed between 600 and 1000 lbs. Landed upright with only slight damage.
NEBRASKA Gering (3 miles south of), Scotts Bluff County	10	5 p.m.	Short	Narrow	0	0	3	1	Tornado	
TEXAS Perryton (7 miles, southwest of), Ochiltree County	10	5:15 p.m.			0	0	3		Tornado	Dipped twice, 1 barn and garage damaged, 1 steel grain bin destroyed, phone lines and fences knocked down.
MINNESOTA Pease, Mille Lacs County	10	5:45 p.m.			0	0			Funnel aloft	Funnel sighted and photographed. Did not touch ground.
IOWA Keokuk (northwest of), Lee County	10	6 p.m.			0	0	4	1	Tornado (suspected)	2 barns and other farm buildings destroyed. Storm moved northeastward.
ILLINOIS Pittsfield to Philadelphia, Pike to Cass Counties	10	10:05 p.m.	50		0	0	4		Tornado	Intermittent path, with damage near Pittsfield, Concord, and Philadelphia. 6 residences damaged at Philadelphia. Roaring sound reported. Tornado moved northeastward.
	10									Minor storms also reported at Dubuque, Iowa; Fergus Falls and Minneapolis, Minn.; near Bostwick, Nebr.; and at Dustin, Okla.

See footnotes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
ILLINOIS Springfield and Danforth Sangamon and Iroquois Counties	10-11	11 p.m. - 2:30 a.m.			0	0	4		Funnel aloft and wind	Funnel not in full contact with ground. Roaring sound reported and funnel observed. Wind damage at Danforth, more than 100 miles to northeast at 2:30 a.m. on 11th may have been continuation of this storm. Storm moved northeastward.
MISSOURI Jefferson County	11	1-1:10 a.m.							Wind and rain	Many trees uprooted, homes damaged, and power- and phone lines downed.
IOWA Creston, Union County	11	8:15 a.m.			0	0	3	1	Funnel aloft and wind	Trees and telephone circuits damaged.
IOWA Keokuk (southwest of) Lee County	11	11:33 a.m.			0	0			Tornado	Reported by GOC, but no damage given.
COLORADO Otero, Bent, Prowers, and Kiowa Counties	11	Afternoon	100		0	0			Wind, hail, rain, and tornado	Thunderstorms beginning at 1 p.m., at Fowler, followed Arkansas River to Kansas border. Classed as worst hailstorm in 31 years, with hailstones size of golf balls which beat crops into ground, damaged buildings, and killed many turkeys and chickens, and bruised livestock. Near Ft. Lyon, twister uprooted 2 trees, blew down windmill and corral. Many crops replanted. Storm moved eastward.
OHIO North Lewisburg, Champaign, County	11	3:20 p.m.			0	0			Tornado	Score of trees damaged and 1 residence unroofed.
INDIANA Morgan County	11	4 p.m.					°4	C	Rain	Rainfall of 6 inches in 7 hours in southern Washington and Baker Townships washed out many acres of crops. Basements and highways flooded.
OHIO Centerburg, Knox County	11	4:20 p.m.	1/2	100	0	0	4	1	Tornado	Storm well verified as immature tornado in that rotary winds occurred, and debris was carried aloft. Damage consisted mainly of unroofed buildings, broken trees, and structural damage by explosive effect, confined mainly to southwest part of village. No visible funnel existed and no rain fell, but debris seen to travel aloft in circular pattern. Storm moved east-northeastward.
INDIANA Daviess County	11	4:30 p.m.				2	°4	C	Wind	Railroad shop at Washington torn open by wind and outdoor-theater screen flattened. 5 small airplanes at airport turned over. At Montgomery, several roofs damaged. Power and telephone services disrupted by falling trees. Wind damage occurred at Cannelburg and Plainville.
INDIANA Knox, Vigo, Green, Dubois, Orange, and Pike Counties	11	4:30 p.m.					°5	C	Wind and rain	High wind uprooted trees, broke plate-glass windows, collapsed television antennas and cut utility services. 1 house almost totally destroyed. Several barns blown down. Many roofs damaged. Some of heaviest damage occurred at Edwardsport, Oaktown, and Bicknell. At Terre Haute, large greenhouse had many panes of glass blown out. Heavy rain damaged crops.
KANSAS Sedgwick and Butler Counties	11	4:40-9 p.m.			0	0			Hail, wind, electrical, and funnels aloft	2 thunderstorms hit Wichita area in evening. Hail up to 1-1/4 inches in diameter fell in parts of city and nearby area. Lightning set several small fires and disrupted electric service. Winds up to 70 m.p.h., broke trees and near Andale blew Highway Patrol car off road. 2 funnels aloft sighted; 1, near Maize about 5 p.m., and other north of Wichita at 8:43 p.m. Storm moved east-southeastward.
KANSAS Shawnee, Douglas, Johnson, and Jefferson Counties	11	5-10 p.m.			0	0	5	4	Wind, hail, tornadoes and funnels aloft	Severe thunderstorm conditions over these counties resulted in several damaged areas from hail, tornadoes, and severe wind. Several funnel clouds sighted. Thunderstorm with heavy rain began in Douglas County about 5 p.m. At 6 p.m., small tornado struck ground 5 miles south of Lawrence just east of Highway 59; damage limited to farms and sheds; tornado, moving northeastward, dipped to ground and rose several times. At 7:45 p.m., funnel cloud moving northwestward dipped to ground once 6-1/2 miles southwest of Topeka; loud roar attended its passage; minor property damage.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

JUNE 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
KANSAS (Cont'd.)										Funnel aloft moving northeastward seen and heard near Rock Creek 15 miles northeast of Topeka at 7:45 p.m. Near Stilwell at 7:40 p.m., hail and severe wind caused minor damages; funnel cloud moving northeastward seen and distinct whistle heard but funnel remained aloft. At 8:04 p.m., hail and windstorm with tornado in Johnson County; tornado dipped once 3 miles north and 1/2 mile west of Olathe, destroying barn and then rising into air; damage from tornado, $20,000; property damage from winds, $100,000 over northern part of county; crop losses from hail and wind $20,000; storm moved northeastward.
KANSAS Lyon County	11	6-8 p.m.			0	0			Funnel aloft, wind, and hail	At 6:15 p.m., funnel cloud observed near northwest edge of Emporia which dipped to within 100 feet of ground once. Some wind and hail caused minor damage. Storm moved northeastward.
KENTUCKY Jefferson County	11	6:15 p.m.				3	4		Wind	Winds with gusts to 73 m.p.h., downed trees, disrupted power and telephone services, damaged numerous house trailers, broke windows, and damaged cars.
MISSOURI Ray and Lafayette Counties	11	7-8 p.m.							Funnels aloft and electrical	2 unconfirmed funnels aloft reported at 7 p.m. near Lexington. Several homes damaged by lightning at Hardin.
KANSAS Anderson County	11	7:30 p.m.			0	0			Funnel aloft, wind, and rain	Funnel aloft visible for about 10 miles. Strong winds and heavy rain followed passage of funnel northeast of Garnett. Storm moved northeastward.
INDIANA Monticello (8 miles south and 1 mile east of), White County	11	8:35 p.m.			0	0			Funnel aloft	Unconfirmed tornado which did not touch ground reported.
MISSOURI Columbia area Boone County	11	8:45 p.m. -midnight			0	0			Funnel aloft, wind, and rain	Unconfirmed funnel aloft reported 5 miles west of Columbia. Trees, powerlines, and phone lines downed. Storm moved east-northeastward.
KANSAS Atchison County	11	9 p.m. - midnight			0	0			Wind, rain, hail, electrical, and funnel aloft	During 3-hour thunderstorm much wind, rain, some hail, and almost incessant lightning. Funnel cloud 3 miles south of Atchison at 9:15 p.m., appeared like large ink blot with long tail, but did not come to ground. Storm moved northwestward.
OKLAHOMA Medford, Grant County	11	9:45 p.m.			0	0			Funnel aloft	Sheriff reported tornado north of Medford moving eastward. Evidently remained aloft as no other reports received.
MISSOURI Camdenton, Camden County	11	10:30-11 p.m.			0	0			Funnel aloft, wind, rain and electrical	Trees and powerlines downed. Storm moved northeastward.
OKLAHOMA Blackwell, Kay County	11	10:43 p.m.	12		0	0			Funnel aloft and electrical	Chief of Police and Blackwell Cooperative Weather Observer reported funnel, which appeared to be 100 yards wide and just above ground, traveling east-northeastward from near Blackwell to near Newkirk. Excessive lightning noted in and near funnel.
MISSOURI Iberia, Miller County	11	10:45 p.m.			0	0	2		Funnel aloft, wind, rain, and electrical	135 chickens killed. Buildings damaged. Storm moved northeastward.
MISSOURI Montreal, Camden County	11	10:55-11 p.m.			0	0			Funnel aloft	Observers report hearing loud "roaring" sound. Funnel moved eastward.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

JUNE 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MISSOURI Springfield (10 miles south of), Greene County	11	11 p.m.			0	0			Funnel aloft	
MISSOURI Newburg (2 miles southeast of), Phelps County	11	11-11:20 p.m.			0	0			Hail, electrical, wind, rain and funnel aloft	Hail 1/2 inch in diameter. Observer heard roaring sound. Others saw funnel aloft. Storm moved southeastward.
INDIANA Sullivan (4 miles east of), Sullivan County	11	P.m.	2/10	70	0	0	4	C	Tornado, rain, and wind	Funnel cloud observed to hit barn and destroy grain in adjacent field. 10 telephone poles snapped off along State road 54. Heavy rain flooded basements and crops in area. Strong winds responsible for collapsing television antennas, trees, and utility lines. Storm moved eastward.
KENTUCKY Green County	11	P.m.					4		Wind	Drive-in theater suffered damage to several of its installations and equipment. Damage reported to a number of barns, and numerous trees blown down.
MISSOURI St. Louis County	11	Evening							Wind, rain, and electrical	Many trees, powerlines, and phone lines downed.
MISSOURI Riverside (2 miles north of), Clay County	11	Evening			0	0			Funnels aloft	
IOWA Polk City (northwest of), Polk County	11					1	2	1	Electrical	Lightning struck tree, injuring farmer.
KANSAS Southern Counties	11								Hail	Hail Insurance Clearing House reported many hail claims paid for wheat losses especially in Scott, Finney, Haskell, Gray, Ford, Hodgeman, Ness, Rush, Pawnee, and Barton Counties. Another area of much better wheat and consequently more and larger claims consisted of Barber, Kingman, Harper, Sumner, Sedgwick, Butler, and Lyon Counties in south-central. Labette and Neosho Counties in southeast also had numerous claims.
	11									Minor storms also reported at Davenport, Des Moines, and St. Lucas, Iowa; in Casey, Grayson, and Hardin Counties, Ky.; at Butler, Gravois Mills, Higginsville, Jefferson City, Kirksville, Marshall, Odessa, and Windsor, and in Jackson County, Mo.; and at Gustavus, Ohio.
ILLINOIS South-central portion	11-12	1 p.m.-a.m.					5		Wind	Severe squall line moved south or southeastward rapidly. Large amount of widespread damage in belt 50 miles wide extending from Jacksonville and Springfield southeastward to Lawrence County. Wind gusts to 76 m.p.h., at Springfield and 60 m.p.h., at Mattoon. Heaviest damage in Jasper and Cumberland Counties. Utilities very hard hit, as lines damaged by hundreds of falling trees. Most damage by northwest wind and some by north wind. Most structural damage minor, but a few larger buildings collapsed. Tornadic action possible, but could not be verified. Paris area had more than 4 inches of rain during night.
KANSAS South-central area	11-12	8 p.m. - 12:30 a.m.			0	0			Hail, wind, rain, electrical, and funnels aloft	Severe thunderstorm conditions prevailed over area from Scott County eastward to Barton County and as far south as Haskell and Ford Counties from 8 p.m., to after midnight. From about 9 p.m. to 12:30 a.m., storm centered from Barber-Sumner Counties northeastward to about Lyon County. Many strips of damaged crops reported in these areas. Hailstones near Scott City were as much as 1-1/2 inches in diameter; near Kinsley, 2 to 3 inches in diameter. Losses in some cases 100 percent to crops. Considerable building damage from heavy hail near Kinsley, golf-ball-sized hail, and winds gusting to 81 m.p.h., reported at Hoisington. 2 funnel clouds reported, 1 near Offerle at 11:20 p.m., and the other about 20 miles southwest of Hutchinson at 9:30 p.m. Southern Butler County crops suffered considerably from hail, winds, and heavy rains. Much baled alfalfa soaked. Some damage reported in ElDorado to powerlines from both wind and lightning.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MISSOURI Franklin County	11-12	Late evening-early morning							Wind, rain, and electrical	Many trees, phone lines, and powerlines downed.
OKLAHOMA Southwestern to northeastern half of State	12	Midnight-9 a.m.				1			Wind, rain, hail, and electrical	Severe squall line moved across state from southwest to northeast corners. At least 5 and possibly 2 more tornadoes developed in central and northeast sections along squall line (reported separately). Widespread destruction and damage resulted to roofs, buildings, windows, signs, trees, TV antennas, utilities, etc. Some of worst damage included $2,000 to lumber shed destroyed, $1,000 to plate-glass windows at bottling company, and $3,000 to street lights and other utilities in Altus; $7,000 to fair grounds building in Snyder; huge storage shed, awnings, and windows at surplus store in Lawton; trucks blown over at Frederick; $3,000 to sheds and feeders at feed lot, and $500 to roof of cotton gin in Hobart; $500 damage by lightning to home in El Reno; tents, displays, and signs torn down at Semi-Centennial Exposition in Oklahoma City. Woman injured while closing door and was blown down, breaking her hip at Oklahoma City. Strong winds with heavy rain and some hail caused heavy losses to the ripe wheat crop.
OKLAHOMA Bartlesville area, Washington County	12	12:30 a.m.			0	0	6		Tornado, hail, wind, and rain	Tornado dipped down momentarily at Dewey which is northeast of Bartlesville; no damage resulted. Severe hailstorm with stones up to 3 inches in diameter caused extensive damage to automobiles, roofs, and trees over area 20 miles in radius from Bartlesville. Heavy rains of up to 5 inches also caused damage and considerable flooding. Storm moved northeastward.
KANSAS Montgomery and Chautauqua Counties	12	12:30 - 2 a.m.			0	0			Wind, rain, and funnels aloft	During thunderstorm, severe winds damaged trees, etc. Heavy rain fell. 2 funnel clouds aloft reported; 1 near Caney at 12:15 a.m., and the other 6 miles west-northwest of Coffeyville at 12:50 a.m.
MISSOURI Bonne Terre, St. Francois County	12	1-1:15 a.m.			0	0	3		Funnels aloft, wind, and rain	
ILLINOIS Southwestern portion	12	1:20 a.m.					5		Wind	Severe thundersqualls affected East St. Louis area, eastward to Marion County, and southeastward as far as Pinckneyville. Mostly minor structural damage, but many falling trees broke utility lines and blocked roads. Scott AFB reported wind of 80 m.p.h. Storm moved southeastward.
TEXAS Quanah, Hardeman County	12	1:45-2:30 a.m.	100	100			3		Wind and sand	Winds estimated at 80 m.p.h., created sandstorm, knocked out windows, unroofed small building, tore doors off another, tore limbs from trees and damaged TV antennas. Storm moved eastward.
ILLINOIS Southeastern portion	12	4 a.m.					4		Wind	Severe thundersqualls destroyed 3 barns, damaged other buildings, and broke many trees with damage to utility lines in area from Harrisburg to Carmi.
INDIANA Evansville (8 miles west of), Vanderburgh County	12	4:20 a.m.			0	0	3	1	Funnels aloft and wind	2 small tornado clouds observed aloft. Wind blew down trees, utility lines, and television antennas.
OKLAHOMA Agra, Lincoln County	12	4:45 a.m.	6	440	0	0	3	1	Tornado	20 outbuildings destroyed, several homes damaged, and trees, utilities, and windows broken or damaged. Details of second funnel could not be learned. Tornado moved northeastward.
OKLAHOMA Stillwater area, Payne County	12	4:55 a.m.	7		0	0			Tornado	Tornado dipped to ground 4 miles southwest of Stillwater. Considerable damage resulted to several farmsteads. Funnel moved northeastward aloft over southern edge of Stillwater and dipped again 3 miles east where several more farmsteads damaged.
OKLAHOMA Adair to Pensacola, Mayes County	12	7:40 a.m.			0	1	4		Tornado (suspected), wind, and rain	2 trailer houses and several farmsteads received heavy damage along path of storm. 1 person injured at Adair when house trailer blown over. 1 person reported sighting funnel, but could not be contacted for details. Storm moved east-northeastward.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path miles	Width of path yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TEXAS Dallas, Dallas County	12	8:10-8:25 a.m.		50	0	0	3		Tornado and dust	At Redbird Airport small twister struck in middle of 400-foot long steel hangar, preceded by blinding cloud of dust; pulled concrete piers 16 to 18 inches from ground in middle of hangar and damaged 3 Bonanza aircraft. Hangar built 1 year ago to withstand winds up to 120 m.p.h. Storm moved southeastward.
MISSOURI St. Charles, St. Charles County	12	Early morning							Wind, rain, and electrical	Wind hit gusts of 70 to 80 m.p.h. and heavy rains. Many trees and power- and phone lines downed.
KANSAS Cottonwood Falls (Southeast of), Chase County	12	11:50 a.m.			0	0			Funnel aloft	Funnel cloud sighted aloft.
OKLAHOMA Calumet (6 miles west of), Canadian County	12	A.m.			0	0			Tornado (suspected)	Western half of concrete-block house blown away.
OKLAHOMA Crescent, Logan County	12	A.m.			0	0			Funnel aloft	Farmer near Crescent reported sighting funnel aloft.
MISSOURI Ava, Douglas County	12	1:15 p.m.			0	0			Tornado, wind, and rain	Roaring noise heard, but no funnel seen. Possibly touched ground briefly. Farm buildings damaged.
TEXAS Killeen (30 miles southwest of), Burnet County	12	1:36 p.m.			0	0			Tornado (suspected)	
TEXAS Groom (7 miles northeast of), Gray County	12	2 p.m.			0	0			Tornado (suspected)	Reported moving eastward.
TEXAS Hutto, Round Rock, Granger, Friendship, and Taylor, Williamson County	12	2:15 to 4 p.m.	12	*10			°5	C	Wind and hail	3 buildings damaged by wind at Hutto; corn and maize crops virtually wiped out by heavy hail between Granger and Friendship; farm buildings and homes damaged by hail and wind. Barns, sheds, outbuildings in Taylor area, TV antennas, and trees damaged in varying degrees. At least 8 farmers in Friendship area had their crops completely hailed out. One farmer said it hailed for 30 minutes at his place. Winds estimated at 50 to 60 m.p.h. Storm moved eastward.
TEXAS Skellytown (southwest of), Carson County	12	2:25 p.m.			0	0			Funnel aloft	
KANSAS Geary and Riley Counties	12	3:05-3:30 p.m.			0	0			Funnel aloft	1 funnel cloud aloft observed at various points from Alida, Milford, and Riley occasionally dipping to within 100 feet of ground. Funnel traveled north-northeastward quite rapidly.
IOWA Atlantic, Cass County	12	4:30 p.m.			0	0			Funnel aloft	
OKLAHOMA Erick to Berlin, Beckham and Roger Mills Counties	12	5:15 p.m.	20	*3			2	4	Hail and rain	Hailstorm, with stones up to 1 inch in diameter caused considerable damage to crops in area. Hard rains of up to 3 inches accompanied storm which moved northeastward.
NEBRASKA Saline County (southeastern portion)	12	5:30-6:30 p.m.	5	*3-4			1	4	Hail	Hailstones 1/2 to 1 inch in diameter. Storm moved northeastward.
SOUTH DAKOTA Stanley County	12	5:41 p.m.			0	0			Funnel aloft	Pilot reported funnel-shaped cloud aloft 35 to 40 miles northwest of Pierre. Moving northeastward.
SOUTH CAROLINA Maple, Horry County	12	Afternoon			1		1	1	Electrical	
OKLAHOMA Woodward (southwest of), Woodward County	12	6:10 p.m.			0	0			Funnel aloft	Highway Patrol reported funnel aloft moving northeastward.

See footnotes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
NORTH DAKOTA Park River, Walsh County	12	Late afternoon					4	3	Hail	Many buildings pitted by hail and gardens badly damaged. 1,700 tomato plants ruined on 1 farm.
KANSAS Dickinson County	12	6:50-7:20 p.m.			0	0	3	3	Funnel aloft and hail	Funnel cloud aloft observed 5 miles west of Herrington at 6:55 p.m., while thunderstorm in progress. Hail caused some damage 2 miles west of city. Storm moved northeastward.
ILLINOIS Tuscola, Douglas County	12	8 p.m.	1		0	0	2		Tornado	Eye witness reported tornado cloud nearly overhead, moving northeastward apparently at treetop level, with minor damage to trees and wires.
MISSOURI Hermann, Gasconade County	12	8:17 p.m.			0	0			Funnel aloft	
SOUTH DAKOTA Brown and Day Counties	12	8:30 p.m.			0	0			Tornado	Funnel cloud appeared to touch ground briefly 1 mile north of Aberdeen airport. Same formation believed sighted near Groton, Pierpont, and Waubay between 9:30 and 10 p.m. Storm moved southeastward.
KANSAS Gray County	12	9:25-9:50 p.m.							Hail	Heavy damage to wheat and barley by hail, ranging in size up to 1-1/2 inches in diameter. Many fields 100 percent loss. Storm moved northeastward.
KENTUCKY Lincoln County	12	P.m.					4		Wind	Wind damaged several buildings, felled trees, knocked down signs, and damaged powerlines.
OKLAHOMA Duke to Victory, Jackson County	12	P.m.							Hail	Hailstorm with stones up to size of hens' eggs followed narrow strip from east of Duke to west of Victory. About one-third of crops still in fields destroyed.
KANSAS south-central and eastern counties	12								Hail	Many hail claims paid for losses, with greatest concentration in south-central counties of Kingman, Harper, Sumner, and Sedgwick. Butler, Marion, Lyon, Greenwood, and Labette had some damage, but number of claims paid were fewer.
MINNESOTA Little Falls (12 miles southeast of), Morrison County	12				1		1	1	Electrical	Elderly man struck and killed by lightning.
NORTH DAKOTA Southeastern and southwestern portions	12								Hail	Total crop loss to some grain and corn fields in area 2 miles wide and about 5 miles long in northern Cass County. Other losses also on this date, mostly in southwestern part of state and in LaMoure County.
TEXAS Big Spring (north of), Howard County	12								Hail	At Tarzan community heavy hail damaged young cotton crop.
TEXAS Granger (near), Williamson County	12				0	0			Funnels aloft	2 funnels reported.
TEXAS Taylor (southwest of), Williamson County	12				0	0			Funnel aloft	
	12									Minor storms also reported in Green and Henderson Counties, Ky.; at Carthage and Crane, Mo.; Lebanon, Pa.; and near Joshua, Pampa, and Snyder, Okla.
MISSOURI St. Louis and St. Louis County	12-13	1 a.m. 12th-2:40 a.m. 13th							Wind	First storm struck about 1 a.m., on 12th. Winds hit 70 to 80 m.p.h., in gusts. Many trees downed blocking hundreds of streets. Walls of Westinghouse Company manufacturing and repair plant blown out, apparently as result of sudden drop in atmospheric pressure. Many cars, roofs, and windows damaged. Second storm hit about 6 p.m., on 12th. It was quite brief, winds up to 54 m.p.h., at WBAS. Third storm hit at 2:40 a.m. on 13th. Hail and rain accompanied winds of up to 52 m.p.h., at WBAS. 0.83 inch of rain fell there, with heavier amounts in southern St. Louis County. Many more phone lines, powerlines, and trees downed.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TEXAS Spur, Dickens County	12-13	11:45 p.m. 12th - 12:30a.m. 13th	25	1900			4	C	Wind	Some damage to oats and cotton; 2 barns blown over, chickenhouse blown away; church roof damaged, about 100 TV antennas broken or bent, windows blown out, awnings downed, tree limbs torn off; roof and structural portions of cotton compress damaged. Storm moved northeastward.
MISSOURI Carthage, Jasper County	13	4 or 5 a.m.			0	0			Funnels aloft	Observer saw 2 funnels moving southeastward. Neither touched ground.
INDIANA Lawrence, Knox, Wabash, Greene, and Vigo Counties	13	5 a.m.			1		4	1	Wind	Many trees blown down which damaged property they fell on. Drive-in theater screen blown over and 3 homes damaged at Linton. In Terre Haute, man killed when tree fell on his car.
INDIANA Steuben and DeKalb Counties	13	9:10 a.m.					4	1	Wind	Trees, buildings, and utility lines damaged by high winds in scattered localities.
INDIANA Whitley County	13	9:30 a.m.					4	1	Wind	Many farm buildings damaged by high winds.
WASHINGTON Seattle, King County	13	10 a.m.					3	1	Rain	Runoff from unusually heavy rain shower centered over University district flooded basements and low areas in streets. Some property damaged and traffic delayed for short time.
MICHIGAN (Lower) Southeastern portion	13	11 a.m. - 1 p.m. and 6-10 p.m.			0	2	5	1	Wind and funnels aloft	Winds caused widespread minor damage, including many trees downed or damaged, in several extreme southeastern counties. Most damage occurred near noon, but some also reported during evening. Funnels aloft reported near Ann Arbor, Pontiac, and Utica during early evening.
INDIANA North Manchester (4 miles east of), Wabash County	13	A.m.	1/10	10	0	0	3	1	Tornado	Top of farm house destroyed and a barn damaged.
INDIANA Wayne County	13	A.m.	1/10	10	0	0	4	1	Tornado and wind	Tornado observed to strike church. Minor wind damage occurred in area.
MINNESOTA Southwestern portion	13	A.m.-p.m.					1		Hail	Crop damage reported in 10 counties.
NEW YORK Western and central portions	13	Noon - late evening			1		5		Electrical and wind	Warm, unstable air moving northeastward set off numerous severe thunderstorms in west and central N.Y. Man struck by lightning in East Randolph and killed. Garage door blown by wind severely cut foot of woman for the most serious injury reported, but numerous minor injuries also occurred. Wind damage from falling limbs and trees caused most loss, especially to utility and communications lines. Gas station and small store in Jasper ruined and some barns blown down. Olean airways observer estimated 50 to 60 m.p.h., winds in that area. Storm in Bath-Cold Springs area may very possibly have been tornadic; - it lifted garage from its foundation and hurled it 25 feet into back of house, picked up house trailer, and overturned automobile. News accounts of this storm called it a "twister", but no confirmation of tornado has been received and due to lateness of clipping service and lack of qualified meteorologists in area, no confirmation is possible. However, narrow path described and strength of wind along with visual accounts given to news sources, make this very marginal. The Jasper storm (ruining gas station and small store) also gives slight evidence of tornadic activity, but not so strong as Bath-Cold Springs storm.
NORTH DAKOTA Jamestown (40 miles south of), La Moure County	13	12:43 p.m.			0	0			Funnel aloft, electrical, rain, and hail	Heavy thunderstorm with hail and funnel aloft.
SOUTH DAKOTA Britton (6 miles southeast of), Marshall County	13	1 p.m.			0	0			Tornado	Touched ground then dissipated; moved southeastward.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

JUNE 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
WEST VIRGINIA Weirton and vicinity, Hancock County	13	2:30 p.m.						1	Wind and rain	Trees damaged, awnings torn off, 1 window broken, streets temporarily flooded with 1.27 inches of rain in 1-1/2 hours.
ARIZONA Buckeye (17 miles southwest of), Maricopa County	13	Afternoon				1		1	Wind	Wind blew truck against bridge abutment, injuring driver.
NORTH CAROLINA Duplin, Pitt County	13	Afternoon						4	Hail and wind	Tobacco, truck, and corn damaged.
NORTH CAROLINA Cumberland County	13	Afternoon						4	Hail and wind	Tobacco crop damaged.
SOUTH CAROLINA Scattered areas	13	Afternoon			1		4	3	Hail, wind, rain, and electrical	Several severe local thunderstorms did scattered damage over State. Lightning burned tenant home and struck woman working in field near Summerton, Clarendon County. At Columbia and elsewhere in Richland County minor damage to public utilities from wind. At Leesville and Lexington in Lexington County, minor wind damage. At Greenville, Greenville County, minor wind damage. At Lamar, Darlington County, hail caused $2,000 damage to tobacco.
VIRGINIA Abingdon area, Washington County	13	Afternoon					°4	C	Wind, hail, and electrical	Severe thunderstorm, with violent wind, hail, and lightning. 9 cattle killed by lightning, damage to crops extensive. Other scattered areas of damage to buildings and trees.
IOWA Cherokee, Woodbury, and Monona Counties	13	Afternoon -evening			0	0	3	5	Rain, hail, wind, and funnel aloft	Damaged trees, crops, livestock, transportation and communication facilities. Funnel aloft reported at 3:35 p.m., 15 miles west-northwest of Sioux City.
PENNSYLVANIA Western portion	13	Afternoon -evening				2	4		Electrical and wind	Lightning fired several barns and damaged a few homes. Locally strong winds felled many trees, utility lines, and several barns. Storm moved eastward.
SOUTH DAKOTA Brown and Day Counties	13	3:30 p.m.			0	0			Tornadoes and funnel aloft	4 funnels sighted, 2 touched ground briefly. 3 dissipated while in sight. Other later spotted near Lily, not touching ground. Storm moved east-southeastward.
KANSAS Syracuse, Hamilton County	13	6 p.m.					4		Wind	Severe wind blew down tent of small circus and damaged equipment.
NEBRASKA Monroe (north and east of), Platte County	13	6:20 p.m.	Short	Narrow	0	0	3	4	Tornado and hail	Property damage by tornado, crop damage by hail. Storm moved northeastward.
NEBRASKA David City (9 miles south of), Butler County	13	6:25 p.m.	Short	Narrow	0	0	3		Tornado and hail	3 funnels observed. Property damage by tornado, some crop damage by hail.
ARKANSAS Damascus, Faulkner County	13	6:25 p.m.	1-1/4	25	0	0	3		Tornado and funnels aloft	Buildings damaged. Several persons reported seeing funnel cloud which appeared at rear edge of rain cloud after rain had stopped. 2 other funnel clouds aloft seen to south after tornado had passed. Storm moved northeastward.
ARKANSAS Pinnacle Springs Road to southeast of Guy, Faulkner County	13	6:30 p.m.			0	0			Tornado	House and barn damaged. Tornado funnel observed by several persons.
NEBRASKA Hamilton County (southwestern portion)	13	7:30-10 p.m.					1	5	Hail	Hailstones 1/2 inch in diameter.
KANSAS Chase (near), Rice County	13	11:30 p.m.			0	0			Funnel aloft	Funnel aloft sighted by Ground Observer Corps.
GEORGIA Collins, Tattnall County	13	P.m.	Short	Narrow	0	0	3	1	Tornado (suspected)	Roofs torn from buildings and trees and powerlines downed.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
KENTUCKY Gallatin County	13	P.m.					4	3	Wind and hail	Wind levelled several barns and garages, tore down powerlines, felled trees, and damaged 1 home and 1 trailer home. Accompanying hail responsible for destruction of several crops of tobacco.
MINNESOTA New Ulm (near), Brown County	13	P.m.			0	0	2	1	Tornado (suspected)	Barn demolished, small buildings damaged, and some trees downed.
IOWA Carroll, Calhoun, and Greene Counties	13	Evening					3	4	Hail and rain	Damaged crops and caused local flooding.
NEBRASKA Edgar (southwest of), Clay County	13	Evening				1		1	Electrical	House struck, no fire; girl burned.
KANSAS Northwestern counties	13								Hail	Considerable number of claims for hail losses reported from Rawlins, Thomas, Sheridan, Gove, Trego, Phillips, and Rice Counties.
KENTUCKY Boone County	13						4		Wind	Roof of farm supply building completely torn off. It hit and damaged old school building. Other damage to trees, windows, and powerlines.
OHIO Northern portion	13								Wind, rain, and hail	Squall line accompanied by strong, gusty winds moved across northern Ohio causing extensive damage to trees, utility lines, etc. Accompanying thunderstorms caused minor flooding and very localized hail. Places from which reports received include Warren, Youngstown, Geneva, Massilon, Painesville, Canton, Toledo, Bellefontaine, Newcomerstown, and New Philadelphia.
	13									Minor storms also reported at Brecon and in Lamar County, Ala.; at Florence, Colo.; at Brownsburg and Mt. Vernon, near Sweetsers, and in Putnam County, Ind.; at Missouri Valley and Nevada, Iowa; in Carlisle and Graves Counties, Ky.; in Holt County Mo.; at Bellevue, Nebr.; Sallisaw, Okla.; Cleveland, Tenn.; and in Middlebourne area, W. Va.
NORTH CAROLINA Henderson County	13-14	Afternoons					4		Electrical	Severe thunderstorms on afternoons of 13th and 14th damaged power- and communications lines and a number of homes.
OREGON Northern border area	13-14	Afternoons and evenings	350	*40-50			4	3	Electrical, hail, rain, and wind	Lightning storms struck at scattered points along State's northern border on 13th, generally blanketed same area on 14th. Knocked out several power transformers and telephone stations, struck a few homes, started several small inconsequential forest fires. Accompanying hail and rain ruined remaining berries in a number of Willamette Valley strawberry fields, damaged considerable additional hay, cherries, some fall grain, and several acres of green peas in Umatilla County. Lightning damage $2,000; hail $15,000; rain $10,000; wind $1,000. Storm moved eastward.
MISSOURI Henry County	13-14	Late evening - early morning							Wind and rain	Many powerlines downed and trees uprooted. Storm moved northeastward.
MINNESOTA Renville County	13-15 -21						4	6	Hail and rain	Damage to crops also includes storms of 13th and 15th. On 13th, hail cut swath 2 miles wide south of Bird Island with intermittent damage for 50-mile stretch.
KANSAS Barber County	14	12:15-12:24 a.m.			0	0			Wind and tornado	Severe winds caused some damages in northern part of Medicine Lodge. At about same time, small tornado on ground a few miles north of Aetna. At 12:20 a.m., it was sighted 1-1/2 miles south of Medicine Lodge.
KANSAS From Saline and McPherson Counties northeastward through Brown and Doniphan Counties	14	12:30-3:30 a.m.	170	*1-15	0	0			Wind, rain, electrical, hail, and tornado	Severe wind squall moving northeastward hit Salina about 12:30 a.m.; Junction City at 1:05 a.m.; Westmorland at 2:15 a.m.; Holton at 2:30 a.m.; Horton at 2:45 a.m.; and Western Doniphan County about 3 a.m. Storm lasted only 15 to 30 minutes in some areas, while in others it continued for nearly an hour. At Salina Air Base, wind gusts rose to 93 m.p.h.; at Fort Riley, 73 m.p.h., at 1:15 a.m.; 80 m.p.h., at Lawrence Airport; and estimated at 100 m.p.h., at other points in affected area.

See footnotes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
KANSAS (Cont'd.)										Damage included upset trailers, roofs of buildings torn off, window and store glass broken, trees uprooted, TV antennas bent, power- and transmission lines and poles broken, livestock killed when buildings blown down. Much small grain lodged by wind and rain. Incessant lightning very brilliant. Hurricane-force winds prevailed over all the area, with greatest intensities as indicated by damages near Salina, Junction City, Wamego, northwestern Jackson County through northern Brown County and western Doniphan County. Storm hit with sudden onset in most localities. Some evidence in numerous places of tornadic activity and violence, but only positive account of tornado was 4 miles south and 1 west of Junction City which struck at 1:05 a.m. Additional wind damage occurred in Shawnee and Douglas Counties and lightning damaged buildings in Leavenworth and Holliday near Kansas City. No tangible estimate of damages.
MISSOURI Nodaway County	14	3 a.m.							Rain, wind, and electrical	From 0.40 to 1.30 inches of rain in less than 1/2 hour in county. Trees, barns, and power-lines damaged. Store hit by lightning in Maryville, with damage of $3,500.
MISSOURI St. Joseph, Buchanan County	14	3-4 a.m.							Wind and rain	0.30-inch rain at St. Joseph WBAS in 5 minutes. Gusts to 52 m.p.h. at WBAS. Trees downed and a few homes damaged. Storm moved southeastward.
MISSOURI Chillicothe (2 miles northwest of), Livingston County	14	4-4:15 a.m.		300	0	0			Tornado, wind, rain, and electrical	Buildings on several farms damaged. Oats flattened in fields. Violent lightning. Storm moved northeastward.
MISSOURI Moberly area, Randolph County	14	4-5:55 a.m.			0	0			Rain, wind, hail, and funnel aloft	0.91 inch of rain in 25 minutes. Hail reported south of Moberly. Unconfirmed funnel aloft northwest of Moberly at 4 a.m.
MISSOURI Carrollton, Carroll County	14	5-9:30 a.m.			0	0			Rain	Heavy rains at 5 and 9:30 a.m.
MISSOURI St. Charles County	14	9 a.m.			0	0	3		Tornado, wind, and rain	Funnel dipped very briefly and touched ground 1 mile north of Boschertown, damaging buildings on 1 farm.
ILLINOIS Springfield, Sangamon County	14	9:30 a.m.			1				Electrical	Railroad worker killed riding work car south of city.
MISSOURI Center, Ralls County	14	Noon							Rain, hail, and electrical	2-1/4 inches of rain in 1 hour. Local flooding.
ILLINOIS Pike County	14	1 p.m.	23		0	1	5		Wind or tornado (suspected)	Possible tornado traced intermittent path eastward from Rockport to Milton, with much damage to buildings, trees, and utility lines. Same cloud formations later produced tornadoes at Jacksonville and Springfield.
OKLAHOMA Nowata (10 miles south of), Nowata County	14	1 p.m.			0	0			Funnel aloft	Funnel aloft reported moving eastward.
CALIFORNIA Millerton Lake, Fresno County	14	1:30 p.m.	1/3	10	0	0	3	1	Whirlwind	Whirlwind sounded like jet plane, lasted about 2 minutes, blew aluminum roofing and sections of roof from storage building as much as 400 yards. Storm moved eastward.
ILLINOIS Jacksonville Morgan County	14	1:30 p.m.	3		0	5	5		Wind and tornado (suspected)	Wind squalls and possible tornado struck eastern portion of business district. Storm moved eastward.
COLORADO El Paso and Elbert Counties	14	2-4 p.m.							Hail	Hailstorm struck in vicinity of Calhan, Ramah, and Simla, mowing down alfalfa and causing damage to wheat. Hail reported to be 4 inches deep 8 or 9 miles north and west of Calhan also severe at Simla and northwest of Ramah. Storm moved eastward.
ILLINOIS Springfield, Sangamon County	14	2 p.m.			2	50	6		Wind, tornado, and rain	1/2-mile wide path of heavy wind damage extending from southwest of city east-northeastward through south side of city culminated in severe tornado destruction in 220-yard by 1/2-mile area. Only scattered evidence of tornado

See footnotes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons: Killed	Number of persons: Injured	Estimated damage by categories †: Property (exclusive of crops)	Estimated damage by categories †: Crops	Character of storm	Remarks
ILLINOIS (Cont'd.)										winds in other parts of damage area. Funnel obscured by heavy rain showers and rapidly advancing dark and low clouds. Scattered reports of roaring sound and report of "ear-popping". Wind gusts to 106 m.p.h., and minor damage at Capital Airport, 4-1/2 miles northwest of main path. Same storm complex that hit Jacksonville 30 minutes earlier and 31 miles to west.
ILLINOIS Aroma Park-St. Anne, Kankakee County	14	3 p.m.			0	0	4		Wind and tornado	Short northeastward tornado path 4 miles east of Aroma Park. Severe thundersqualls moved rapidly eastward, with many trees downed and buildings damaged by west wind. St. Anne had damage by northwest wind.
WISCONSIN Florence, Florence County	14	5:30 p.m.	7	100	0	0	4	1	Tornado	Tornado moving northeastward on skipping path caused intermittent destruction.
PENNSYLVANIA Philadelphia, Philadelphia County	14	Late afternoon			3		4		Electrical, wind, and hail	3 persons killed by lightning in and near city during series of storms. Much property damage by lightning. Wind damaged circus tent near Valley Forge and blew off house roof in Philadelphia suburb. Small hail reported in scattered localities, but no crop damage reported. Storm moved northward.
ARKANSAS Siloam Springs, Benton County	14	6 p.m.							Hail, wind, and rain	Hailstones up to 11 inches in circumference reported. Extensive damage to glass, roof, automobiles, and trees. Considerable water damage reported due to punctured roofs.
MICHIGAN Vienna Township, Montmorency County	14	6 p.m.	1	50	0	0	4	1	Tornado	Tornado moving northeastward smashed 1 summer cottage, damaged 2 others, and downed powerlines and many trees.
MICHIGAN Cheboygen (near), Cheboygan County	14	6:30 p.m.			0	0			Funnel aloft	Funnel passed northeastward over Cheyboygan Golf and Country Club.
INDIANA Rochester (5 miles west of), Fulton County	14	7:15 p.m.			0	0	4	1	Tornado	2 barns, home, and other buildings smashed by what may have been same storm that hit North Webster a little later. Slight damage occurred at Fletcher Lake at about same time.
INDIANA North Webster, Kosciusko County	14	7:15-7:40 p.m.			0	0	4	1	Tornado and funnel aloft	2 funnel clouds observed, with 1 touching ground, travelling along shore of Webster Lake. Cottage, boats and docks damaged.
MISSOURI Jefferson City (20 miles northwest of), Cole County	14	8:10 p.m.			0	0			Funnel aloft	
MISSOURI Fulton (7 miles southwest of), Calloway County	14	10:05 p.m.			0	0			Funnel aloft	
MINNESOTA Traverse, Swift, Chippewa, and Murray Counties	14	P.m.							Hail	Crop damage reported in counties listed.
OKLAHOMA Henryetta, Okmulgee County	14	P.m.					1		Wind and rain	High wind and heavy rain caused damage to utilities.
OKLAHOMA Muskogee, Wagoner, and Cherokee Counties	14	P.m.					1		Wind, rain, and electrical	Thunderstorms with severe winds and lightning caused widespread damage in 3-county area. In Muskogee, winds caused $1,000 damage to plate-glass windows. Also tree blown down across new car. Boats and concessions on Fort Gibson Lake heavily damaged. Water ski concession lost floating office and $2,100-cash register. Waves 5 feet high reported on lake. Many trees blown down in area.
OKLAHOMA Vinita area, Craig County	14	P.m.			0	0	1		Funnel aloft, electrical, wind, and rain	Tourist reported sighting funnel southwest of Vinita. Wind and lightning damaged utility lines in area.

See footnotes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
	14									Minor storms also reported at Gadsden, Ala.; near Clarion and in southern portion of Iowa; at Carthage, Lentner, Salisbury, Slater, Sturgeon, Trenton, Waynesville, and in northern Callaway County, Mo.; in Catawba and Surry Counties, N. C.; and at Bartlesville, Chickasha, Lake Eucha, Okemah, and Tulsa, Okla.
MISSOURI Franklin County	14-15	5 p.m. - 5 a.m.			7				Rain	Rainfall at Gerald 6.35 inches. Much erosion and local flooding. 7 lives lost in flash flood near Spring Bluff.
MISSOURI East-central portion	14-15	Late afternoon-early morning			11	Many	6	6	Rain	Many homes damaged, either by flooding or collapsed foundations. Streets blocked by flood water and debris. Factories, warehouses, and stores damaged by floods. This storm covered area from Owensville to Litchfield, Ill.
MISSOURI Crystal City, Jefferson County	14-15	Evening - early morning							Rain and wind	Considerable flooding.
ILLINOIS St. Clair, Clinton, Bond, and Montgomery Counties	14-15	Night - morning			10	30	7		Rain	Record rains of up to 16 inches in western St. Clair County and 12 inches in Clinton County fell in about 12 hours time. Heavy rains extended eastward to about Carlyle and north to about Litchfield. More than 450 homes destroyed or suffered major damage. Crop losses heavy.
MISSOURI Jefferson Barracks to Kimmswick, Jefferson County	14-15								Rains	47 slides and washouts along Missouri-Pacific railroad.
MISSOURI Independence, Jackson County	15	12:43 a.m.							Wind and rain	Trailer court damaged. Filling station demolished.
OKLAHOMA Ada, Pontotoc County	15	12:55 a.m.							Wind, rain, and electrical	Severe thunderstorm with strong winds, heavy rain and lightning blew down trees, utilities, outbuildings, etc. Over 3 inches of rain reported in 25 minutes.
MISSOURI Prairie Hill (6 to 8 miles north of) Chariton County	15	Early morning							Hail and rains	Hail caused extensive crop damage.
KANSAS Milford (near), Riley County	15	11:30 a.m.							Hail	Oats, wheat, and other crops beaten flat by hail. Most hailstones marble to golf-ball size, with a few 3 inches in diameter. Main damaged area was about 4 square miles near Milford.
KANSAS Pottawatomie County	15	12:15 p.m.	15	*2			4	5	Hail	Hail averaging 1 inch in diameter, some as large as hens' eggs and 1 that measured 7 inches in circumference, fell from Fostoria to Wheaton. Crops and gardens ruined, much poultry killed, and many windows broken. Storm moved eastward.
NEBRASKA Hastings (southwest of), Adams County	15	12:15 p.m.	Short	Narrow	0	0	2	1	Tornado	Garage demolished.
KANSAS Northeastern counties	15	Midday							Hail	Hail Clearing House reports indicated numerous claims paid in Ottawa, Clay, Dickinson, Geary, Washington, Marshall, Riley, Pottawatomie, Nemaha, and Brown Counties.
NEBRASKA Jefferson, Pawnee and Gage Counties	15	1-2:30 p.m.	40	*4-12			6	6	Hail	All crops over 280-square mile area destroyed. Extensive roof and window damage in Wymore. Hailstones 1-1/2 to 3 inches in diameter; ground covered to 6 inches in center of storm. Storm moved east-northeastward.
NEBRASKA Burchard (6 miles northeast of), Pawnee County	15	2 p.m.	Short	Narrow	0	0	3	2	Tornado	Large barn flattened. Storm moved eastward.
KANSAS Smith County	15	4:05-4:45 p.m.	14	*1	0	0	6		Tornadoes and rain	First tornado touched ground about 4 miles south-southwest of Kensington and travelled almost northward through west side of Kensington and lifted about 10 miles north-northeast of town. Second tornado hit first about 1 mile northwest

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

JUNE 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
KANSAS (Cont'd.)										of Athol and skipped across several miles, with intermittent damage. First tornado sighted at 4:05 p.m., and apparently while it was in progress, second one formed. Reports indicate possibility of other funnels. Many farm buildings and some houses totally demolished. Cattle, hogs, and many chickens killed. Much machinery badly damaged. Extremely heavy rain followed tornadoes.
NEBRASKA Johnson County (southeastern portion)	15	4:30-5:30 p.m.	10	*4			3	4	Hail	Hailstones size of golf balls to eggs. Ground covered 3 inches in center of storm. Storm moved east-northeastward.
IOWA Central portion	15	Afternoon -evening	300	*60	1		4	5	Wind, hail, electrical, and rain	Storm moved eastward across Iowa in band from Monona, Harrison, and Pottawattamie Counties to Dubuque and Jackson Counties. Greatest damage in western part of area, where farms and basements flooded and wind and hail damage to crops and buildings considerable. Lightning killed man in Jones County and burned several buildings.
KANSAS Northwestern counties	15	Late afternoon							Hail	Hailstorm resulted in payment of many claims in Decatur, Sheridan, Norton, Graham, Phillips, Rooks, and Smith Counties.
NEBRASKA Glennville to Saronville, Clay County	15	Late afternoon	20	*4-5			3	5	Hail	Storm moved east-northeastward.
COLORADO Mesa and Delta Counties	15	5-6 p.m.	15	*1/2-3			°4	C	Rain, hail, and wind	Heavy rain accompanied by hail and wind did extensive damage to garden crops, alfalfa, and apples. Many of damaged crops are expected to come back, but fruit damage will result in downgrading. Wind damage estimated at $1,000 and hail damage at $7,500. Much of peach area escaped. 50 acres of tomatoes, 33 acres of beets destroyed. 600 acres of tomatoes and 2,000 acres of beets damaged. Storm moved eastward.
NEBRASKA Columbus (5 miles northeast of), Platte County	15	5:30 p.m.			0	0	3	1	Wind or tornado (suspected)	Possible tornado.
KANSAS Logan County	15	6 p.m.							Hail, rain, and wind	Hail and heavy rain caused damage over county. Clouds so thick that almost complete darkness prevailed at 6 p.m. Wind damage minor.
MISSOURI Shelby County	16	6 p.m.			0	0			Tornado, wind, rain and electrical	Funnel-shaped cloud seen approaching farm near Lakenan. Debris blown into air. Several farm buildings destroyed. Several head of cattle killed by lightning.
NEBRASKA Cozad (6 miles south of), Dawson County	15	6-6:30 p.m.	3	*2-1/2			3	5	Wind and hail	Hailstones 1/2 to 1-1/2 inches in diameter. Storm moved northeastward. Property damage by wind. Crop damage by hail.
KANSAS Liberal, Seward County	15	7:01-7:10 p.m.	1	100			4	1	Wind	Wind gust of 80 m.p.h. hit southwestern part of Liberal, damaging some playland equipment. City Armory and some aircraft buildings suffered damage. Storm moved northward.
NEBRASKA Beaver Crossing to Seward, Seward County	15	8-8:30 p.m.	15	Narrow	0	0	4	1	Tornado	Tornado moved northeastward.
NEBRASKA Fremont (3 miles west of), Dodge County	15	8:08 p.m.	Short	Narrow	0	0			Funnel aloft	
NEBRASKA Ithaca to Bennington, Saunders and Douglas Counties	15	8:30-9:30 p.m.	21	Narrow	0	0	4	2	Tornado	Tornado moved northeastward.
NEBRASKA Adams County (southeastern portion)	15	9:45-10:15 p.m.	17	*10			3	5	Hail	Hailstones rather small. Storm moved eastward.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
NEBRASKA Agnew (1 mile north of), Lancaster County	15	Evening	Short	Narrow	0	0	3	2	Tornado	Barn demolished; corn crib damaged.
NEBRASKA Brainard, Butler County	15	Evening			0	0	5	2	Wind or tornado (suspected)	Probable tornado. Storm moved northeastward.
NEBRASKA Ansley (2 miles north of), Custer County	15	Evening						1	Lightning	House struck; considerable damage.
NEBRASKA Nance County (northwestern portion)	15	Night					2		Hail	Considerable crop damage.
NEBRASKA Merrick County (southeastern and eastern portions)	15	Night	4-5	*1			3	3	Wind and hail	Wind damage scattered over county caused property damage. Hailstones 1/2 to 3/4 inch in diameter caused crop damage. Storm moved eastward.
	15									Minor storm also reported at Savannah, Mo.
NEBRASKA Brunswick and vicinity, Antelope County	15-16	11 p.m. - 3 a.m.					3	3	Hail	Hailstones 1 inch in diameter.
NEW YORK	15-19								Heat	At least 5 deaths attributed directly to unseasonable heat wave, while numerous drownings of persons at beaches due to heat reported. New York City reported 24 percent increase in death rate during hot spell. Some damage to electrical systems, due to overloading (air conditioners running overtime) reported in New York City area.
NEBRASKA Beaver City (south and east of), Furnas County	16	Midnight-2 a.m.	15	Narrow	0	0	4	2	Tornado	A few farm buildings destroyed. Tornado moved east-northeastward.
IOWA Ida, Buena Vista, Palo Alto Counties	16	6:30 a.m.	15		0	0	5	4	Tornado (suspected)	A number of farm buildings, trees, and utility lines destroyed. Storm moved north-northeastward.
IOWA Central portion	16	Forenoon					4	4	Rain	Croplands and buildings flooded.
UTAH Layton, Davis County	16	Before noon							Funnel aloft	
IOWA Rockford, Floyd County	16	A.m.					4	1	Electrical	Farm buildings and livestock burned by lightning strike.
WYOMING Albin area, Laramie County	16	2:30 p.m.			0	0			Tornado	Formed about 10 miles north of Albin near state line; moved eastward into Nebraska.
NEBRASKA Franklin and Webster Counties	16	2:30-2:45 p.m.					3	5	Hail	Hailstones up to 1-7/8 inches in diameter. Storm moved eastward.
WEST VIRGINIA Bluefield, Mercer County	16	2:30-4 p.m.		880				1	Wind, rain, and electrical	Trees blown down, roofs damaged, streets and basements flooded.
NEBRASKA Perkins County (southwestern to northeastern portions)	16	3-5 p.m.	35	*4-6			3	6	Hail	Storm moved northeastward.
NEBRASKA Deuel to Lincoln Counties	16	3-5:30 p.m.	80	*3-5			3	5	Hail	Hailstones size of golf balls. Storm moved eastward.
DELAWARE Bridgeville, Sussex County	16	3:45 p.m.					5	1	Electrical	Lightning started blaze in lumber yard.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
OKLAHOMA Hooker (3 miles southwest of), Texas County	16	3:50 p.m.				5	3		Wind and dust	Severe duststorm caused 12-car pile-up. 5 persons received minor injuries.
COLORADO Morgan, Washington, Yuma, and Phillips Counties	16	Afternoon						4	Hail and rain	Scattered hailstorms throughout most of northeast damaged crops. Hailstones up to 1 inch in diameter fell around Otis and Yuma, where damage to wheat and other crops reported heavy. $50,000 crop damage in Phillips County. Storm moved northeastward.
DELAWARE Wilmington area, New Castle County	16	Afternoon						1	Electrical and rain	Lightning associated with violent thunderstorms struck at least 6 places in and around Wilmington. Power lines went down, flash floods reported, property damaged by lightning, etc.
NORTH CAROLINA Vance, Nash, and Wake Counties	16	Afternoon						4	Hail	Tobacco damaged in fields.
PENNSYLVANIA Pittsburgh and Johnstown areas Allegheny and Cambria Counties	16	Afternoon				1	5		Rain, electrical, and wind	Heavy rain caused flooding to depths of 5 feet in some basements. Lightning tore rear wall from house and winds downed many trees and utility lines. Several homes and barns burned by lightning. Storm moved eastward.
PENNSYLVANIA Scranton, Lackawanna County	16	Afternoon			3	3			Electrical	Lightning bolt struck tree at Scranton golf course under which 6 men were standing. Bolt killed 3 men instantly and burned the other 3 quite severely.
NEW JERSEY Bergen County (northern and central portions)	16	4-8 p.m.					4		Rain, wind, and electrical	Lightning struck gasoline service station and at least 9 homes. Power- and communications lines downed by falling trees and poles. Highways flooded in a few localities.
NEW JERSEY Gloucester, Camden, and Burlington Counties	16	4-10 p.m.					4		Rain, wind, and electrical	Thunderstorms, with heavy rain and high wind caused flooding of highways, especially at underpasses, and disrupted power and telephone services when utility poles and trees blown down.
MARYLAND Benson (near), Harford County	16	Late afternoon			1			1	Electrical	Bolt of lightning struck and killed man playing ball.
MARYLAND Baltimore	16	Late afternoon						1	Wind, rain, and electrical	Sudden heavy thunderstorm uprooted some trees, caused some local flash floods in city streets, and started a number of fires from lightning flashes.
PENNSYLVANIA Southeastern counties	16	Late afternoon-early evening					5		Wind, electrical, hail, and rain	Series of thunderstorms brought high winds, severe lightning, and some hail to southeastern counties. Winds flattened 2,000 boy scout tents and several shower baths at Valley Forge, in addition to damaging numerous roofs and buildings in vicinity. Lightning took its usual toll in burned-out electric transformers and house fires. Manufacturing plant at Bristol struck by lightning with $150,000 fire occurring. Heavy rain caused some flooding in homes and streets. Storm moved northeastward.
TENNESSEE White Pine to Sneedville, Jefferson County to Hancock County	16	5-5:15 p.m.					1		Hail	Severe hailstorm did considerable damage to crops, especially tobacco. Damage heavy at Russellville and Whitesburg.
NEBRASKA Chase County (northern portion)	16	5-6 p.m.	20	*5-10			2	6	Hail	Hailstones 1/2 to 2 inches in diameter. Storm moved eastward.
NEBRASKA Chase and Dundy Counties	16	5-6 p.m.	25	*1/2 to 7			3	6	Hail	Hailstones size of golf balls. Storm moved eastward.
NEBRASKA Brewster and vicinity, Blaine County	16	6-6:30 p.m.	10	880				3	Hail	Hailstones marble sized to 2 inches in diameter. Many windows broken. Considerable property damage. Storm moved northwestward.
CONNECTICUT Southwestern portion	16	6-7 p.m.					3		Electrical, wind, and dust	Violent thunderstorm during midst of heat wave caused scattered damage in greater bridgeport area. Lightning struck 3 homes in Easton and 1 in Westport. Damage estimated at $2,000 to 1 home from fire; others light damage to TV

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
CONNECTICUT (Cont'd.)										antennas and roofs. Large tree blown on wires in Milford caused power failures; scattered failures in parts of affected area. Dust blown by winds up to 45 m.p.h., preceding rain, hampered traffic with low visibility in Bridgeport. Storm moved southeastward.
TENNESSEE Harriman and vicinity, Roane County	16	6:30-7:30 p.m.						1	Wind, rain, and electrical	Strong winds blew over TV antennas, ripped shingles from roofs, uprooted trees and blew over 12-foot high wall. Low areas and basements flooded. Lightning struck powerlines and 1 home where hole burned in hot water heater.
NEBRASKA Lexington (west of), Dawson County	16	8:15 p.m.			0	0			Funnel aloft	
KANSAS Osborne County	16	8:15-10 p.m.			0	0			Tornado, funnel aloft, and electrical	Heavy thunderstorm with very turbulent clouds prevailed from 8:15 to about 10 p.m. 1 massive funnel cloud observed to touch ground about 4 or 5 miles north of Downs in pasture momentarily at 9:25 p.m. Second funnel observed aloft about same time. Lightning flashed continuously. Storm moved northeastward.
NEBRASKA Doniphan (near), Hall County	16	8:18 p.m.			0	0			Funnels aloft	4 funnels reported moving northeastward.
NEBRASKA Hayes, Frontier, Hitchcock, and Red-Willow Counties	16	Evening						4	Hail	Hailstones up to size of baseballs. Considerable property damage.
NEBRASKA Mt. Clare (near), Nuckolls County	16	Night		Narrow	0	0	3	1	Wind or tornado (suspected)	Possible tornado.
KANSAS Northwestern and north-central counties	16								Hail	Numerous hail-loss claims paid in Cheyenne, Rawlins, Graham, Rooks, Phillips, Smith, Osborne, and Trego Counties.
MINNESOTA Martin County	16			1	0	0	3	4	Tornado (suspected), rain, and funnel aloft	5 miles northeast of Dunnell sheriff's office reported funnel cloud. 1 barn demolished. Heavy rain flooded highways and farmland. Funnel cloud aloft observed near Ceylon. Storm moved northeastward.
TENNESSEE South Holston Lake, Sullivan County	16							1	Wind	Strong winds wrecked boathouses and swamped and sank numerous boats.
	16									Minor storms also reported at Anniston, Ala.; Orange City and in Lyon and O'Brien Counties, Iowa; near Loretto and St. Paul and at Red Cloud, Nebr.; in Alexander, Catawba, Mecklenburg, Rowan, and Union Counties, N. C.; at Fountain City, Tenn.; and in Green Bay area, Wis.
MINNESOTA	16-17	A.m.-16th - a.m. 17th			3		°7	C	Rain and hail	Heavy rain accompanied by hail damaged crops, eroded farmland, and caused severe flooding throughout southwest and central and throughout parts of west-central and south-central. Record-breaking 24-hour rainfall totals fell in numerous areas; Marshall 8.70 inches, Minnesota 8.67, Tyler 8.57, Montevideo 7.30, Willmar 6.82, and Litchfield 6.80. Hardest hit community was Marshall, where $2,256,000 estimated property damage due to resulting severe flood. Numerous unofficial rainfall totals of 10 inches reported. Crop damage due to flooding and eroded soil estimated over $9,000,000. Wild life throughout area also hit quite hard. Storm moved eastward. See Climatological Data, National Summary, for June 1957 for description of resulting flood and attending damage.
SOUTH DAKOTA Southeastern portion	16-17	Noon 16th to morning 17th			4		6	6	Rain, hail, wind, and electrical	Heaviest rains on afternoon of 16th, along line from 7 miles northwest of Yankton to 6 miles north of Flandreau. Unofficial reports indicated 6 to 11 inches along this line, with greatest falls northwest of Sioux Falls. Flash floods developed, with considerable loss in Sioux Falls area. 4 deaths resulted from automobiles driving into washouts. Fifth person

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
SOUTH DAKOTA (Cont'd.)										still missing at last reports. Much hail damage to crops in Yankton, Turner, and Minnehaha Counties. Hail damage to buildings minor. Scattered wind damage, but no funnels were reported. Lightning damage minor.
	16-17									Minor storm also reported near Dawson, Nebr.
NEBRASKA Blair, Washington County	17	Early a.m.					4	1	Electrical	600 pair of underground telephone cable burned in 3-block area.
MISSOURI Martinsville (1 mile north of), Harrison County	17	5-5:30 a.m.				2			Electrical	2 men hit by lightning and temporarily crazed.
IOWA Widely scattered points	17	Throughout day			0	2	5	4	Wind, rain, electrical, and funnels aloft	Wind and rain in local thundershowers damaged buildings and utilities. Lightning injured farmer, and housewife. Funnel clouds reported near Storm Lake at 5:20 a.m.; north of Des Moines at 2 to 3 p.m., and south of Marshalltown, time unknown.
ARKANSAS Piggott (10 miles southwest of), Clay County	17	Noon	8	*1			4	4	Hail and wind	Hailstones averaged 1/2 inch in diameter, with some 1 inch in diameter. Considerable hail damage to crops. Wind damage to houses, barns, and trees. Outbuildings destroyed. Storm moved eastward.
TEXAS Bridge City, Orange County	17	1:29 p.m.			0	0			Funnel aloft	
OHIO Hamilton County	17	2 p.m.							Rain and electrical	Storm deposited rainfall in localized area in Cincinnati between Mt. Airy Fores and Spring Grove cemetery determined by bucket survey to range upward to 8 inches. 5 to 6 inches fell within 1 hour to give severe localized flooding as far north as Cumminsville and Mt. Healthy. Abbe Observatory, 1 mile distant recorded 2.53 inches. Several lightning fires reported.
CONNECTICUT Hartford County	17	Afternoon			0	0			Dust devil	Dust devil moving about 200 feet blew over lawn furniture and lifted lids off garbage cans in Windsor Locks. Weather at time sunny, scattered clouds, and very warm.
NORTH CAROLINA Person, Forsyth, and Cleveland Counties	17	Afternoon			1	2	3		Electrical and wind	Lightning killed 1 construction worker, injured 2 in Forsyth County. Scattered lightning and wind damage.
SOUTH DAKOTA McPherson and Edmunds Counties	17	3:30-4:25 p.m.			0	0			Funnel aloft	Funnel cloud aloft sighted between Eureka and Ipswich. Last seen near Wetonka moving eastward.
TENNESSEE Powell Community, Knox County	17	4 p.m.					4	1	Wind	Winds associated with severe thunderstorm blew down 500-foot long aircraft hangar, destroyed light airplane, and damaged 9 others. Steel beams of hangar blown from 50 to 100 feet.
TENNESSEE Oak Ridge, Anderson County	17	4:25 p.m.				1		1	Wind and electrical	Lightning struck house, causing minor damage and 1 minor injury due to flying debris. Trees downed and power service disrupted.
INDIANA Vanderburgh and Warrick Counties	17	5:30 p.m.					4	1	Rain and electrical	At Evansville, several inches of rain in short time flooded city streets, homes, and some business places. Barn near Newburgh struck by lightning and burned with loss of $20,000.
TEXAS Muleshoe area, Bailey County	17	5:45 p.m.			0	0			Funnels aloft	2 funnels reported.
TENNESSEE Cottontown Community, Sumner County	17	9 p.m.						1	Electrical	Storehouse and contents ignited by lightning and burned to ground.
KENTUCKY Shelby County	17	P.m.				1			Electrical	Man suffered burns caused by lightning.
TENNESSEE Mt. Carmel area, Sinai, Pilot Knob, and Brown Springs Community, Greene Co.	17	P.m.							Wind and hail	In Mt. Carmel-Sinai section, barn demolished, several roofs blown from barns and houses, garage blown from its foundation, and trees broken. In Brown Springs Community, hail did considerable damage to tobacco and corn, and part of barn roof blown off. At Pilot Knob, several

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TENNESSEE (Cont'd.)										barns destroyed or heavily damaged and several large trees uprooted. Storm moved northward.
TENNESSEE Knoxville vicinity, Knox County	17	P.m.						1	Wind and electrical	Strong winds blew down numerous trees and limbs, causing extensive damage to powerlines. Lightning struck 2 transformers.
TENNESSEE Oneida, Scott County	17	P.m.						1	Wind and rain	Part of store roof blown off, allowing rain damage to dry goods. Several trees and TV antennas blown down.
TENNESSEE Bristol (near), Sullivan County	17	P.m.							Wind and rain	20-minute downpour with strong winds leveled corn, extensively damaged tobacco plants, and felled some trees.
INDIANA Harrison County	17				3	2	1	1	Electrical	On Blue River between Milltown and Fredericksburg, 3 boys killed and 2 injured by lightning.
KENTUCKY Marion County	17						4		Electrical	Lightning struck and destroyed school building and home.
TENNESSEE Ritta Community, Knox County	17							1	Wind	Concrete-block chickenhouse about 150 feet long demolished.
TEXAS Lamb, Hale, Swisher, and Castro Counties	17								Hail and funnel aloft	Funnel aloft reported northwest of Olton, Lamb County. Heavy hail and rain leveled uncounted acres of wheat nearly ready for cutting in the 4 counties.
TEXAS Whiteface (near), Cochran County	17								Electrical and funnel aloft	2 homes set afire by lightning and oil storage tank burst into flames as result of lightning bolt. Funnel aloft reported 2 miles southwest of Whiteface.
	17									Minor storms also reported at Grove Hill, Ala.; Hoopeston, Ill.; in Washington County, Ky.; at Fayette, Mo.; Eldorado and Weatherford, Okla.; Fountain City, Tenn.; near Abernathy and at Dimmitt, Tex.; and in Barron, Polk, and St. Croix Counties, Wis.
MICHIGAN Scattered Sections of State	17-18	Afternoon 17th-early morning 18th			2	5	5	4	Wind, electrical, hail, and funnels aloft	High winds and lightning caused scattered damage in many sections of State. Drive-in theater near Ionia nearly wrecked by winds. Hail damaged crops in a few areas. Lightning killed woman near Grand Rapids and man in Huron County. Funnels aloft reported near Flint, and Pinckney in Livingston County.
WISCONSIN Oconomowoc, Waukesha County	17-18	11:30 p.m. 17th - 1 a.m. 18th					3	3	Wind, hail, and rain	High winds, large hail, and heavy rain. Storm moved eastward.
CALIFORNIA Southern portion	17-26								Heat	Above-normal temperatures prevailed last 2 weeks of June in most areas, but unusually high temperatures and low humidity in south, resulted in considerable sunscald and heat damage to walnuts, avocados, strawberries, string beans, and avocado foliage, and increased drop of citrus set. Loss to strawberries in Oxnard district estimated at $100,000; 40 percent loss to string bean crops in San Diego County; 50 percent grape damage in Coachella Valley. At San Diego 97° maximum on 18th was highest June temperature of record, 104° at Los Angeles City Office on 18th highest June temperature since 1917, and 100° at Airport highest of June record at that station. Several stations in southeastern deserts reached 120° or higher, Cow Creek 123° on 25th and 27th. Fire danger higher than normal with several bad fires in south.
INDIANA South Bend and Mishawaka, St. Joseph County	18	1:22-3:27 p.m.					°4	C	Wind and rain	Heavy rain flooded streets and basements of communities of area, with estimated loss of $3000. Wind blew over trees which cut utility lines and crashed on houses and cars with loss of about $7,000.
NORTH DAKOTA Cavalier County	18	2:30 p.m.					1	3	Hail	Some grain fields damaged with hail as large as golf balls.
INDIANA Lagrange, Lagrange County	18	Afternoon					4	1	Wind	High winds damaged some buildings, uprooted trees, and tore down some utility lines.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
NORTH CAROLINA Pitt and Beaufort Counties	18	Afternoon					4	4	Tornado (suspected), wind, electrical, and hail	Possible small tornado destroyed store and several other buildings in Pitt County. Several cattle killed by lightning. Hail damaged crops.
OHIO Marion, Marion County	18	Afternoon					5	1	Electrical and wind	While there was minor wind damage in this storm, major damage was by lightning strikes. DeKalb Hatchery hit and burned, and radio station tower damaged.
OHIO Ashtabula, Ashtabula County	18	Afternoon							Electrical	Destructive lightning fire occurred.
WEST VIRGINIA Ravenswood, Jackson County	18	4:45-5 p.m.	1	1000			4	1	Wind, hail, rain, and electrical	Roofs blown off exposing contents of residences to damage from heavy rains, trees uprooted, picture windows blown out, some damage to a church by lightning strike. Storm moved east-southeastward.
PENNSYLVANIA Eastern and southeastern portions	18	Afternoon -Evening				3	4		Electrical, hail, and rain	Several barns and homes fired and 8 cows electrocuted by lightning. Hail size of marbles fell during storm, but no damage estimate reported. Heavy rain resulted in some local flooding in streets and house basements. Storm moved eastward.
VERMONT East Franklin to West Berkshire, Franklin County	18	6:05-6:15 p.m.	4	500	0	0	5	1	Tornado	Storm destroyed 1 home and damaged many others. Many eye-witnesses to storm cloud, described by some as having "two tails." Storm attended by hail size of golf balls which broke many windows and damaged roofs. Storm moved northeastward.
ALABAMA Vernon, Lamar County	18	6:30 p.m.					4	1	Thundersquall	Damage to new stadium and other buildings, trees, and TV antennas.
WEST VIRGINIA Upshur County	18	7:20-7:40 p.m.						2	Wind and rain	Trees blown down, roofs damaged, telephone service disrupted; some hay lodged. Storm moved northeastward.
TENNESSEE Greeneville, Greene County	18	P.m.						1	Rain	Cloudburst caused flooding of roads, evacuation of 1 home, and damage to fish hatchery where 100,000 minnows lost.
SOUTH CAROLINA Greenville area, Greenville County	18	Night			1	1	3	1	Electrical, wind, and rain	Lightning struck and burned home; wind and rain damaged another.
TENNESSEE Bluff City, Sullivan County	18								Wind and rain	Power service disrupted by wind-blown trees. Wind and water caused considerable damage to crops, washing away tobacco and knocking down corn.
	18									Minor storms also reported at Cloverdale, Ala.; Flora and Metcalf, Ill.; in Murray, Pipestone, and Renville Counties, Minn.; at Clinton, Mo.; and Cleveland, Ohio.
NEW ENGLAND Central and northern portions	18-19	P.m. 18th - p.m. 19th			2	5	6	4	Electrical, wind, rain, and hail	Violent thundersqualls cut swath of destruction from western Vermont southeastward across southern Vermont, central and southern New Hampshire, southwestern Maine, and northern and east-central Massachusetts. Tornadoes which were spawned by these squalls recorded elsewhere. 2 men killed in Massachusetts when struck by lightning. Widespread damage resulted from effects of lightning and wind, and, locally, heavy losses caused by torrential downpours and hail. Slow-moving cold front and squall line moved over northwestern Vermont evening of 18th, but most of area affected in afternoon of 19th.
TEXAS Livingston (6 miles west of), Polk County	19	1 p.m.			1	1			Electrical	2 men struck by lightning, 1 killed.
NEW HAMPSHIRE, Newington, Rockingham County	19	1:35-1:37 p.m.	1/4	75	0	1	4	1	Tornado	Several witnesses saw funnel cloud. Steel screen of drive-in theatre, 50 x 100 feet, destroyed with loss of $25,000. Boy picked up by wind and carried about 40 feet, not seriously hurt but terrified. About 100 speaker posts (4 feet high) set in cement blocks downed. Storm moved eastward.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MAINE and NEW HAMPSHIRE Off-Shore from York Beach, Maine to Sea-Brook Beach, N. H.	19	2 p.m.			0	0			Waterspouts and funnels aloft	Waterspouts and funnels offshore reported by witnesses. 1 observer reported 9 funnels sighted to north and east of Portsmouth, N. H. These funnels and spouts apparently developed from same squall that spawned Newington, N. H., tornado about 25 minutes earlier.
CONNECTICUT Central portion	19	2-4 p.m.	1/4	400	0	7	5	C	Tornado, electrical, wind, and hail	Violent thunderstorms, mostly in central counties and small tornado in Glastonbury, Hartford County. Tornado at 2:30 p.m., completely destroyed tents covering 70 acres of shade-grown tobacco. Large wagon driven and 500-gallon drums blown into side of curing barn, but barn damage slight. Tent poles of 6-inch diameter twisted and broken off at ground, cloth ripped beyond repair and plants ruined by hail and removal of shade covering. 5 huge trees blown over at different angles and 2 large pine trees sheared off 15 feet above ground. 2 curing barns blown in, but not unroofed or torn by wind. Driver of loaded bus facing wind claimed bus was driven back 5 feet with brakes on and in low gear. Tornado damage estimated in excess of $300,000. Bull killed by lightning in Columbia with $1,000 loss. Lightning struck dozens of homes and structures from Hartford southward to New Haven with small fires in many cases. 4 persons injured by lightning; remainder in automobile or pedestrian accidents. Hail damaged apples and truck crops in New Haven area to extent of $25,000. Numerous but short power failures throughout area. Storm moved northeastward.
MASSACHUSETTS North Sudbury, Middlesex County	19	2:47 p.m.	1	25	0	0	4	1	Tornado and hail	Discontinuous path, with main path 1/4 mile long through orchard and farm buildings. Barn deroofed, machine shed destroyed, and about 30 trees broken or uprooted. Much debris blown to north, to left of storm's path, or to northeast, in line with storm, but some went in other directions, even to southwest. 2-gang plow carried 20 feet and trees hurtled through air as far as 100 feet. Funnel sighted. Small amount of hail, up to 1/2 or 3/4 inch in diameter, fell briefly after tornado. Storm moved northeastward.
MASSACHUSETTS Lancaster, Worcester County	19	Afternoon	1-3/4		0	0	4	1	Tornado and hail	Storm said to look "something like a little smokestack" felled trees, and snapped utility poles. Several trees sent crashing against buildings. Hail up to golf-ball size fell for several minutes in and around storm area, covering ground 1/2 inch deep. Area of damage by hail 3/4 mile wide. Funnel thought to have been very narrow. Electrical power restored in 24 hours by 10 repair crews working through night. Storm moved eastward.
NORTH CAROLINA Lee, Gaston, Mecklenburg, Wake, Catawba, Rowan, Iredell, Cumberland, Wayne, Hoke, and Cabarrus Counties	19	Afternoon			2	47	5	4	Electrical and wind	Lightning killed 2 soldiers and injured 47 at Fort Bragg, set several fires, and damaged utilities in several counties. Wind damaged planes and facilities at Charlotte Airport, did scattered damage to buildings over wide area.
MASSACHUSETTS Bedford, Middlesex County	19	3 p.m.	1/2	100	0	0	2	1	Tornado	Witness reported funnel cloud touching surface. 30 x 6 foot portion of Post Office roof torn away, including 2-inch planking and 30-foot 6 x 8-inch timber beam. Tornado moved northward.
RHODE ISLAND Providence County	19	4-6 p.m.					4		Electrical and wind	Damage from violent thunderstorm concentrated in Burrillville area, northwest of Providence. Lightning-caused fires destroyed barn, including hay and machinery, and small cottage with total damage set at $10,000. Wind and lightning caused power and telephone failures to several thousand users in Pascoag-Woonsocket area. Crop damage negligible.
TENNESSEE St. Elmo, Hamilton County	19	4:30 p.m.			1		1	1	Electrical	Lightning struck tree, killing woman underneath.
TEXAS Round Rock (2 miles north of), Williamson County	19	5 p.m.			0	0			Tornado	

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TEXAS Taylor (15 miles northeast of), Milam County	19	6:27 p.m.			0	0			Funnel aloft	
TEXAS Round Rock (2 miles north of), Williamson County	19	7:03-7:12 p.m.			0	0			Funnel aloft	Reported moving eastward.
KANSAS Johnson County	19	7:10-7:35 p.m.	12	*2				5	Hail	Hail ranging from pea to marble size fell across northeastern corner of county. Accumulated to more than 1 inch deep. Storm moved southeastward.
MINNESOTA Western half	19	P.m.					1		Hail	Hail damage reported in 19 counties. At Hallock, Kittson County, hail reported size of golf balls. Ground completely covered for short period at 6 p.m. Hail size generally 1/4 to 1/2 inch in diameter. Details from other counties not available. Insurance claims have been submitted.
NORTH DAKOTA Traill County	19	Evening					1	4	Hail	Hailstones as large as golf balls; some fields severely damaged.
	19									Minor storms also reported near Philadelphia, Pa.; in Camden area and in Spartanburg County, S. C.; and at Beaumont, Tex.
SOUTH CAROLINA Charleston County	20	Noon						1	Rain, wind, and hail	Line of thunderstorms moved over Charleston from east and southeast. Heavy rain caused flooding of streets. Trees blown down and power disrupted temporarily.
ALABAMA Brewton, Escambia County	20	1:45 p.m.			1		1	1	Electrical	Man killed on paper mill construction job.
LOUISIANA Sulphur (5 miles northwest of), Calcasieu Parish	20	2:56 p.m.							Funnel aloft	Reported by public.
LOUISIANA Over Lake Pontchartrain	20	3:28 p.m.							Funnel aloft	Reported by pilot.
WYOMING Barnum, Johnson County	20	3:30 p.m.	12						Hail and rain	Hail 4 inches deep in local areas; destroyed some wheat and alfalfa.
ARIZONA Tucson, Pima County	20	Afternoon			0	0	3	1	Dust devil	House unroofed.
NORTH DAKOTA Stutsman County	20	Afternoon					4	4	Wind and hail	7 buildings demolished on 2 farms by wind, damage $20,000. Hail damage $10,000.
NORTH DAKOTA Barnes County	20	Late afternoon					1	4	Hail	Some hailstones reported as large as baseballs.
NORTH DAKOTA Oakes (near), Dickey County	20	6:15 p.m.	2	30	0	0	4	3	Tornado and hail	2 funnels seen. Airplane and hangar destroyed. Roof of lumber company ripped off. Houses and garages damaged. 25 to 30 trees uprooted. Crops damaged by hail. Storm moved eastward.
NORTH DAKOTA Fargo (10 miles southwest of), Cass County	20	6:30 p.m.			0	0			Tornado	Tornado moved southward.
SOUTH DAKOTA Martin (southwest of), Bennett County	20	6:30 p.m.				1			Electrical	Lightning injured man mowing near tree.
NORTH DAKOTA Fargo area, Cass County	20	6:40 p.m.	30	500	10	103	7		Tornado and rain	Tornado first seen 30 miles west of Fargo at Wheatland and then Casselton. Several funnels sighted at Casselton. Tornado struck in new section in northwestern Fargo, destroying nearly all property in area of 5 city blocks wide and 20 blocks long. It narrowed somewhat as it moved eastward. 1,364 homes damaged or completely destroyed. No damage reported west of Fargo, but 3 farms east of Fargo in Clay County, Minnesota damaged and Moorhead Rod and Gun club leveled by same tornado. Heavy rain after tornado added to damage. Many lives saved by the Weather Bureau warnings.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MINNESOTA Clay and Becker Counties	20	7:40 p.m.	26	400	0	0	5		Tornado	After striking Fargo, N. Dak., tornado crossed Red River. 2 farms, 2 country club houses and buildings of Sugar Company, all just north of Moorhead, damaged or partially destroyed. Length of most serious damage 3 miles. Minor damage also reported at Glyndon and Dale east of Moorhead as tornado weakened and finally dissipated over Lake Park. 2 funnels observed over Moorhead by Weather Bureau employee. Rope funnel dissipated just north of Moorhead. Cone-shaped funnel continued eastward to Glyndon.
NORTH DAKOTA Dickinson (50 miles east-southeast of), Stark County	20	8:10 p.m.			0	0			Funnel aloft	Funnel cloud sighted.
MINNESOTA Fergus Falls area, Otter Tail County	20	8:30 p.m.			0	0	3	1	Tornado and funnel aloft	Funnel cloud observed by several persons. Demolished new cottage at Long Lake near Fergus Falls. At 8:30 p.m., airline pilot reported funnel cloud aloft southeast of Fergus Falls. Storm moved eastward.
SOUTH DAKOTA Lyman, Brule, and Sanborn Counties	20	8:30-10 p.m.					4	5	Wind and electrical	High winds caused extensive damage west and north of Kimball. A number of farm buildings including 2 barns destroyed. Anemometer at Forestburg showed 91 m.p.h. Trees blown across automobiles. Barn destroyed south of Woonsocket. 3 cows killed by lightning near Iona and Eagle.
MINNESOTA Western portion	20								Hail and rain	Hail damage reported in 18 counties. Stones up to golf-ball size pulverized crops and killed livestock. Heavy rain damaged fields and flooded basements in Renville County.
	20									Minor storms also reported near Cornell, Mich.; in Sumter County, S. C.; and at Lusk, Wyo.
SOUTH DAKOTA Northeastern and east-central portions	20-21	7:30 p.m. -2:30 a.m.			1	0	4	5	Tornado (suspected) electrical, and hail	Thunderstorm damage over wide area. Shortly before 10 p.m., windstorm struck Rockham, Ashton, and Athol areas. In places, damage indicated tornado, but no funnel seen. Near Athol, woman fatally injured when house trailer blew over. Near Rockham, several barns destroyed and other buildings damaged. Lightning damage included houses near Ortley, Bryant, and West Sioux Valley. Barn burned at Wilmot. Hail fell extensively from Tripp to Roberts Counties.
COLORADO Colorado Springs, El Paso County	21	10 a.m.			1	11			Electrical	Volunteer Girl Scout leader killed by lightning and 11 girls knocked to ground and stunned.
NEW MEXICO Las Vegas, San Miguel County	21	10:30 a.m.			0	0			Dust devil	Store damaged.
LOUISIANA Baton Rouge (east of), East Baton Rouge Parish	21	11:38 a.m.							Funnel aloft	
LOUISIANA Lake Charles (15 miles southeast of), Calcasieu Parish	21	11:40 a.m.							Funnels aloft	2 funnels reported.
NEBRASKA Chadron (10 miles southwest of), Dawes County	21	12:53 p.m.			0	0			Funnel aloft	
LOUISIANA Moisant Airport (40 miles northwest of), Livingston Parish	21	2:50 p.m.							Funnel aloft	
SOUTH CAROLINA Greenville County	21	Afternoon				1	3	1	Electrical and rain	Lightning caused warehouse fire and other minor damage. Streets flooded, due to heavy rain.
NEBRASKA Gordon (west and east of), Sheridan County	21	3:30-5:15 p.m.	20	*1-3			3	4	Hail	Storm moved eastward.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
COLORADO Burlington, Kit Carson County	21	4-4:30 p.m.	5	*5			2		Hail and wind	Small hail to depth of 1 inch damaged crops heavily in radius of 5 miles around Burlington.
NEBRASKA Clinton (1/2 mile north of), Sheridan County	21	4:30-4:45 p.m.	2	880			1	3	Hail	Hailstones 1/2 to 1 inch in diameter. Storm moved eastward.
MINNESOTA Cottonwood County	21	5 p.m.					1	4	Rain	Crop damage due to flooded fields. Storm moved eastward.
MINNESOTA Winthrop (west of), Sibley County	21	5 p.m.							Wind	3 barns flattened, outbuildings damaged, and trees blown over on 4 farmsteads.
KANSAS Gove and Trego Counties	21	5:30-8 p.m.	20	*8				5	Hail	Some damage in all parts of county, but main loss in strip from 8 miles southwest of Collyer to 5 miles northwest of Wakeeney. Hailstones averaged 1/2 inch in diameter. Wheat, oats, barley, and sorghums sustained main loss. Storm moved eastward.
ALABAMA Morgan, Limestone, and Lawrence Counties	21	6 p.m.					3	3	Hail and wind	Hail size of hens' eggs. Crop damage by hail. Wind for 1/2 hour damaged trees and caused several power failures. Storm in Decatur, Austinville, and Cedar Lake areas.
NEBRASKA Waco to Utica, York and Seward Counties	21	6:15 p.m.	6	Narrow	0	0	5	2	Tornado	Buildings on 1 farm destroyed, and damaged on 15 other farms. Tornado moved northeastward.
KANSAS Ellis County	21	6:15-6:30 p.m.	15	*10		1	4	5	Hail, wind, rain, and electrical	Main damaged area in east-central part of county. Hail ranged from 1/2 inch in diameter to hens' egg size. Hail driven by 80 to 85 m.p.h., winds. Trees, TV antennas, roofs, and sheds damaged. Small grains and pastures beaten into ground. Newly-planted row crops washed out or covered up. Man injured by falling tree limbs. Crop loss due to hail. Property damage largely from wind. Storm moved eastward.
NEBRASKA Bellwood (4 miles west of), Butler County	21	6:30 p.m.	1	120	0	0	2	1	Tornado	7 turkey houses destroyed. Tornado moved northeastward.
NEBRASKA Friend (north of), Saline County	21	6:30 p.m.			0	0			Funnel aloft	Reported by Highway Patrol.
NEBRASKA Seward County	21	6:30-9:30 p.m.					3	3	Wind	
NEBRASKA Valparaiso (north of), Saunders County	21	6:52 p.m.	Short	Narrow	0	0	1	3	Tornado	Funnel observed over open fields moving northeastward.
MISSISSIPPI Brooksville, Noxubee County	21	7-8 p.m.					4	2	Wind	Damaged roofs and some outbuildings.
KANSAS Ford to Reno Counties	21	7-10 p.m.			1	8			Wind, hail, rain, and funnel aloft	Severe winds and hail locally from Ford County through Reno County. Tree limbs broken in Dodge City. 2 men injured when their car ran into tree when heavy rain obscured their vision at Dodge City. In Pratt, trees, powerlines, and roofs suffered damage from wind. Hutchinson experienced the greatest damage. Severe winds hit about 9:14 p.m., principally in northern part of town. 1 funnel cloud sighted close to ground west of town. Man killed when large portion of roof 100 feet west smashed into his home. His 3-year old son blown out window. Man driving into Hutchinson at 85 m.p.h., said wind-driven tumbleweeds passed him. Many buildings including State Fairground grandstand unroofed, truck terminal demolished, and many window lights broken. Many electric and telephone wires broken, resulting in some fire damage. Numerous automobiles damaged by flying debris or falling trees. Streets blocked. Storm moved eastward.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

JUNE 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
KANSAS Mitchell, Jewell, and Republic Counties	21	7:30-8 p.m.			0	0			Tornado, funnel aloft, wind and electrical	Funnel cloud observed to form aloft north of Beloit and passed northward over Randall about 7:40 p.m. At about 8 p.m., tornado dipped at Norway, Republic County, uprooting long row of cottonwood trees which blocked highway, damaging barn and other buildings, and disrupting telephone and electric services. Considerable wind damage reported in Scandia and scattered areas over county. Lightning caused minor damage to house 10 miles south and 4 east of Beloit.
NEBRASKA Malcolm (5 miles north of), Lancaster County	21	8:39 p.m.			0	0			Funnel aloft	Reported by GOC.
NEBRASKA Omaha (6 miles north of), Douglas County	21	9:13 p.m.			0	0			Funnel aloft	Reported by GOC
NEBRASKA Sterling (southeast of), Johnson County	21	9:20 p.m.			0	0	3	2	Wind or tornado (suspected)	Possible tornado. Several sets of farm buildings damaged.
KANSAS Sedgwick County	21	10:09 p.m.	3	100	0	0	3		Tornado	Tornado hit ground about 4 miles west of Valley Center; moved northeastward.
MINNESOTA Knife Lake on Canadian border, Lake County	21	P.m.				2	1	1	Electrical	Lightning struck fishing camp.
NEW MEXICO Placitas, Sandoval County	21	P.m.			0	0	2	1	Dust devil	Roof on house blown off.
NEW MEXICO Grants, Valencia County	21	P.m.			0	0	2	1	Dust devil	Damage to partially finished building.
NEBRASKA York County (southwestern portion)	21	Evening	7-8	*3			2	3	Hail	Hailstones 1 inch in diameter. Storm moved east-northeastward.
KANSAS Western half	21								Hail	Hail occurred in many places over western part of State in addition to those specifically listed above. Most numerous claims paid were in Rooks, Osborne, Russell, Lincoln, Saline, Greeley, Wichita, Scott, Ness, Rush, Barton, Gray, Hodgeman, Pawnee, Edwards, Stafford, Reno, and Kingman Counties.
	21									Minor storms also reported at Centerville and in Plymouth County, Iowa; at Richmond, Mo.; and in Oakland, Osceola and Shelby areas and in Howard, and Merrick Counties, Nebr.
KANSAS Johnson County	21-22	11:30 p.m. 12:15 a.m.	8	400	0	2	5	4	Tornado	In midst of thunderstorm, tornado hit near DeSoto travelling eastward almost to Shawnee. Loud roar heard. Several houses unroofed, trees uprooted, trailer houses turned over, and 2 small houses moved off foundations.
MISSOURI Clay and Jackson Counties	21-22	Near midnight-12:30 a.m.	10-15	100	0	0	5		Tornado, wind, rain, and electrical	100-m.p.h., wind at WBAS in Kansas City. Many powerlines, telephone lines, trees, and homes damaged in Kansas City, and farm buildings in rural areas. Storm moved northeastward.
MINNESOTA Southern half	21-22	P.m. 21st -a.m. 22d					°6	C	Rain and hail	General rain averaging over 3 inches fell on top of Minnesota River Crest progressing downstream from Mankato to St. Paul. Heavy rainfall runoff resulted in higher crests. All of Minnesota Valley bottomlands inundated. Heaviest rainfall reported 5.38 inches at Coon Rapids just north of Minneapolis. Crow River Drainage had severe flooding due to this rain. Crests generally equal to or slightly over record April 1952 flood. Hardest hit community on Crow River was Delano. Some overflow also on Rum River. Crow and Rum Rivers drain into Mississippi River north of Minneapolis. Storm moved eastward. See Climatological Data, National Summary for June 1957 for details.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MINNESOTA Beltrami, Clearwater, Red Lake, and Polk Counties	21-23	P.m. 21st -a.m. 23d					°6	C	Rain	Several days of rain climaxed with excessive rain on 21st and 23d, heaviest 24-hour amount reported 5.42 inches at Itasca State Park, resulted in severe flooding on Clearwater and Lost Rivers. Minor to moderate flooding occurred along Red Lake River from confluence of Clearwater River to downstream from Crookston. Storm moved eastward. See Climatological Data, National Summary, June 1957 for further description.
OKLAHOMA Wann (4 miles east of), Nowata County	22	1 a.m.					5	1	Electrical	Lightning caused fire which burned packing company.
OKLAHOMA Pawhuska (southeast of), Osage County	22	5 a.m.			0	0			Funnel aloft	Funnel aloft reported moving eastward.
MINNESOTA Albert Lea (near), Freeborn County	22	A.m.			0	0			Tornado (suspected)	Cooperative observer reported small twister; no damage.
OKLAHOMA Manchester Grant County	22	A.m.						1	Electrical	Lightning caused fire which burned garage, family car, tools, and laundry equipment.
OKLAHOMA Oklahoma City, Oklahoma County	22	A.m.						1	Wind and rain	Wind and rain caused 90 x 60 foot roof to collapse. Building was under construction.
TENNESSEE Buladeen Community Carter County	22	1 p.m.	1	1760			1		Hail	Crops heavily damaged. Ground white with hail which lasted for more than an hour before melting.
NORTH DAKOTA New Town (near), Mountrail County	22	1:15 p.m.			0	0			Funnel aloft	Reported moving southward.
TENNESSEE Corryton Community, Knox County	22	2:45 p.m.						2	Wind and electrical	Strong winds deroofed 1 house and either totally or partially deroofed several barns and sheds. Lightning killed 1 cow and injured 2 others.
MICHIGAN Hudsonville, Ottawa County	22	4:30 p.m.	Short	Narrow	0	0	4	1	Tornado or wind	Onion warehouse and contents destroyed. Nearby buildings not damaged.
MICHIGAN (Lower) Southern portion	22	Late afternoon -evening					5	4	Wind and hail	High winds caused damage in several counties. Hail also occurred in a few localities.
MICHIGAN Berrien and Cass Counties	22	5:05 p.m.	12	50	0	0	4	1	Tornado and hail	Funnel developed near Eau Claire, moved east-northeastward and lifted several times along its path. Several rural buildings destroyed or damaged and many trees uprooted.
MICHIGAN Dumont Lake, Allegan County	22	5:10 p.m.	1		0	0			Tornado	Small funnel moved northeastward over Lake and dissipated soon after hitting shore.
INDIANA Ardmore and Lydick (near South Bend), St. Joseph County	22	5:28-8:50 p.m.					3	1	Wind	Windstorm blew some trees down and caused minor damage to utility wires. Wind reached 51 m.p.h. at South Bend Airport.
IOWA Sioux City, Woodbury County	22	6-8 p.m.							Wind	Strong wind.
TEXAS Amarillo (80 miles north of), Sherman County	22	9:42 p.m.			0	0			Funnel aloft	
TEXAS Plains (7 miles south of), Yoakum County	22	9:47 p.m.			0	0			Tornado	Reported moving northeastward.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons: Killed	Number of persons: Injured	Estimated damage by categories †: Property (exclusive of crops)	Estimated damage by categories †: Crops	Character of storm	Remarks
TEXAS Littlefield (north of), Lamb County	22	10:02 p.m.			0	0			Funnels aloft	2 funnels reported.
TEXAS Plainview (5 miles north of), Hale County	22	10:18 p.m.			0	0	3		Tornado	Smashed truck and car. Occurred in rural area.
KENTUCKY Warren County	22	P.m.				1	4		Wind	Roof of tobacco building blown off, home damaged, power- and telephone lines knocked out, trees damaged, and TV antennas toppled.
OKLAHOMA Panhandle Counties	22	P.m.			0	0			Funnel aloft (suspected), hail, wind, and rain	Radar indicated possible funnel as a loud roar heard over Texhoma, Texas County. Spotted severe hailstorms caused extensive damage to crops in Panhandle. Areas affected included near Beaver River in Cimarron County, west and south of Texhoma in Texas County, and strip 10 miles long and 4 miles wide between Guymon and Hooker in Texas County. Just west of Texhoma, hail as large as golf balls fell for 45 minutes without any rain. Heavy rains with high winds throughout most of area helped to beat down and wash out crops.
OKLAHOMA Harper County	22	P.m.							Wind, rain, and hail	Thunderstorms caused scattered damage over County. Crops flattened and losses up to 50 percent reported. In Buffalo, wind blew over seven 60-foot light towers, and damage estimated at $400. Heavy rains caused considerable flooding and washing.
TENNESSEE Athens, McMinn County	22	P.m.							Wind	Wind snapped small trees, unroofed 1 or 2 buildings, and flattened cornfields.
MICHIGAN Bay City (near), Bay County	22	Evening	Short	Narrow	0	0	3	1	Tornado	Tornado wrecked barn and downed trees and utility lines.
ALABAMA Rutledge, Crenshaw County	22					1	1	1	Electrical	Details not available.
KENTUCKY Fayette County	22				1	2			Electrical	Lightning struck golf cart on which men were riding, causing death and injuries.
TEXAS Amarillo (30 miles north of), Potter County	22				0	0			Funnel aloft	
	22									Minor storms also reported at Goshen, Ind.; in Polk and Story Counties, Iowa; near Quenemo, Kans.; at Sedalia, Mo.; and at Guthrie, Stillwater, and Tulsa, Okla.
COLORADO Baca County (southeastern portion)	22-23	Night							Rain	Heavy rain caused flooding which washed out thousands of acres of row crops.
KANSAS Morton County (southern portion)	23	2-3 a.m.	20	*7				5	Hail	Damage mostly to small grains. Hailstones averaged 1/2 inch in diameter, but some as much as 2 inches in diameter. Storm moved south-southeastward.
OKLAHOMA Altus, Jackson County	23	7:20 a.m.			0	0			Funnel aloft	Public reported tornado which evidently remained aloft as no damage reports received.
COLORADO Stratton, Kit Carson County	23	8 a.m.			0	0			Funnels aloft	5 funnel clouds observed in vicinity of Stratton moving northward. None observed to reach ground.
OKLAHOMA Broken Arrow, Tulsa County	23	9:30 a.m.				1			Electrical	Lightning struck home causing damage to floor, cabinets, and counter top. Woman slightly injured by shock and bits of linoleum were buried in her chin.
OKLAHOMA Ellis County	23	A.m.							Wind, rain, hail, and electrical	Severe thunderstorms caused widespread damage to buildings, trees, crops, etc. 1 farmer lost 7 head of cattle when lightning struck shed. Heaviest damage reported in northern part of County. Heavy rains up to 6 inches caused considerable flooding and washing.

See footnotes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
OKLAHOMA Payne and Pawnee Counties	23	A.m.							Wind, rain, and electrical	Thunderstorms caused damage to roofs, trees, TV antennas, utilities, etc. Lightning struck at least 2 buildings and several TV sets reported burned out. Storm flattened ripened crops and caused losses.
TEXAS Fort Worth, Tarrant County	23	Noon			1				Electrical	Woman struck by lightning, died of injuries.
TEXAS Terminal, Midland County	23	1:12 p.m.			0	0			Funnel aloft	Reported moving westward.
TEXAS Midland, Midland County	23	1:15-2 p.m.	15	*12			4		Wind and rain	Accompanied by heavy rain. Gusts to 74 m.p.h. Short-wave radio tower blown down, window glass broken, phone lines downed, sewer pump burst. Storm moved southward.
TEXAS Waxahachie (4 miles west of), Ellis County	23	1:50 p.m.			0	0			Tornado	
TEXAS Wink (north of), Winkler County	23	2-3 p.m.			0	0			Funnels aloft	3 funnels reported moving eastward.
TENNESSEE Bristol, Sullivan County	23	2:30 p.m.				1			Rain and electrical	Heavy rain flooded portion of city and damaged phone cables and crops. Lightning suspected as cause of fire in vacant paper mill. Woman treated for shock after near miss by lightning.
TENNESSEE Karns Community, Knox County	23	2:30-2:50 p.m.					3		Wind and electrical	Winds leveled 100-foot tool shed and destroyed granary. Lightning struck 60-foot oak tree, splitting it from top to bottom.
VIRGINIA Lebanon and Bristol areas, Russell and Washington Counties	23	2:34-5:40 p.m.					4	C	Rain and electrical	Heavy thundershower caused flash flooding. Estimated worst rainstorm in 10 years. Little Cedar Creek flooded, 2 miles east of Lebanon on Route 19. Damage to streets, roads, and buildings, and 1 footbridge washed out. Lightning set fire to 1 building in Bristol.
TEXAS Wink (40 miles southwest of), Reeves County	23	3:20 p.m.			0	0			Funnel aloft	
TEXAS Ft. Stockton area, Pecos County	23	4-4:25 p.m.	12	*5	0	26	5	5	Hail, wind, and tornado (suspected)	Storm moved southward, with center 7 miles west of Fort Stockton. Over 60-square mile area hail, average diameter 1-1/2 inches, largest 4-1/2 inches, fell heavily. Heavy damage to irrigated cotton crops; roofs damaged, windows broken, automobiles dented and glass broken, and livestock injured, a few killed. Heavy winds slammed hail through windows and property, snapped powerlines and trees. 19 farm laborers trapped in open fields unable to escape to shelter, several rather seriously injured. Other injuries caused by broken glass. Unconfirmed tornado reported 5 miles west of Ft. Stockton at 4 p.m.
KANSAS Rawlins County	23	5:30-6 p.m.	7	*2			3	4	Hail and wind	Major damage in areas about 8 miles northeast of Atwood. Hailstones varied from 1 to 1-1/2 inches in diameter. Hailstorm sounded like a stampede of buffaloes. Much damage to buildings, but some 6 or 7 sections of 40-bushel wheat ruined. Storm moved southeastward.
TEXAS Boerne (10 miles west-southwest of), Kendall County	23	7:10 p.m.			0	0			Funnel aloft	
TEXAS San Antonio (25 miles northwest of), Bexar County	23	7:50 p.m.			0	0			Funnels aloft	3 funnels reported.
NEW HAMPSHIRE AND VERMONT Upper Connecticut Valley	23	Evening					3	1	Electrical and wind	Violent thunderstorms raked area, causing widespread power and telephone service interruptions. Loss primarily due to felled trees and branches falling onto wires. A number of homes damaged by lightning-set fires.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
PENNSYLVANIA Susquehanna and Lebanon Valleys	23	Evening					5		Electrical	Near Lebanon, lightning fired large building of chemical plant which was completely destroyed as well as contents; total value $400,000. Numerous small fires occurred in homes and other buildings from Williamsport to Lebanon and electrocuted 10 cows at Beechwoods.
NORTH CAROLINA Forsyth and Yadkin Counties	23				2		5	4	Rain	Near cloudburst in Winston-Salem and over parts of Yadkin River Basin caused flash flood in city, on Yadkin and local tributaries. 2 persons drowned. Heavy damage in low areas.
TEXAS Fort Worth, Tarrant County	23				1				Wind	Strong winds reaching 50 m.p.h., overturned boat on Lake Worth, occupant drowned.
TEXAS Lamesa, Dawson County	23						1		Hail and wind	Accompanied by driving wind; damaged cotton crops in area. Storm moved southward.
	23									Minor storms also reported at Anniston, Gadsden, and Jasper, Ala.; in southwestern Dundy County, Nebr.; at Alva, Geary, Helena, Ringling, Vinita, and Watonga, Okla.; in Lancaster area Pa.; and at Moscow, Mt. Solon, and Staunton, Va.
TEXAS Jefferson County Airport (10 miles south of), Jefferson County	24	10:32 a.m.			0	0			Funnel aloft or waterspout (suspected)	
NEW JERSEY Fort Dix, Burlington County	24	Midafternoon				3			Electrical	3 soldiers injured when lightning struck emergency communications pole they were erecting on rifle range. Men treated for shock and superficial body burns.
MASSACHUSETTS Attleboro, and North Attleboro, Bristol County	24	Afternoon					4	1	Electrical and rain	Storm lasted 2 hours. Many buildings struck and some damaged by lightning. Streets flooded. Damage to stored merchandise by water amounted to $3,000.
RHODE ISLAND Providence County	24	Afternoon							Electrical and rain	Squall line resulted in locally heavy rains. Automobiles stalled by flooding of streets in Woonsocket and greater Providence. Lightning struck 2 homes in Woonsocket, with damage limited to toppled chimneys and electrical wiring. Minor power interruptions.
PENNSYLVANIA Statewide	24	Afternoon-evening			0	22	5		Electrical, rain, and wind	Lightning fired numerous structures throughout State while torrential rain caused local flooding to homes and streets. Trees and utility lines hard hit by strong winds. At Indiantown Gap, 22 Army reservists injured by lightning. Large tent near Philadelphia ripped to shreds. Storm moved eastward.
MONTANA Powder River and Carter Counties	24	6 p.m.	50	*1-1/2			3	5	Hail	Hailstones up to 2 and 3 inches in diameter near Olive. Some crops a total loss. Storm moving southeastward ended near Boyes.
TEXAS High Island (11 miles east of), Galveston County	24	8 p.m.			0	0			Waterspout	Reported about 2 miles offshore, moving westward.
	24									Minor storms also reported in area from Skowhegan to Waterville, Maine; at Silver City, N. Mex.; and at Bearden, Tenn.
SOUTH DAKOTA Beadle, Kingsbury, Lake, and Moody Counties	24-25	Night						4	Hail	Hail damaged crops crops. Damage estimates incomplete.
NEBRASKA Fillmore County (southern portion)	25	6-7 a.m.	10	*4-5			1	4	Hail	Hailstones small. Storm moved northeastward.
KANSAS Washington and Marshall Counties	25	7:15-8:30 a.m.	16	*5				4	Hail	Hail damage from northeastern Washington County southeastward into Marshall County, south of Marysville. Not much wind and most hailstones less than 1-1/2 inches in diameter.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path yards	Number of persons Killed	Number of persons Injured	Estimated damage by categories † Property (exclusive of crops)	Estimated damage by categories † Crops	Character of storm	Remarks
LOUISIANA New Orleans (5 miles east of), Orleans Parish	25	3 p.m.							Funnel aloft	Reported moving south-southwestward.
IOWA Rockwell City, Calhoun County	25	3:09 p.m.			0	0			Funnel aloft	Reported moving northeastward.
NORTH CAROLINA Davidson County	25	Late afternoon					4	4	Rain	Over 4 inches of rain caused flash flood in Lexington and vicinity; washouts, street damage and flooded basements in low areas.
MINNESOTA Minneapolis Hennepin County	25	7 p.m.					3		Rain and wind	Streets and basements flooded as storm sewers backed-up. Wind gusts up to 68 m.p.h., recorded at WBAS.
MINNESOTA Alden, Freeborn County	25	8 p.m.			0	0	3	3	Wind, hail, and tornado (suspected)	Trees uprooted, steel grain bin overturned, and tractor damaged. Growing crops damaged by hail. Farmer stated "it sounded like a bunch of bombers going over". Storm moved southeastward.
KANSAS Halls Summit, Coffey County	25	9:12 p.m.			0	0			Funnel aloft	Funnel cloud aloft sighted.
IOWA Winnebago County	25	9:30 p.m.					1	4	Hail	Crops destroyed.
MINNESOTA Norman County (central portion)	25	P.m.			0	0			Tornado (suspected)	Finley radar reported tornado. Trucker sighted funnel cloud.
MINNESOTA Southwestern half	25	P.m.							Hail	Loss reported in 15 western counties.
	25									Minor storms also reported at Pure Air, Mo.; near Coleridge, Nebr.; in Passaic County, N.J.; and at Lamont and Watonga, Okla.
MISSOURI Centerview, Johnson County	26	1 a.m.							Hail, wind and rain	Hail size of walnuts. Fruit trees, corn, wheat, and barley damaged.
MISSOURI Warrensburg area, Johnson County	26	1-1:30 a.m.			0	0			Funnel aloft and hail	Hail size of walnuts at Glendale, 8 miles southwest of Warrensburg. Funnel aloft 3 miles northeast.
MISSOURI Golden City Barton County	26	6:30 a.m.			1				Electrical and rain	Barn set afire by lightning. 1 man killed.
NEW JERSEY Union County	26	Midday				2			Electrical	2 golfers injured when struck by lightning. Both men treated for shock.
MARYLAND Baltimore	26	Afternoon			1	3			Electrical and rain	Youth killed as he took shelter from rain under tree on property of Maryland Training School Boys. 3 others stunned.
NEW JERSEY Maple Shade, Burlington County	26	3:30 p.m.			1	1			Electrical	Construction worker killed and another knocked unconscious when both struck by lightning.
MISSOURI Harrisonville, Cass County	26	4:30-7 p.m.							Rain and wind	3.63 inches of rain at Harrisonville from 4:30-7 p.m., caused local flooding.
NEBRASKA Chase County (western portion)	26	9:30-10:30 p.m.	16	*3			4	6	Hail	Hailstones 1 to 3 inches in diameter. Ground covered 2 to 4 inches deep. Storm moved southeastward.
NEBRASKA Dalton (southeast of), Cheyenne County	26	Evening	7	*2			1	5	Hail	
	26									Minor storms also reported at St. Charles, Mo.; in Bergen County, N. J.; at Bartlesville, Okla.; and at Watertown, Wis.
KANSAS Cheyenne and Rawlins Counties	26-27	Near midnight	20	*6					Hail	Hail fell over both counties. 1 strip in Cheyenne County from northwestern corner to central part which was the most damaging. Another strip extended from Yuma County, Colorado, to 6 miles southwest of St. Francis. Hail across central part of Rawlins County. Storm moved southeastward.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

JUNE 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
KANSAS South-central counties	26-27								Hail	Hail loss Clearing House records indicated many losses paid in Rooks, Pratt, Reno, Kingman, Harper, Sumner, and Cowley Counties for hailstorms on these dates.
TEXAS Galveston, Chambers, Jefferson, and Orange Counties	26-27				9	450	°7	C	Hurricane "Audrey"	Hurricane Audrey formed in southwestern Gulf on June 25 some 350 miles southeast of Brownsville. Storm moved northward, with storm center reaching Gulf Coast just east of Sabine Pass morning of June 27. 7 persons lost their lives in sinking of fishing boat M/V Koturah of Pensacola which was under tow in heavy seas off Galveston. 1 person drowned in heavy undertow at Galveston Beach on 26th and an electrician killed as he sought to repair high-voltage lines during storm at Orange. Hurricane rains extended northward in Texas along eastern tier of counties, but tapered off sharply as storm left immediate coastal area. Flooding largely local in nature from inadequate drainage. Storm rain totals were, Jefferson County Airport - Beaumont 7.57 inches; Port Arthur 5.75 inches; and Orange 5.10 inches. As storm moved northward in Gulf, tides 3 to 4 feet above normal in Corpus Christi - Port Aransas section which caused some minor damage to beach installations and roads. Tide of plus 6.0 occurred at Galveston at 4:35 a.m., June 27. This elevation caused water 6 to 12 inches in depth on parts of Galveston Municipal Airport. Extensive advance evacuation of persons from Bolivar Peninsula southwest of High Island and almost complete evacuation of persons from Sabine Pass section. Tide at Sabine Pass was plus 8.3. 2 miles of State Highway No. 87 east of High Island destroyed. Eye of storm passed east of Sabine Pass, moving northward, and City of Orange was in western half of eye between 9 and 10 a.m., June 27.
LOUISIANA Micheaud, Orleans Parish	27	10 a.m.		25	0	0	4	1	Tornado	Occurred during passage of hurricane. Seen on radar; moved northeastward.
NORTH DAKOTA Fargo (25 miles southwest of), Cass County	27	10:25 a.m.			0	0			Tornado (suspected)	Unconfirmed tornado on ground reported.
NORTH DAKOTA Grand Forks (60 miles northwest of), Grand Forks County	27	12:30 p.m.			0	0			Funnel aloft	Funnel cloud observed by Highway Patrol moving northwestward and dissipating.
MINNESOTA Kittson County	27	2 p.m.			0	0			Funnels aloft	Several funnel clouds observed. 1 near Hallock, 3 near Humboldt, and 2 by pilot of light plane.
NORTH DAKOTA Pembina (near), Pembina County	27	2 p.m.			0	0			Funnel aloft	
ALABAMA Ryland, Madison County	27	2:30 p.m.					4	1	Wind	School unroofed by wind during "howling windstorm" which lasted 20 minutes. Large smokestack also blown down across part of building.
NEBRASKA Between Holbrook and Arapahoe, Furnas County	27	2:55 p.m.			0	0			Funnel aloft	Reported by GOC.
ARIZONA Douglas, Cochise County	27	Afternoon			0	3	5	1	Dust devil	C-47 aircraft blown off runway on take-off and then destroyed by fire.
MINNESOTA Alexandria (20 miles north-northeast of), Douglas County	27	3 p.m.			0	0			Tornado (suspected)	Barn destroyed.
MINNESOTA Ottertail (2 miles east of), Otter Tail County	27	3 p.m.			0	0			Tornado	Funnel cloud reported touching ground.
NEW JERSEY Bergen and Passaic Counties	27	3-8 p.m.					4		Wind, electrical, and rain	Winds to 55 m.p.h., downed trees and utility poles leaving several communities without power for 6 hours or longer. Telephone service also disrupted. Lightning struck church and

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
NEW JERSEY (Cont'd.)										numerous houses. Heavy rain flooded storm sewers, streets, and highways in a few areas.
ARKANSAS El Dorado, Union County	27	3:45-4 p.m.					3	1	Hurricane Audrey	Minor roof damage reported in northeastern section of City. This was the only damage attributed to the hurricane in Arkansas and was limited to area only 600 x 900 feet in size. Highest wind at El Dorado Airport was 26 knots, with gusts to 37 knots at 5:58 p.m., and 26 knots with gusts to 35 knots at 7:58 p.m.
MICHIGAN Saginaw, Saginaw County	27	4:30 p.m.			0	0			Tornado	Funnel developed just southwest of Saginaw, but showed little movement and dissipated 1/2 hour later. Witnesses said funnel moving northeastward dipped to surface briefly over Tittabawassee River.
NEBRASKA Nuckolls and Thayer Counties	27	7 p.m.	10	Narrow	0	0	4	2	Tornado and funnels aloft	2 sets of farm buildings badly damaged. 4 other funnels observed in adjacent areas. Storm moved east-northeastward.
NEBRASKA Between Shickley and Davenport, Fillmore and Thayer Counties	27	7:05 p.m.			0	0			Tornado and funnels aloft	3 funnels moving northeastward reported by Highway Patrol, 1 touched ground.
NEBRASKA Crete (west of), Saline County	27	7:46 p.m.			0	0			Funnel aloft	Reported by Highway Patrol.
MISSISSIPPI Philadelphia, Neshoba County	27	8:30 p.m.	4	50	0	9	4	4	Tornado	3 homes destroyed, 5 badly damaged; stockyards unroofed; much minor damage. Tornado moved northward.
ILLINOIS Prairie City, McDonough County	27	9:30 p.m.					4		Electrical	Large barn and contents burned.
MISSISSIPPI Houston (4 miles north of), Chickasaw County	27	10:10 p.m.			0	0	4	2	Tornado	Trees uprooted, some roofing damage.
LOUISIANA Arnaudville, St. Landry Parish	27	10:30 p.m.	Short		0	0	4	1	Tornado	Occurred during passage of hurricane. Several homes damaged, trees uprooted. Tornado moved northeastward.
TENNESSEE Dyersburg (near), Dyer County	27	P.m.			0	0		1	Tornado	At Big Boy Junction, 7 miles west of Dyersburg, Tornado destroyed sawmill, barn, and several small buildings. Couple reported seeing tornado's tail skip along ground for a few seconds before pulling back up into clouds.
IOWA Cherokee and Ida Counties	27	Evening					1	4	Hail	Crops destroyed.
VERMONT AND MASSACHUSETTS Central portions	27	Evening					4	1	Rain and electrical	A few places struck by lightning, but most damage caused by locally torrential rains which caused many road washouts, landslides, local floods, etc. In Tunbridge, Vt., barn collapsed and garage seriously undermined due to raging waters.
MISSISSIPPI Kosciusko, Attala County	27				1		3		Wind	Man electrocuted when he tried to upright utility pole downed by windstorm.
	27									Minor storms also reported at Gadsden and Talladega, Ala.; Wilford, Idaho; and in Allentown and Wilkes Barre areas, Pa.
LOUISIANA Entire State	27-28	A.m. 27th - a.m. 28th			400	1000	8	7	Hurricane Audrey	Center of Hurricane Audrey moved inland over southwestern corner of Louisiana during morning of June 27, 1957, and plowed diagonally across State into northwestern Mississippi by midnight. Center passed over Vinton, DeRidder, Winnfield, and Monroe. Eye of hurricane was about 35 miles in diameter as it moved inland, gradually closing in until it lost its identity near Winnfield. Entire State swept by winds of hurricane and tides rose along entire coast. Highest winds and heaviest damage extended from Atchafalaya River westward into Texas and northward from coast to LaSalle Parish, mainly within eastern semicircle. As hurricane approached coast, sea water rose over low-lying shoreline reaching height of 10.6 feet above mean Gulf level at Cameron on

See footnotes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
LOUISIANA (Cont'd.)										eastern edge of eye. Winds of gale force extended far eastward and winds up to 105 m.p.h., churned sea water over Cameron and most of Vermilion Parishes and whipped through Calcasieu, Jeff Davis, Beauregard, and Allen Parishes. Winds of near hurricane force reported as far north as LaSalle Parish. Heaviest rains extended northeastward in diverging path from hurricane center from Cameron and Calcasieu Parishes to East Feliciana Parish and on into southwestern Mississippi. Hurricane rainfall exceeded 10 inches in Jeff Davis and Acadia Parishes. Estimated 4,500 homes destroyed or irreparably damaged, with 95 percent of homes in Cameron and lower Vermilion Parishes in this category. About 100,000 homes suffered varying but lesser damages, mainly to roofing, with 90 percent of homes in some towns west of Atchafalaya suffering roof damage. Structural damage widespread in area 70 miles eastward from center inland for 100 miles. Large acreage of rice inundated by salt water, while corn blown down and lost over State except extreme southeast and extreme northwest. Cotton suffered loss from water in heavy rain area. Estimated 50 million feet of timber destroyed, with heaviest losses in Jeff Davis, Allen, Evangeline, and LaSalle Parishes. 40 to 50 thousand head of cattle perished, mostly by drowning. Estimated 400 persons lost their lives in Cameron and Vermilion Parishes (latest count of bodies 311), mostly by drowning, while 1 died in Alexandria and 1 in Jonesville as result of hurricane. About 1,000 persons injured in Cameron, Vermilion, Calcasieu, Jeff Davis and Acadia Parishes. Total damages derived from following estimates: Rice, Corn, cotton, and truck crops $6,000,000; timber 10,000,000; cattle 5,000,000; communication and powerlines 2,000,000; oil installations 20,000,000; buildings, shipping, automobiles, farm equipment, etc. 75,000,000; fur-bearing animals 2,000,000.
MISSISSIPPI Entire State	27-28	Night 27th - a.m. 28th					6	6	Hurricane Audrey	Greatly-weakened hurricane Audrey moved across northern portion of Mississippi through Greenville, Minter City, Oxford, and Corinth during night. Highest recorded wind speed 52 m.p.h., at Jackson and Greenwood. While some damage occurred on immediate Gulf Coast from winds and tides, southeastern and northwestern corners of State received very little damage from hurricane. Elsewhere squally weather swept State, blowing down corn, cotton, and beans, uprooting trees, breaking TV antennas and windows, snapping communications and powerlines and damaging roofs. These squalls were localized, but widely scattered. Hurricane spawned 4 tornadoes. Heaviest rains occurred in southwestern corner (4 to 6 inches) from Woodville to Bay Springs as heavy rain squalls moved northeastward from southwestern Louisiana in line diverging from path of hurricane. Damages including $565,000 from 4 tornadoes, listed separately, are based on best available data as follows: Crops (cotton, corn, beans) $4,000,000; communications and powerlines 500,000; timber 1,000,000; buildings and other property 3,500,000.
ILLINOIS South-central portion	27-28	Night			2		6		Rain	Rainfall of 5 to 10 inches in area 20 to 40 miles wide from Carlinville and Mt. Olive eastward through Pana and Windsor to Paris and into Indiana. 10 to 13 inches in southwestern Edgar County. Slow runoff from level land reduced damage. At Paris, more than 10 inches of rain flooded sewerage and water facilities, destroying reservoir dike. Crop losses heavy.
ALABAMA Northwestern half	28	Midnight - noon			2	1	5	5	Hurricane Audrey	High winds did widespread minor damage to roofs, trees, TV antennas, etc., with no heavy concentrations of damage. Man killed by "live wire" downed by falling tree in Birmingham, and woman killed when bus overturned 20 miles southwest of Birmingham on wet shoulder. Woman injured when wind caused vehicle to run off road. Most notable local damage was at Leighton, Colbert County, where barn destroyed and several houses suffered roof damage in 15-minute squall at 3:30 to 4 a.m. Crop damage mostly to wheat, corn, and peaches.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons: Killed	Number of persons: Injured	Estimated damage by categories †: Property (exclusive of crops)	Estimated damage by categories †: Crops	Character of storm	Remarks
MISSISSIPPI Brooksville, Noxubee County	28	12:32 a.m.	10	50	1	10	5	4	Tornado	Touched down 2 miles southwest, lifted and down again in town; 4 homes destroyed, cheese plant demolished, and several homes badly damaged; corn blown down and other crops destroyed. Moved northeastward across open country.
MISSISSIPPI Clara, Wayne County	28	6:30 a.m.	10	50	0	0	5	3	Tornado	Touched ground several times before striking town of Clara and several times afterward. Several buildings demolished, numerous homes and brick school badly damaged. Tornado moved northeastward.
TENNESSEE Giles County	28	6:40 a.m.						1	Wind	Winds from dying Hurricane Audrey blew limbs from trees and blew down phone and powerlines.
ALABAMA Clarke County	28	7:30 a.m.			0	0			Tornado (suspected) and rain	Thomasville Times reported that many small fish fell at Magnolia Terminal, near Thomasville, during shower of rain. This report verified by cooperative observer at Thomasville. Crayfish and tiny frogs also part of precipitation. The country southwest of Thomasville and over most of Washington County is sparsely settled and heavily wooded, and tornado could easily escape notice.
TENNESSEE McMinnville, Warren County	28	8 a.m.				1	4	1	Wind	Strong winds from dying Hurricane Audrey collapsed walls of factory under construction. Workman slightly injured.
ALABAMA Whatley area, Clarke County	28	8:30 a.m.	3	100	0	0	3	2	Tornado	Skipping path, touched in 7 places. On Indian Ridge Road, just east of Whatley, severe damage to 2 houses. Garage and considerable timber destroyed. Tornado moved northeastward.
ALABAMA Oakhill, Wilcox County	28	8:50 a.m.	2	35-100	0	0	4	1	Tornado	Church reduced to rubble, and furnishings not distinguishable. Other damage was to timber. Tornado moved northeastward.
ALABAMA Montgomery and Lowndes Counties	28	9:35 a.m.	13	120	0	0	4	1	Tornado	Path northeastward from 3 miles south of Hayneville to about 3 miles southwest of Hope Hull. Path mostly through pasture and wood land, with damage mostly to houses and barns. Man in house which was damaged beyond repair said house at the time it was hit was filled and surrounded by dark mist which looked like smoke.
ALABAMA Conecuh and Butler Counties	28	9:45 a.m.	20	150	0	0	5	3	Tornado	Tornado path northeastward, skipping from 4 miles southeast of Skinnerton, Conecuh County, to about 4 miles west-southwest of Liberty, Butler County. Path variable in width, ranging up to 400 yards when in weakened condition. Worst damage 3 miles south of Butler Springs, where 7 houses destroyed.
ALABAMA Excel, Monroe County	28	9:51 a.m.			0	0			Funnel aloft	Funnel cloud moved northeastward over town about 5 minutes before it was hit by tornado.
ALABAMA Monroe County	28	9:55 a.m.	10	100	0	4	5	3	Tornado	Began 1 mile south of Frisco City, moved northeastward. Skipping path ended near Bermuda. Most damage at Excel, where 4 persons injured. Timber damage in Bermuda area about $4,000. Eyewitness living about 200 yards from path of storm told of seeing cloud pass over his house about 5 minutes earlier.
TENNESSEE Cleveland, Bradley County	28	10 a.m.			1	1		1	Wind	Strong winds from dying Hurricane Audrey blew down 12-foot brick wall at construction project, killing 1 workman and injuring another.
ALABAMA Lowndes and Montgomery Counties	28	10-11 a.m.	35	150	0	8	5	3	Tornado	Path skipping, and at times rather broad, with scattered fallen trees occasionally as far as 200 yards from center of path. About $60,000 of total damage was at Devenport, on Highway 331, where all injuries occurred. Path began about 2 miles south of Fort Deposit, moved northeastward, and ended at Sprague Junction. Storm reached Sprague Junction at 11 a.m., about an hour after its beginning.
ALABAMA Montgomery County	28	10:03 a.m.			0	0			Funnel aloft	Eastern Air Lines plane reported tornado cloud west of Montgomery spotted by radar.
ALABAMA Butler County	28	10:15 a.m.	14	125	0	0	5	3	Tornado	Tornado moved northeastward. Path began about 6 miles southwest of Greenville and ended about 6 miles east-northeast of city. Bulk of damage to junior college just southeast of Greenville and in Kolb City, south-southwest of Greenville.
ALABAMA Conecuh County	28	10:25 a.m.	10	150	0	0	4	3	Tornado	Storm first sighted 4 miles west of Middleton Airport, Evergreen. Path began 5 miles west of Evergreen, and passed northeastward to 1-1/2

See footnotes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
ALABAMA (Cont'd.)										miles north of city. Path through woods and fields, on ground about 50 percent of time. House and store destroyed and barn damaged.
ALABAMA Conecuh, Covington, and Butler Counties	28	11 a.m.	12	200	0	2	4	2	Tornado	Began in Conecuh County, about 1-1/2 miles southwest of Brooke, Covington County, moved northeastward, and ended near Oaky Streak, Butler County. Path skipping. About $30,000 of damage in Brooke Community.
ALABAMA Crenshaw County	28	11:50 a.m.			0	0			Tornado	Reported by Highway Patrol who followed storm in progress moving northeastward toward Luverne. Sparsely-settled unproductive country, with damage confined to woods.
ALABAMA Conecuh County	28	Morning	1	Narrow	0	0	3	1	Tornado	Aerial inspection of path of tornado near Middleton Airport listed above revealed path of this storm about 500 yards northwest of main path being tracked. Barn and some timber destroyed. Tornado moved northeastward.
ALABAMA Montgomery County	28	Morning	Short	100	0	0	3	1	Tornado	Short path of fallen trees lying in opposite directions to ones on other side of path, across U.S. Highway 331, 1 mile north of Sellers. Tornado moved northeastward.
ALABAMA Montgomery County	28	Morning	5	150	0	0	3	1	Tornado	Tornado crossed U.S. Highway 231, then crossed U.S. 82 4 miles west-northwest of Downing, and ended about 3 miles northwest of Downing. Path northeastward through woods and pastures. House and barn destroyed. Path apparently on ground about 75 percent of time.
GEORGIA Most of State	28	All day					(4)	(4)	Wind, rain, and electrical	Strong winds and heavy rains associated with fringe affects of Hurricane Audrey caused minor but widespread damage over most of Georgia. Some areas hit by severe thunderstorms, causing even stronger winds. Damage to crops included blown over corn and peaches blown from trees. Many roofs damaged and electric and telephone services disrupted for thousands of people by falling trees and branches. North Georgia hardest hit, but extensive damage suffered as far south as Albany, Tifton, Fitzgerald, and Augusta.
OHIO Entire State	28	All day							Rain	Hurricane Audrey dropped large amounts of rain over State. Amounts greatest in broad band oriented southwest to northeast across middle of State where averages exceeded 2 inches and ranged locally to more than 4 inches. Smallest amounts, generally less than 1 inch fell in southeast. It was generally an all-day rain ending in early evening.
ALABAMA Barbour County	28	12:30 p.m.			0	0			Funnel aloft	Passed about 2 miles north of path of tornado which hit in late afternoon. Funnel cloud seen near Mt. Andrew moving northeastward.
NEBRASKA Sheridan County (northeastern portion)	28	Afternoon	20	*1			2	5	Hail	Crop losses 10 to 90 percent in storm area. Storm moved northeastward.
NORTH CAROLINA Eastern portion	28	Afternoon					5	4	Wind	Violent local thunderstorms scattered over eastern half of State, some damage most counties.
SOUTH CAROLINA Scattered areas	28	Afternoon			1	10	5	5	Electrical, wind, and rain	Series of severe local thunderstorms, apparently associated with squall line, moved northeastward across State. Minor damage widespread, with more extensive damage in Columbia area and Beaufort. Some of heavier damage reported included: at Columbia, 6 injured, power and communications disrupted; at Beaufort, severe storm lifted 2 trailers 50 feet, injured 1 person; at McColl, 1 injured; at Anderson, 1 injured; at Sumter, 1 injured; at Spartanburg, Barnwell, Walterboro, Florence, Olanta, McCall, Greenville, Cheraw, Bennettsville, Moncks Corner, Darlington, Timmonsville, Bishopville, Yemassee, Kingstree, Lake City, and Orangeburg damage reported to roofs, powerlines, etc., mainly resulting from trees felled by wind.
ALABAMA Barbour County	28	5:45 p.m.	14	100	0	1	4	2	Tornado	Began about 8 miles northeast of Brundidge. Last trace of it was when it passed over Batesville, without doing any damage. Path was northeastward, skipping over sparsely-settled country. 2 houses, 4 barns, other small buildings, and considerable timber destroyed.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
VIRGINIA Richmond area, Henrico County	28	8:27 p.m.							Wind	Severe thunderstorm with high winds. Trees and utility lines downed. Wind reached 56 m.p.h., at WBAS, Richmond.
ARIZONA Willcox, Cochise County	28	Evening					1		Hail	Hail caused heavy crop damage.
COLORADO	28						5		Flooding	Warm temperatures caused rapid snow melt in the mountains, resulting in high water. Low land inundated and bridges and roads damaged by flooding. Buena Vista estimated $100,000 damage, when Cottonwood Creek overflowed its banks. Peak apparently reached night of June 28. $100,000 property damage at Buena Vista, other areas not estimated.
FLORIDA Lake Worth, Palm Beach County	28				0	0			Wind or tornado (suspected)	Damage minor, tornadic action suspected.
INDIANA Cross Plains, Ripley County	28				0	0	4	1	Tornado	Tornado damaged several houses and a school.
KENTUCKY Madison County	28				0	0	3		Wind and tornado (suspected)	Residence damaged and 2 outbuildings demolished. Large tree uprooted. Funnel reported sighted, but damage does not appear to be such as caused by tornado.
TENNESSEE Claiborne County	28						1		Wind	Winds from dying Hurricane Audrey resulted in severe crop damage.
TENNESSEE Great Smoky Mountains National Park	28							1	Wind	Strong winds from dying Hurricane Audrey uprooted many trees, causing severe damage.
TENNESSEE Chattanooga Hamilton County	28							1	Wind	Strong winds from dying Hurricane Audrey shattered plate-glass windows, blew down trees, and caused much damage to powerlines.
TENNESSEE Sweetwater, Monroe County	28							1	Wind	Strong winds from dying Hurricane Audrey blew down north wall of new concrete-block building, blew roofing from buildings, and blew down limbs and trees.
TENNESSEE Conasauga, Polk County	28					1		1	Wind	Construction worker injured by wind-blown plank as remnants of Hurricane Audrey passed through.
TENNESSEE Wayne County	28						1		Wind	Winds from dying Hurricane Audrey resulted in severe crop damage.
	28									Minor storms also reported at Hallock and Kennedy, Minn.; and Decatur, Tenn.
PENNSYLVANIA Statewide	28-29	P.m. 28th - a.m. 29th					5	3	Rain, wind, and hail	Hurricane spawned thunderstorms caused local flooding mostly in west. Winds which reached 65 m.p.h., at Pittsburgh and somewhat lesser speeds elsewhere played havoc with trees and utility lines as well as several house roofs throughout State. In Philadelphia, tent at outdoor music festival extensively damaged, while winds downed many boy scout tents at Valley Forge. 1/4-inch hail fell near Williamsport, resulting in some crop damage. Storm moved northeastward.
NEW YORK	28-29	P.m. 28th - p.m. 29th			9		5	3	Wind and rain	Reintensified Hurricane Audrey brushed State with resulting wind damage. Highest winds in most places on 29th after passing to north of center. 2 persons drowned in Oneida Lake when boat disappeared, 2 drowned while swimming during high winds, 1 washed from capsized boat near Coney Island, 1 Jet pilot killed in crash, 1 electrocuted by fallen live wire, 2 killed in automobile accident caused by skidding on wet pavement. Scores of minor injuries, but few major injuries. Village of Black River without water from tree falling to snap hydrant. 125,000 customers lost power, as hundreds of breaks resulted from falling trees and limbs. Some crop damage from winds, but moisture on dry soil likely of greater benefit. Some building damage from falling trees and limbs, but greatest single loss item would be power company loss through fallen wires. Large circus tent blown down near Skaneateles.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
WEST VIRGINIA Northern and central portions	28-29						4	2	Wind and rain	High winds attending passage of Audrey evening and night of 28th continued on 29th as result of regeneration of storm. Electrical utilities disrupted in a few places, trees damaged, at Stewart Airport near Parkersburg 2-place Cessna airplane wrenched from its moorings and damaged to extent of $10,000 to $15,000, 8 heavy plate-glass windows blown out in airport observation room, and some damage done to hangar door and shed. Storm moved northeastward.
INDIANA Central Portion	28-30				6		6	7	Rain	Up to 10 inches of rain on June 28 and 29 resulted in floods in central Indiana, drowned 6 persons, damaged 1,282 homes, flooded 125 business places, washed away approximately 1/2 million acres of crops, and knocked out highway and railroad bridges. 8 to 10 inches of rain fell in area from Rockville to Whitestown, northwest of Indianapolis. Areas flooded which were unknown to have been flooded before. Families vacated homes along streams in central Indiana from Vigo and Vermillion Counties in west to Jay County in east. American Red Cross reported that 1,010 persons given aid in 13 counties, 1,282 homes damaged, and 125 business places suffered losses. Dollar value of loss estimated at $1,250,000 to homes and business places. 6 deaths attributed to high water. Girl drowned while wading at edge of river in Indianapolis. Man attempting to rescue girl also drowned. 2 women drowned when bus slipped off road into creek at Zionsville. Other passengers escaped through roof of bus. Man drowned in his basement, attempting to procure a tool. Man drowned in rescue operation. Losses by railroads amounted to $1,200,000. 18-car work train of Pennsylvania Railroad fell into Big Walnut Creek near Reelsville when bridge collapsed after being weakened by flood water. Bridges and tracks washed out badly. More than 20 state and federal highways closed by flood water. Many bridges and roads washed out. About 1,000,000 acres of crops flooded.
CONNECTICUT AND RHODE ISLAND	29	2-8 a.m.							Wind	Winds of 40 m.p.h., and gusts of 50 m.p.h., from remains of hurricane Audrey tore small boats from moorings and drove 2 barges onto beach in Long Island Sound and Narragansett Bay. Falling limbs caused widespread but brief power failures in affected areas of both states. Winds shifted tent poles, causing postponement of Musical Theatre performance in Warwich, R.I., and large canopy of restaurant blown down at Coventry, R.I.
KANSAS Seward County	29	2:15 a.m.			0	0			Wind and funnels aloft	High wind tore roof from Power and Light Building in Liberal and a number of trees broken. 3 funnels aloft reported.
KANSAS Marshall County	29	Early a.m.							Electrical	Fire resulting from lightning caused loss of several thousand dollars to store building and contents.
KANSAS Shawnee County	29	7:20 a.m.			0	0			Funnel aloft	Small funnel cloud aloft reported from near Big Springs, 12 miles east of Topeka.
MISSOURI Chillicothe, Livingston County	29	8 a.m.						3	Hail, wind, rain, and Electrical	Many hailstones size of golf balls; some 9 inches in circumference. Windows, roofs, and many neon signs damaged.
NEBRASKA Brainard, Butler County	29	8:45 a.m.					2	2	Hail	Hailstones 2 inches in diameter.
VERMONT AND MASSACHUSETTS	29	All day				1	4	1	Wind	Principal damage resulted from wind-felled trees bringing down telephone and electric powerlines. Gust of 80 m.p.h., clocked at Army Aircraft Center at St. Albans. Storm was tail-end effect of Hurricane Audrey. Felled powerline seriously burned man at Millers Falls, Mass.
MISSOURI Harg, Boone County	29	12:30 p.m.			0	0			Funnel aloft	Witnesses heard roaring sound and saw apparent funnel.
MISSOURI Ripley County	29	Late afternoon							Rain, electrical, hail, and wind	1.41 inches of rain in 20 minutes from 5:40-6 p.m., at Doniphan. Minor damage to homes, trees, power- and phone lines.
ARIZONA Marana and Tucson areas, Pima County	29	5 p.m.	23				5	5	Hail, wind, and dust	Hail damaged crops near Marana and wind damaged homes in Tucson suburb. Storm moved northwestward.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MISSOURI Kansas City, Jackson County	29	6:50-8 p.m.							Rain, wind, and electrical	0.95 inches of rain at WBAS in 30 minutes. Local flooding. Power- and phone lines downed. Several homes hit by lightning.
WEST VIRGINIA Elkins, Randolph County	29	7.30 p.m.	1/2-1/4	30	0	0	5	1	Tornado and rain	Tornado moved south-southwestward. Houses and business buildings unroofed, trees uprooted and limbs blown off, electrical services disrupted. Greenish cloud formation reported, also funnel-shaped cloud. Believed this tornado resulted from or was associated with intensification of Hurricane Audrey as it moved up Ohio Valley.
TENNESSEE Gibson County	29	8 p.m.				1			Wind and electrical	Wind, accompanying severe electrical storm, caused extensive damage to crops, roofs, trees, and TV antennas. At Trenton, automobile agency partially unroofed and lost portion of brick annex. 1 man injured by flying debris.
KANSAS Lyon County	29	10-11:15 p.m.	12	*4-1/2			3	4	Winds	Crops suffered mostly from severe winds across central part of county. Storm moved eastward.
TENNESSEE Ridgely, Lake County	29	P.m.						1	Rain	Heavy rains brought several inches of water into downtown buildings.
KANSAS Tribune (8 miles west of), Greeley County	29	Evening			0	0			Tornado	Tornado touched ground in open country.
KANSAS Collyer, Trego County	29	Evening			0	0			Tornado	Small tornado caused minor damages.
NEBRASKA Nuckolls County	29	Night					1	4	Hail	In scattered areas over County.
KANSAS South-central and north-central counties	29								Hail	Hail Loss Clearing House reports indicated many claims paid in Republic, Washington, Clay, Pottowatomie, and Dickinson Counties in north-central. Southern counties with losses were Barton, Rice, Stafford, Reno, Kingman, Sedgwick, Harper, Sumner, and Cowley.
	29									Minor storms also reported near Herington, Kans.; at Flat River, Potosi, and Salem, Mo.; in Pawnee County, Nebr.; and at Paris, Tenn.
MISSOURI Callaway County	29-30	3 p.m. - 1:30 a.m.	20	*10					Rain	Very heavy rains in northern Calloway County. Highway 40 blocked east of Kingdom City. Unofficial 7.50 inches of rain near Williamsburg. McCredie Experimental farm had 4.26 inches. Much soil erosion and local flooding.
TENNESSEE Dyersburg, Newbern, Ayers, Emmaus, Lane, and Maxey, Dyer County	29-30	6:29 p.m. - 6:30 a.m.			2	1			Wind	At Dyersburg, limbs and trees blown down, causing extensive damage to power- and phone lines and damage to several houses. 2 boys electrocuted upon contact with fallen wires. Several plate-glass windows blown out, 1 of which resulted in severe arm injury. At Newbern, many trees and limbs blown down, causing major damage to 2 homes and 2 automobiles. At Ayers, several roofs and singles blown off, TV antennas twisted, and power- and phone lines damaged. At Emmaus, many trees, garage, and barn blown down. At Lane and in Maxey community, many farm buildings blown down.
MISSOURI Gasconade, Franklin, Osage, and Montgomery Counties	29-30	8 p.m.- 2 a.m.					5	4	Rain and electrical	Unusually heavy lightning. Frene Creek at Hermann crested higher than 1952 flood. 3.00 inches at Chamois, 6.00 at Rhineland, 8.00 at Berger, and 8.50 at Bay. Heavy damage to homes and business buildings from flooding. Many fields badly eroded and farm ponds washed out. Many highways blocked. Train service delayed by washed-out tracks. Storm moved northeastward.
MISSOURI Gasconade, Franklin, Iron, Jefferson, Washington, Bollinger and St. Francois Counties	29-30				7				Rain and electrical	Family of 7 drowned near Ironton as Pilot Knob Creek rose around their home. Sample rainfall totals for this storm; Hermann 9.00, Potosi 7.00, Union 3.50, Sullivan 6.08, Owensville 4.42, Farmington 5.42, and Marble Hill 5.05 inches. Heavy damage to roads, bridges, homes, business buildings, and fields by flooding.
TENNESSEE Union City Obion County	30	4 a.m.						1	Rain	Heavy rains caused flooding of 11 homes and several business houses. Damage estimated in thousands of dollars.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MISSOURI Bootheel area	30	4-5 a.m.							Wind, rain, electrical, and hail	Squall line moved through Bootheel area, accompanied by severe thunderstorm activity. CAA Station at Malden had gusts to 70 m.p.h. Rains of 2.50 to 4.50 inches with storm. Houses, trees, farm buildings, power- and phone lines damaged over wide area in Bootheel.
MISSOURI Caruthersville area, Pemiscot County	30	6-8 a.m.			0	0	4		Funnels aloft, wind, rain, and electrical	Unconfirmed funnels observed near Caruthersville.
OKLAHOMA Woodward (north and east of), Woodward County	30	A.m.							Wind	Farm buildings and trees demolished or severely damaged.
OKLAHOMA Okeene area, Blaine County	30	A.m.							Wind and electrical	Outbuildings damaged and trees and TV antennas broken in and around Okeene. Lightning caused structural damage to church and power plant had $1500 damage to switchboard.
SOUTH DAKOTA Gettysburg (18 miles northwest of), Potter County	30	Noon				1	2		Electrical	Lightning injured man who was touching water faucet. Cow killed.
NORTH DAKOTA Williston (20 miles north of), Williams County	30	3 p.m.			0	0			Funnel aloft	Reported moving east-northeastward.
CONNECTICUT AND RHODE ISLAND	30	Afternoon				7			Electrical, wind, and hail	High winds accompanied squalls, mostly along Fairfield County coast of Long Island Sound and Narragansett Bay. Two 19-foot sailboats capsized endangering lives of 7 persons. Barge turned over in Bridgeport Harbor. Berthing of aircraft carrier delayed at Quonset Naval Station, R. I. Radio and TV stations interrupted a few hours by power failures in Rhode Island. Light hail reported in Fairfield County, Conn., but crop damage negligible.
MASSACHUSETTS AND NEW HAMPSHIRE	30	Afternoon			1	7	3	3	Wind, electrical, and hail	Scores of small boats capsized by thundersqualls in Massachusetts and Cape Cod Bays. Many timely rescues. Some hail damage to vegetable gardens in Worcester County, Mass. Storm's single fatality occurred when mast of yawl snapped in wind and struck victim. Youth struck by lightning "revived" 5 minutes after heart stopped beating. Lightning strikes in many parts of storm area.
TEXAS Dalhart (25 miles southwest of), Hartley County	30	5 p.m.			0	0			Funnel aloft	
SOUTH DAKOTA South-central portion	30	5-11 p.m.			0	1	4	5	Tornado (suspected), wind, hail, rain, and electrical	Farm buildings 4 miles west of Winner shattered, apparently by tornado. Other high winds moved across Tripp County accompanied by hail that caused serious crop damage. Baseball-sized stones were reported with 6-1/2 inch rains along White River, about 6 p.m. Other large hailstones fell south of Winner. Over 17 buildings in area damaged or destroyed. 2 men swept away in flash flood, were rescued. Much of Gregory flooded by heavy rain, with a number of basements completely filled. Lightning injured a man and killed livestock.
KANSAS Seward County	30	7:45 p.m.			0	0			Wind and funnel aloft	Some minor damages from high winds. 1 funnel observed aloft over Liberal. Storm moved northeastward.
NORTH DAKOTA Dickinson (30 miles southwest of), Slope County	30	7:57 p.m.			0	0			Funnel aloft	Lowered, then receded into cloud.
OKLAHOMA Panhandle and Northwestern Counties	30	8 p.m. - midnight							Wind, rain, hail, and electrical	Severe squall line with winds measured up to 90 m.p.h., heavy rain, and spotted hail swept across area. Crops flattened and utilities and trees damaged. Some buildings damaged. Barn worth $6,000 destroyed near Alva.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

JUNE 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons Killed	Number of persons Injured	Estimated damage by categories † Property (exclusive of crops)	Estimated damage by categories † Crops	Character of storm	Remarks
KANSAS Attica (12 miles southeast of), Harper County	30	11:05 p.m.			0	0			Tornado	Tornado on ground moving northeastward reported by Ground Observer Corps.
MISSOURI Grubville, Jefferson County	30								Rain	Flash flood marooned 14 persons who were fishing on tributary of Big River near Grubville; they clung to trees 9 hours before being rescued.
TENNESSEE Rives, Obion County	30							1	Rain	Heavy rains caused breaking of levee at about noon. Streets and several homes flooded.
VIRGINIA Williamsburg area, James City County	30						3		Wind and hail	Severe thunderstorm accompanied by winds estimated to 60 m.p.h., and hail; some stones as large as hens' eggs. Considerable damage to Jamestown Corporation's Amphitheatre where 25-foot 'prop' ship sunk. A number of trees downed in area. Some hail damage to buildings.
	30									Minor storms also reported near Springview and in Garden County, Nebr.; at Cedardale and Minco, Okla.; in Aiken and Lexington Counties, S. C.; at Athens and Franklin, Tenn.; and Mingo, W. Va.
DELAYED REPORTS										
NORTH CAROLINA Brunswick, Duplin, Jones, Pender, Edgecombe, Lenoir, Sampson, Cumberland, Hoke, Scotland, and Stanly Counties	6	Afternoon					3	5	Hail	Widespread hail in connection with frontal thundershowers. Most damage to tobacco in fields, mostly in Coastal Plains.
NORTH CAROLINA Jones, Scotland, and Henderson Counties	8	Afternoon						4	Hail	Scattered damage to corn and tobacco in widely separate areas.
NORTH CAROLINA Madison County	10	2:30 p.m.						3	Hail	Light scattered damage over 3 square miles.
NORTH CAROLINA Greene County	11	4 p.m.						4	Hail	Heavy damage to tobacco in limited area.
NORTH CAROLINA Jones, Pender, Hoke, Sampson, Richmond, and Ashe Counties	13	Afternoon					4	5	Hail	Heavy damage to tobacco in Hoke and Sampson Counties, scattered damage elsewhere.
NEW YORK Germantown to Livingston, Columbia County	14	5:30-5:50 p.m	10	*3					Hail, rain, and electrical	Hail averaging 1/2 inch, maximum 1-1/2 inches, completely covered ground. No estimates of damage received. Storm moved northeastward.
NORTH CAROLINA Cumberland County	15	5 p.m.						4	Hail	Damage mostly to tobacco in fields.
MARYLAND Mount Airy area Carroll County	16						4	1	Electrical	Lightning destroyed barn valued at $10,000 and set fire to dwelling with damages estimated at $500.
NORTH CAROLINA Beaufort County	17	5:15 p.m.					3	4	Hail	Corn and tobacco damaged.
NORTH CAROLINA Bertie, Hartford, and Martin Counties	18	2-5 p.m.						4	Hail	Tobacco and some corn damaged.
VIRGINIA Independence area, Grayson County	18	Afternoon					3		Rain	Foundation block wall of nearly finished house pushed out by mud and water from cloudburst and house collapsed into basement excavation. 10 persons in house escaped injury. House had to be taken apart and rebuilt.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MARYLAND Royal Oak and Easton, Talbot County	18								Rain and hail	Very severe thunderstorm struck area between Royal Oak and Easton, accompanied by heavy rainfall and hail up to 2 inches in diameter. Hail confined to narrow path about 10 miles long.
NORTH CAROLINA Jones, Lenoir, Lee, Robeson, Wilson, Caswell, Person, Bertie, and Alamance Counties	19	Afternoon					3	4	Hail	Widespread hail damage, mostly to tobacco in fields.
NORTH CAROLINA Durham County	20	3 p.m.						3	Hail	Tobacco and small grains damaged.
COLORADO Wages area, Yuma County	21	1:15 a.m.			0	0			Tornado	Tornado damaged buildings on 2 farms in Wages area. 2 steel granaries destroyed, windows pushed out of house, causing damage to interior.
COLORADO Baca County	22-23	Night 22d - early a.m 23d			0	0			Tornado, rain, and hail	Tornado hit ranch southwest of Campo, demolishing barn and chickenhouse. Heavy rain and flooding of row crops. Spotted hail damage in southeastern Baca County.
COLORADO Southwestern portion	25-30								Rain	Heavy rain of 25th and 26th above Vallecito Dam filled dam to overflowing, causing flooding in Pine River Valley from 28th through 30th. Water system at Ignacio heavily damaged, approaches to bridges washed away near Bayfield and many families evacuated from their homes.
NEW YORK Pleasant Valley, Dutchess County	27	6-7 p.m.	1/2	440				4	Hail	Hail fell over about 50 to 60 acres of land which included portion of fruit orchard. 15 to 20 acres of orchard, hit with estimated $10,000 damage. Storm moved northeastward
COLORADO Holly, Prowers County	29	Afternoon					3		Wind and hail	High winds showing evidence of cyclonic movement blew out windows, tore down TV antennas and caused other minor damage. No damage by hail reported.
COLORADO La Junta (28 miles northeast of), Otero County	29	5:35 p.m.			0	0			Funnel aloft	Funnel cloud sighted.
VIRGINIA Craddockville-Belle Haven-Quinby area, Accomack County	30	2-2:30 p.m.	10	*5		12			Hail	Hailstones egg-shaped up to 2 inches in length. More than 5,000 windows broken. Automobiles, roofs, and boats damaged. Extensive damage to crops, especially tomatoes and sweet corn. About a dozen persons painfully but not seriously injured. Storm moved eastward.
COLORADO Northeastern portion	30	Afternoon			0	0			Tornadoes, hail, and rain	2 tornadoes in Cheyenne County, 1 north of Firstview completely destroyed barn. The other 16 miles southeast of Cheyenne Wells destroyed barn and did minor damage around farm. Heavy rain and some hail accompanied storm. Same afternoon, twister in vicinity of Stratton tore limbs off trees, upset hay racks and other farm implements. It was accompanied by heavy rain and some hail. Hail did considerable damage to crops in eastern Logan and Phillips Counties in Fleming and Haxtun areas. In Yuma County, tornado did extensive damage to farm southwest of Eckley by demolishing barn, damaging house, blowing down windmill, and uprooting trees.
SOUTH CAROLINA Marion (2 miles east of), Marion County	30	Afternoon				1	3	1	Electrical	Lightning burned home. Storm moved northeastward.
NORTH CAROLINA Anson County	30	3:30 p.m.						3	Hail	Cotton crop damaged.
SOUTH CAROLINA Gapway Community, Marion County	30	6 p.m.	2	Narrow	0	0	3	3	Tornado	Tornado moving southeastward destroyed barn, struck another, and caused considerable damage to field of tobacco.

* Miles instead of yards.
** Yards instead of miles.
° Includes crop damage.
C Crop damage.
† Storm damages are placed in categories varying from 1 to 9 as follows:
1 Less than $50
2 $50 to $500
3 $500 to $5,000
4 $5,000 to $50,000
5 $50,000 to $500,000
6 $500,000 to $5,000,000
7 $5,000,000 to $50,000,000
8 $50,000,000 to $500,000,000
9 $500,000,000 to $5,000,000,000.

GENERAL SUMMARY OF RIVER AND FLOOD CONDITIONS

JUNE 1957

Record to near record floods occurred in several drainage areas at different times during the month. The overflows in the Saline, Solomon, Republican, and Blue River Basins were the most widespread in the past 6 years. One of the most severe floods on record occurred on Skunk Creek and the Big Sioux River in South Dakota. It was the highest flood in Sioux Falls, S. Dak., in the last 50 to 75 years. Record to near record floods occurred in the Minnesota River Drainage due to excessive rains. Several streams in the Colorado Basin in Colorado reached record to near record stages during the 1957 "spring runoff". A record crest occurred on the Atchafalaya due to wind and tide effects from hurricane "Audrey". Severe flash flood occurred in the St. Louis, Mo., area with the loss of 10 lives.

ST. LAWRENCE DRAINAGE

The only flooding in the St. Lawrence Drainage during the month occurred on the St. Marys River at Decatur, Ind., on the 29th and 30th. The flooding was light and no damages were reported. The monthly total of 6.67 inches of precipitation recorded at Ft. Wayne, Ind., during June was the greatest on record since 1911. It was 3.11 inches above normal.

ATLANTIC SLOPE DRAINAGE

Serious flash flooding occurred on the extreme upper reaches of the White River in Vermont on the 27th due to locally heavy rain. The flooding was local, as a few miles downstream at Chelsea, Vt.; no flooding was reported.

Minor flooding occurred on the Cape Fear River at Elizabethtown, N. C., on the 10th and 11th from the numerous showers and thundershowers during the first 10 days of June. Precipitation during that period averaged 3 inches.

General rains of from 2 to 4.5 inches on the 4th and 5th over the Yadkin River Basin caused some minor flash flooding on small streams in the Carolinas. Additional rain on the 8th and 9th of from 1 to 2.5 inches filled the reservoirs and some spilling resulted. The Rocky River at Norwood, N. C., rose rapidly during the night of the 9th from a stage of 4.8 feet to 19.0 feet from rain that averaged 2.5 inches over the headwaters. No damage was reported as only the very low unoccupied areas were inundated for a few hours.

Flooding along the Broad River in South Carolina and the Catawba in North Carolina was due to rains of up to 5 inches in the headwaters from the 4th to the 6th. No damage was reported.

The Satilla River at Waycross, Ga., exceeded flood stage by 1.1 feet on the 17th and remained above flood stage for a total of 5 days. No damage of any consequence resulted.

EAST GULF OF MEXICO DRAINAGE

Heavy rainfall on the 28th and 29th associated with hurricane "Audrey" caused flash floods on small streams in several east-central Alabama Counties. Streets and roads were inundated for several hours and yards and homes were flooded. Considerable damage was reported to crops and farmlands. No floods occurred along the main rivers in Alabama.

The slight overflow of Oldtown Creek at Tupelo, Miss., on the 5th was due to locally heavy rains. No damage was reported.

Heavy rains from hurricane "Audrey" on the night of the 27th produced local flooding on the Pearl River at Monticello, Miss., on the 29th and 30th. No damage was reported.

MISSISSIPPI SYSTEM

Upper Mississippi Basin.--Minor flooding developed on Leech Lake River in the reach below Leech Lake Dam and Mud Lake, Minn., due to the failure of part of Leech Lake Dam on the evening of the 4th. This dam was undergoing repair at the time of the break. Closure of the break was completed on the 27th. No flooding occurred along the main stem of the Mississippi River from the high flow coming out of the Leech Lake River. The highest stage reached at Aitkin, Minn., on the 29th was 8.0 feet (flood stage 12 feet).

The severe flooding on the Crow River at Rockford, Minn., beginning on June 22 was due to heavy rain (5 inches) on the 21st and 22d. Runoff was heavy as this storm was preceded by 1- to 3-inch rainfall amounts on the 16th and 17th. The flooding in the reach at and above Rockford, Minn., was greater than in April 1952. In the reach below it equalled or was slightly lower than in 1952. The flooding on the Rum River at St. Francis, Minn., was comparatively light.

The record to near record flooding in streams in the Minnesota River Basin developed from the excessive rains (8 to 10+ inches) during the 24-hour period ending on the morning of the 17th. The storm that produced these rains moved into southwestern and central Minnesota early on the morning of the 16th. The heaviest amounts occurred between 4 p.m. of the 16th and the early morning of the 17th. Several 24-hour rainfall records were broken. For example the previous 24-hour record at Marshall, Minn., of 3.35 inches established in 1946 was topped by a new 24-hour record of 8.07 inches. At Montevideo, Minn., the old record of 3.75 inches in 1926 was topped by a new record of 7.3 inches. The runoff from these rains was heavy and the height of the flood in the area of heaviest rainfall equaled and in many instances was much greater than the April 1952 and the April 1951 floods which were all time maximum floods for most locations. As the crest of the Minnesota River was approaching New Ulm, Minn., on the 21st, another heavy rainstorm fell over the flooded area in southwestern and central Minnesota. The rainfall amounts were again excessive with the heaviest amount of 5.38 inches reported at Coon Rapids, just north of Minneapolis. These rains resulted not only in another flood rise at Marshall and other tributaries of the Minnesota River but also to and along the Minnesota River from Mankato to St. Paul, Minn. The only flooding along the main stem of the Mississippi was at St. Paul. Isohyetal maps showing the areas affected are given in figures 1 and 2. The accompanying Comparative Flood stages table depicts the severity of this flood.

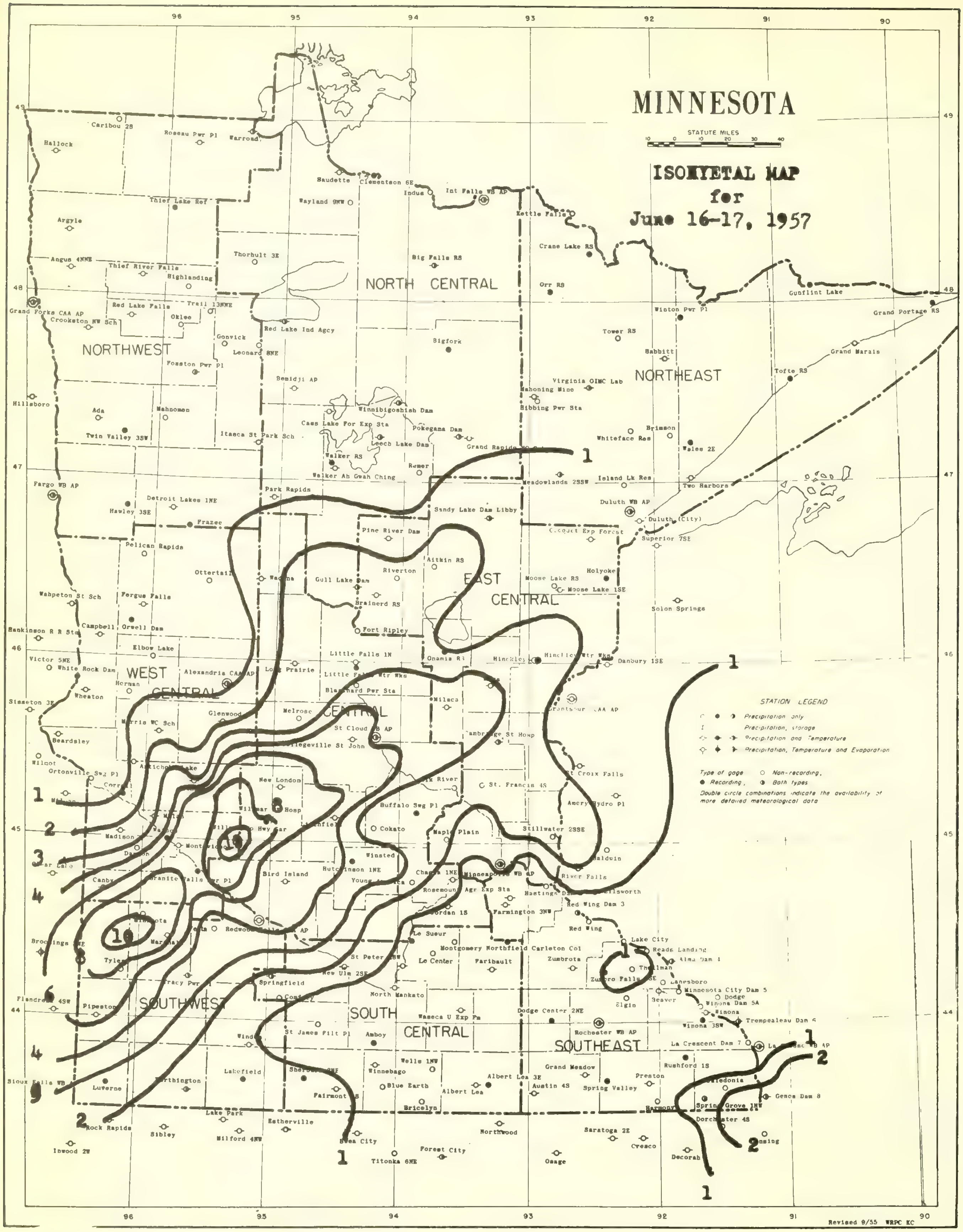

Figure 1 - ISOHYETAL MAP for June 16-17, 1957

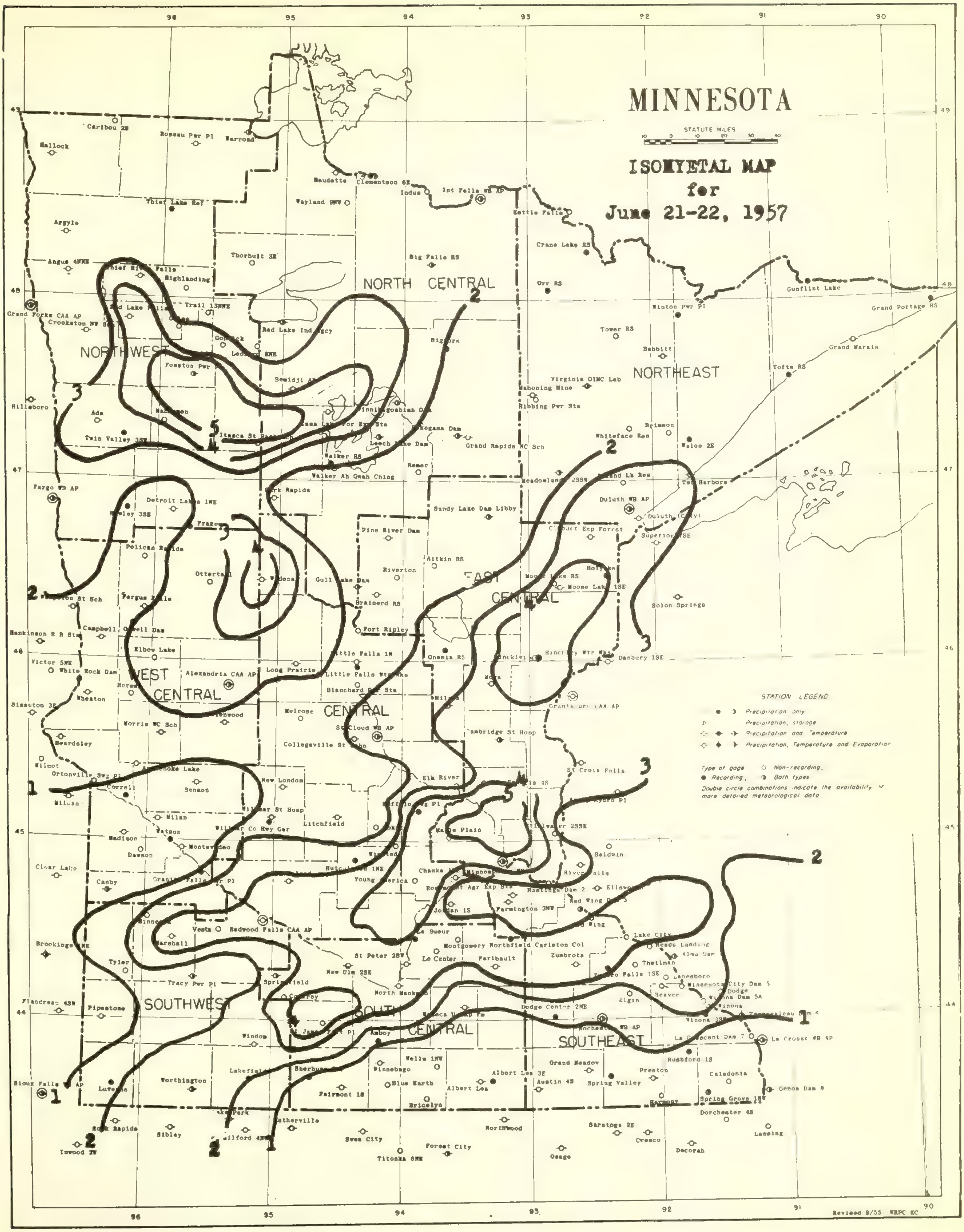

Figure 2 - ISOHYETAL MAP for June 21-22, 1957

COMPARATIVE FLOOD STAGES

UPPER MISSISSIPPI BASIN

River and Station	Flood Stage	June 1957 Stage	June 1957 Date	April 1952 Maximum
Yellow Medicine:				
Granite Falls (nr), Minn.	6	12.05	19	10.5
Redwood:				
Marshall, Minn.	7	10.1	17	9.5
Redwood Falls (nr), Minn.	6	15.9	18	11.8
Cottonwood:				
New Ulm (nr), Minn.	11	11.8	25	14.3
Minnesota:				
Montevideo, Minn.	14	14.8	18	20.0
New Ulm, Minn.	797.5	806.8	23	808.0
Mankato, Minn.	19	22.6	24	24.8
Carver, Minn.	18	26.1	27	28.3
Chaska, Minn.	17.5	25.3	28	29.1
Savage, Minn.	697.5	708.4	29	714.2
Rum:				
St. Francis (nr), Minn.	8.5	8.9	28	11.0
Crow:				
Delano, Minn.		*		
Rockford, Minn.	10	16.2	26	16.2
Mississippi:				
St. Paul, Minn.	14	16.7	29	22.0

* 6 inches higher than April 1952

No damage of consequence resulted from the slight flooding of lowlands along the Salt River at New London, Mo., on the 14th and 15th.

There were three periods of flooding on the Meramec River in Missouri. The first was due to rains (2.25 inches) on the 7th and 8th with the only overflow being at Pacific. The second rise was due to torrential rains during the night of the 14th and 15th averaging over 8 inches. Severe flooding resulted on the lower Meramec with flood stage exceeded by 12 feet. This same storm caused severe flooding along the Bourbeuse River between the 15th and 17th. The third rise was due to additional rains of 1.5 inches on the 29th - 30th and resulted in flood crests on the Meramec of 2 to 4 feet higher than the second rise.

Flash floods occurred in the St. Louis, Mo., area during the night of the 14th from rainfall totalling 8.54 inches in 12 hours. More than 2,000 persons were evacuated from their homes and many more were rescued from automobiles trapped by waters from flooded creeks and rivers. Damage was extensive throughout the metropolitan area. Thousands of basements were flooded. The main stem of the Mississippi rose from a stage of 5.6 feet to 21.7 feet (flood stage 30 feet) by 7 a.m. of the 15th.

Missouri Basin.--The third week of May was characterized by general heavy rains over the Yellowstone drainage basin and these together with the warm weather during the last week of May and the first week of June started the annual spring snowmelt runoff into the Yellowstone River and its tributaries. The Yellowstone River at Livingston, Mont., reached flood stage on the 4th and continued slightly above through the 7th. At Billings, Mont., flood stage was reached on the 5th and continued above until the 8th. Some property damage resulted from the flooding and high water along the main stem of the Yellowstone, but most of the damage occurred on the tributaries. Property damage was especially heavy in Greybull, Wyo., from the high water in the Greybull River. Major damage along these tributaries was confined to roads, bridges, and bank erosion with only a small percentage of farm property involved. Two fishermen lost their lives due to high water on the Stillwater River.

Heavy rain in southwestern North Dakota on the 21st and 22d caused slight flooding on the Cannonball River at Mott and the Heart River west of Dickinson. Rainfall during the 2-day period ranged up to 8 inches. Some farmland was flooded, and property damage was light.

Flash floods occurred in several tributaries of the Elkhorn River and Omaha Creek due to heavy thundershowers over northeastern Nebraska from the 13th through the 16th. Three to 4 inches of rain occurred in the Pender and Winslow, Nebr., area on the 14th and 15th causing overflow on the tributaries of the Logan Creek at Pender and Uehling. Six to 8 inches occurred over Bazile Creek on the 15th-16th from Clearwater, Nebr., northeastward to Brunswick and Creighton. Flash flooding occurred in the town of Creighton on the 16th and 17th. Three to 5 inches of precipitation occurred over Omaha Creek on the 13th-14th causing severe flooding in the lower parts of the towns of

Walthill and Winnebago. Rains averaging 4 inches fell over Pebble Creek on the 15th-16th, causing flash flooding in the town of Dodge, Nebr., on the morning of the 16th. Damage was confined mostly to farmlands. Rainfall over Union Creek totaled 4.55 inches at Creston, Nebr., on the 15th-16th, flooding 1,500 acres of farm and pasture land between Creston and Stanton, Nebr.

Elm and Shell Creeks overflowed some farmland on the 16th at Platte Center, Nebr. Some local overflow occurred in the late afternoon on the 16th at Fullerton and Genoa, Nebr. Locally heavy thunderstorms on the 15th and 16th caused some local overflow in the Iowa River and on the Boyer River from Woodbine to Logan, Iowa. On the 21st and 22d, the upper reaches of the Little Sioux River around Spencer, Iowa, reached bankfull stage but remained mostly within its banks.

Skunk Creek and the Big Sioux River at Sioux Falls, S. Dak., experienced one of its most severe floods on record during the period from the 16th to the 19th due to the heavy rains on the 16th and 17th. Rainfall varied from 5 to 10 inches and fell mostly in 12 hours. This was the highest flood at Sioux Falls, S. Dak., in the last 50 to 75 years. There is a probability that the snowmelt flood in 1881 may have been of the same magnitude, but there is no data on that flood to make a comparison. Several residential sections and trailer courts were flooded, and heavy flood damage occurred in the downtown section of Sioux Falls. Flood losses in the Sioux Falls area could have been much larger had it not been for the improved conditions arising from channel improvement and new levees built within the past year. The Sioux Falls airport did not flood this time as it did in 1952, although the crest in this flood was 1.5 feet higher than in the earlier one. A secondary crest of 14.3 feet occurred along the Big Sioux at Sioux Falls, S. Dak., on the 19th and was about 0.2 of a foot lower than the record flood of 1952. Lowland flooding spread from Sioux Falls to the mouth of the Big Sioux at Sioux City, Iowa, as the crest moved downstream. Lowlands were completely flooded, and growing crops were a total loss. The first crest of 19.8 feet at Akron, Iowa, was about 0.2 foot lower than the record stage set in June 1954. Agricultural losses were heavy along the main stem of the Big Sioux, from Flandreau, S. Dak., to Sioux City, Iowa, and along creeks and small drainage areas from Sioux Falls upstream. The total area flooded may exceed 75,000 acres, most of which is cropland. The heaviest urban damage was in the Sioux Falls area where the damage may exceed 1 million dollars.

The Rock River which has its source in southwestern Minnesota overflowed north of the Iowa-Minnesota state line from the heavy rains on the 16th and 17th and ran bankfull in Iowa. Most of the damage was confined to Pipestone County in Minnesota.

Widespread flooding occurred along the Vermillion River in the Centerville-Parker-Lennox, S. Dak., area between the 16th and 23d from the rains on the 16th and 17th. Rainfall varied from 4 to 7 inches over much of the area. Crop losses and road and bridge damages will run into several hundred thousands of dollars.

A flash flood occurred on Marne Creek in the vicinity of Yankton, S. Dak., due to rain (about 5 inches) on the evening of the 16th. Ten to 12 city blocks of the residential and business sections were flooded and losses will run into a few hundred thousands of dollars. Widespread flooding occurred along the Vermillion River in the Centerville-Parker-Lennox, S. Dak., area from rains of 4 to 7 inches on the 16th and 17th. Crop losses and road and bridge damages will run into several hundred thousands of dollars.

Overflows in the Saline, Solomon, Republican, and Blue River Basins were the most widespread in the past 6 years. The Saline River crest of 25.8 feet near Wilson, Kans., on the 18th was the highest since records were started in 1929 and lacked 1 foot of equalling the high water mark of July 1928. Downstream at Tescott, Kans., the highest crest of 29.55 feet on July 1 approached within 0.5 foot the record 1951 crest of 30.06 feet. Major flooding occurred along the Solomon River in Kansas. The crest of 34.47 feet on the 19th at Beloit (flood stage 20 feet) was about the same magnitude as the 1935 flood and ranks as the fifth greatest flood in the past 53 years. There was considerable flooding on the upstream tributaries as well as along the main stem. Flash flooding of unusual severity occurred on Big Creek, a Smoky Hill River tributary. The business section of Ellis, Kans., was under 4 feet of water with one death from drowning. Some portions of Hays, Kans., were inundated, and in the village of Mungor, Kans., there were 3 deaths from flood-induced explosion. The stage of the U. S. Geological Survey gage near Hays, Kans., was about 0.5 foot higher than in the May 1951 flood. Considerable flooding occurred on Republican tributaries in Kansas. The main stem of the Republican at Guide Rock, Nebr., reached a crest of 15.7 feet on the 16th which was the third highest stage since records began in 1931 and is the only overflow of importance since construction of Harlan County Dam. The crest at Scandia, Kans., of 13.9 feet on the 18th was the 4th highest stage of record, while at Concordia, Kans., the peak of 13.4 feet on the 18th was the highest in the last 10 years. The crest on the upper Big Blue River at Seward, Nebr., of 22.3 feet on the 18th exceeded the highest stages in the memory of local residents with a major overflow continuing downstream through Beatrice, Nebr. Flooding on the Little Blue Channel was the heaviest since 1951.

The only flooding along the main stem of the Missouri was at St. Joseph, Lexington, and Waverly. The flooding was light and occurred between the 18th and 20th.

Ohio Basin.--Flash floods occurred on many small streams and tributaries of the upper Allegheny River above Franklin, Pa., due to rains associated with hurricane "Audrey" on the 28th. Rainfall amounts during the 6- to 8-hour storm varied from 1.25 to 3.44 inches over the upper Allegheny Basin; 2 to 3.05 inches over French Creek Basin; 2 to 2.66 inches over Beaver River Basin, and 0.5 to 1 inch over the Monongahela River Basin. State Civil Defense authorities who were alerted early in the afternoon of the 28th assisted and directed in the evacuation of many vacationers from cottages and summer resorts along French Creek and the Edinboro and Conneaut Lake areas during the night. French Creek at Meadville, Pa., rose 9 feet in 12 hours and crested about 1 foot below flood stage. Only slight rises were reported on the upper Allegheny River.

Light flooding occurred in the upper Scioto River between June 29 and July 2 due to rains (3 inches) during the 3-day period from the 27th to the 29th. Damage was limited. Flash flooding occurred at Bourneville, Ohio, on the 29th with slight damage to small acreage of farmcrops. Although the Creek rose 3.5 feet above flood stage it was out of its banks for only a few hours.

Extensive flooding occurred on small headwater streams on the Whitewater River in Indiana and the Miami River in Ohio on the 28th and 29th. Several families in the low-lying areas along the Miami River near Dayton, Ohio, were evacuated from their homes.

Excessively heavy rains (5 to 8 inches) occurred over the Wabash and White River Basins in Indiana on the late afternoon and evening of the 27th and 28th, causing the greatest floods of record on the Embarrass River, and Eagle and Raccoon Creeks. On the Wabash River the crest of 14.35 feet at Bluffton, Ind., was the highest since 1950, and at Clinton, Ind., the crest of 27.5 feet was one of the four greatest floods of record. On the White River at Anderson and Noblesville, the crests were the highest since 1943. At Indianapolis, Ind., the crest of 14.2 feet was only 0.6 foot short of that of May 1956. In the Eagle Creek drainage thousands of acres of crops were flooded with up to 6 or 7 feet of water. At least 1,500 persons were evacuated from their homes. Many business establishments were flooded. At Zionsville, Ind., a bus was swept from the highway and two of the occupants were drowned. At Speedway, where the bulk of evacuations occurred, two deaths were reported. About 40 homes in the $20,000 to $30,000 class had to be condemned and many other homes and furnishings received heavy damage. Heavy damage occurred to railroads, bridges, and crops in the Raccoon Creek Drainage, and record high water necessitated numerous evacuations. Three hundred and twenty carloads of fill were required to repair the damage to one railroad washout alone, the tracks having dropped as much as 20 feet. In the Greencastle, Ind., and other areas the water supply was overflowed and all drinking water had to be boiled. In the Big Walnut Creek drainage an entire work train of the Pennsylvania Railroad composed of 18 cars plunged into the creek near Reelsville when a flood-weakened bridge collapsed. In the Wabash Basin, numerous people were evacuated from their homes in Clinton, Ind. In the White Basin, numerous homes in the Ravenswood area, River Edge Estates in Indianapolis and other areas were surrounded by water or evacuated, and some streets and roads were closed by overflow from the White River; two lives were lost. The total overflow of croplands in the White and Wabash Basin was estimated at 1-1/3 million acres. It is possible that this flood may have been the most damaging of record because of the great amount of crops overflowed so late in the crop season, and because the damage to bridges, railroads, highways, and dwellings was also significantly large.

Arkansas Basin.--The Little Arkansas was slightly above bankfull from the 28th to the 30th but no damage resulted. The Ninnescah River was rising again near the end of June, but was nearly 3 feet lower than the mid-May flood. The highway was closed at Belle Plaine, Kans., for about 24 hours but little if any property damage resulted. The Salt Fork, Caney, Bird Creek, and Verdigris at Claremore and Inola, Okla., were higher this month than during May, while the Cimarron and Arkansas were considerably lower. No records were broken; however, the Caney at Bartlesville, Okla., rose to within 0.6 foot of the record stage. Two lives were lost by drowning on the Verdigris River at Coffeyville, Kans., on the 10th. Little or no damage occurred on the Neosho River in Kansas and Oklahoma. The Deep Fork Creek near Dewar, Okla., was above flood stage the entire month. Heavy rains (up to 7 inches) during the night of the 22d caused local flooding on Otter Creek at May, Okla.; Wolf Creek had the Maximum flow of record near Fargo, Okla., and Fort Supply Reservoir on Wolf Creek rose to the highest elevation since its completion in 1942. At Woodward, Okla., the North Canadian rose to its highest level since 1951. There was considerable agricultural and rural road damage in the affected areas. Local flooding occurred over the Middle Deep Fork, the North Canadian from Oklahoma City to Shawnee, Okla., and the South Canadian from Union City to near Ada, Okla., from heavy rain (2 to 4 inches) on the evening of the 14th. There were numerous instances of traffic stoppages, some isolation of homes and localized flooding of stores and residences.

There was considerable flooding along the upper reaches of the Arkansas from the headwaters to below Canon City, Colo., during the latter part of the month from snowmelt. There was some lowland flooding in the reach from Canon City to below Pueblo, Colo. This flood was described by longtime residents as one of the longest periods of high water and flooding along the upper reaches of the Arkansas during the past 10 to 20 years. Lower streets in Leadville, Buena Vista, and Canon City, Colo., were inundated and a portion of U. S. Highway 50 near Cotapaxi, Colo., was covered for a time, though kept open. A small bridge about 6 miles west of Salida, Colo., was washed out, and an old bridge in Salida was dismantled to keep it from washing downstream and damaging a more important bridge. Buena Vista, Colo., (on Cottonwood Creek) was probably the hardest hit community with considerable damage reported to buildings and streets. The Arkansas, in the reach from Hutchinson, Kans., to Ralston, Okla., began overflowing between the 28th and the end of the month. In the reach below from Muskogee, Okla., to Dardanelle, Ark., the Arkansas was above flood stage the entire month. It is believed that this is the longest period of consecutive days that the Arkansas has been above flood stage. The high stages were maintained by releases from reservoirs upstream.

Red Basin.--The Ouachita River continued above flood stage at Camden, Ark., from May 26 to June 13th and at Monroe, La., from May 7 to June 11.

The Black River at Jonesville, La., went into flood on the 4th and remained in flood through July 11. There were two crests, one on the 22d and the other on the 28th. The latter crest of 52.3 feet (flood stage 50 feet) was due to excessive rains from hurricane "Audrey".

Considerable damage resulted to roads and levees along the Little and Red Rivers not only during this month but also in the 2 previous months. Extremely heavy rains in Oklahoma and Texas above Denison Dam filled Lake Texoma, and water ran over the spillway for the first time. This is said to be an occurrence calculated to take place once in a hundred years. The water going over the spillway and that released through the flood gates along with the general heavy rains, produced prolonged flooding at every river gage station on the Red River except Shreveport, La.

Lower Mississippi Basin.--The St. Francis River was in continuous flood at St. Francis, Ark., from April 3 through June 25. There were five crests at this point during that period. The highest crest, 22.9 feet, occurred on May 27 and was 1.3 feet higher than the crest of 21.6 feet in early June. The 22.9-foot crest at St. Francis was the highest crest since the 23.4-foot crest on January 14, 1950. There was very little change in stage at Fisk, Mo., and St. Francis, Ark., from June 1 to 13 due to regulation at Wappapello Dam which was held at about 10,000 c.f.s. until conditions permitted a gradual reduction. The overflow was confined, primarily, to areas inside levees and floodways, except in unprotected areas near St. Francis (much of it swampy) near the mouths of a few tributary streams and near Parkin, Ark. Some damage occurred to highways, fences, etc., but the main damage was to crops, such as cotton, soybeans, corn, pastures, truck, and small grain.

No flooding occurred along the main stem of the Mississippi, but bankfull stage was approached by 0.1 foot at Baton Rouge and Plaquemine, La. At New Orleans, La., the crest of 15.7 feet on June 10 was within 1.3 feet of the 17-foot flood stage.

Atchafalaya Basin.--The Atchafalaya River remained in flood at Atchafalaya, La., from the 6th to the 18th. The crest of 29.3 feet on the 12th was 0.3 foot above flood stage. Downstream at Morgan City, La., it was in flood on four different occasions. The crest of 11.4 feet on the 27th was 1.75 feet above the previous record crest of 9.65 feet on June 10, 1927. This record crest was the result of wind and tide from hurricane "Audrey".

WEST GULF OF MEXICO DRAINAGE

The flooding on the Mermentau River at Mermentau, La., and the Calcasieu at Old Town Bay and Lake Charles, La., during the latter part of the month was due to heavy rain on the 27th-28th associated with hurricane "Audrey". These heavy rains also caused the Sabine to go above flood stage in the lower reach at Bon Wier and Deweyville, Tex. Some of the heavy rainfall amounts reported were: Basile, La., 10.63 inches; Mermentau, La., 9.85 inches; Lake Charles, La., 6.89 inches; Oldtown Bay, La., 5.46 inches; Bon Wier, Tex., 5.34 inches, and Deweyville, Tex., 6.8 inches. No abnormal flooding occurred as a result of these heavy rains.

The excessive general rains that started in the upper Trinity Basin about April 16 began slackening off about June 5. Precipitation after that date was in the form of scattered showers, and the flooding was largely due to continued releases from the reservoirs on the upper Trinity watershed. The Trinity from Dallas to Long Lake continued above flood stage throughout the month, making this the longest period that this stream has remained in flood during the period of record. Little additional damage occurred in June other than prolonged loss of grazing land and delay in repair of May damages.

Rains of 4 to 6 inches fell over the Little River Basin (below Belton Dam) in Texas from the 1st to the 5th, resulting in flooding at Cameron from the 2d to the 6th. Additional rains of up to 6 inches occurred over the basin on the morning of the 13th, causing additional flooding on the 13th and 14th.

Local rains of up to 11 inches on May 31 and June 1 over the Nueces Basin in Texas caused considerable flooding and closed low water crossings on the upper and middle Nueces. Rainfall over the Frio and Atascosa was considerably lighter and ranged from 1 to 2 inches. Most of the flooding was confined to ranch- and farmlands, but reports indicate that the benefits from increase in soil moisture greatly exceeded the flood damage to the land. The flooding since April has resulted in a 6 months delay in completion of the Wesley Seale Dam.

The Rio Grande reached and slightly exceeded bankfull stage at Lobatos Bridge, Colo., on the 9th, 12th, and from the 28th to the 30th and at Albuquerque, N. M., on the 2d and from the 8th to the 10th. The area around Lobatos Bridge is barren wasteland and no damage was reported. There was no damage from undercutting in the Albuquerque area, but reports of slight damage in this respect have been reported in other parts of the middle Rio Grande Valley.

Heavy rains on May 31 over the Rio Grande in the Langtry, Tex., area caused a rise to near bankfull stage in the reach from Del Rio to Eagle Pass, Tex. The crest at Del Rio was 13.4 feet on the 1st, 1.6 feet below the flood stage of 15 feet. At Eagle Pass, the crest was 15.1 feet on the 2d, 0.9 foot below flood stage.

GULF OF CALIFORNIA DRAINAGE

Colorado Basin.--Several streams in the Colorado River Basin reached record or near record stages during the 1957 "spring run-off" which ran 2 to 4 weeks later than usual. The Eagle River at Eagle, Colo., reached a record stage of 7.4 feet exceeding the former record stage of 6.8 feet in 1933 by 0.6 foot. The Gunnison River at Delta, Colo., reached a record-peak stage of 13.5 feet on the 6th, exceeding the previous record stage of 12.7 feet in 1941 by 0.8 foot. The Colorado River reached a near record stage of 12.1 feet at Grand Junction, Colo., on the 9th, 0.9 foot lower than the record 13.0 feet stage in 1917. At Fruita, Colo., the Colorado approached within 0.3 foot of the previous record stage. Overflows which caused some damage also occurred on the Crystal, Roaring Fork, and Frying Pan Rivers and some higher creeks in Colorado and on the Green River at Ouray, Jensen, and Green River, Utah.

These floods were caused by the melting of the heavy winter snows in the mountain watersheds where the previous winter's precipitation was much above normal. It is believed that a period of cool weather over western Colorado beginning about the 10th prevented more severe flooding, at least at Delta and Grand Junction. However, the unseasonably cool April and early May, during which almost no snowmelt occurred at high levels, no doubt contributed much to the excessive volume of runoff.

Several homes and a tourist court were flooded at Delta, Colo.; several bridges and bridge approaches and roads were washed out. Much preventative dike work and rip-rapping was required in several of the affected communities.

GREAT SALT LAKE BASIN

Limited flooding occurred in the upper Bear River in Wyoming, the upper Provo River (above Deer Creek Dam), the upper Weber River (above newly constructed Wanship Dam), and the Beaver River on the Big Cottonwood Creek in Utah during the first week in June. No extensive damage was reported and flood waters did not persist more than a few days. Most areas flooded were pasture lands at the higher elevations. There was some damage to roads, bridges, picnic areas, and campsites. Considerable work was expended in preventing further damage. These floods were caused from the melting of a record snowpack.

A flash flood occurred on Lake Creek near Heber, Utah, on the 10th due to heavy rain: one-half mile of the newly installed cement canal lining was destroyed and will have to be replaced. The course of the river was changed by as much as 300 feet in some places.

PACIFIC SLOPE DRAINAGE

Columbia Basin.--Intense, widely scattered showers and moderately warm temperatures temporarily halted the slow recession in rivers east of the Cascades, the middle and lower Columbia, and Willamette below Oregon City, Oreg. The total rise in the lower Snake River Basin did not amount to over 3 feet. The highest stage on the Columbia at Vancouver, Wash., and the Willamette at Portland, Oreg., during June was 21.9 and 21.6 feet, respectively, and occurred on the 5th. The highest stages at these points during the spring rise was 23.3 feet and 23.0 feet on May 23.

FLOOD STAGE DATA

(All dates in June unless otherwise specified)

River and station	Flood stage	Above flood stages -dates		Crest*	
		From–	To–	Stage	Date
	Ft.			Ft.	
ST. LAWRENCE DRAINAGE					
Lake Erie					
St. Marys': Decatur, Ind.		29	29	14.1	29
	13	30	30	15.5	30
ATLANTIC SLOPE DRAINAGE					
Cape Fear: Elizabethtown, N. C.	20	10	11	22.7	10
Rocky: Norwood, N. C.	A16	9	9	19.0	9
Broad: Gaffney (nr), S. C.	10	6	6	10.0	6
Blair, S. C.	14	6	7	14.6	6
Catawba: Catawba, N. C.	8	6	6	19.1	6
		9	9	9.6	9
Santee: Rimini, S. C.	12	1	30	16.9	15
Satilla: Waycross, Ga.	13	15	20	14.1	17
EAST GULF OF MEXICO DRAINAGE					
Pearl: Monticello, Miss.	15	29	30	16.6	29
MISSISSIPPI SYSTEM					
Upper Mississippi Basin					
Crow: Rockford, Minn.	10	22	July 10	16.2	26
Rum: St. Francis (nr), Minn.	8.5	26	30	8.9	28
Yellow Medicine: Granite Falls (nr), Minn.	[illegible]	17	23	12.5	19
				8.5	22
Redwood: Marshall, Minn.	7	16	20	10.1	17
				9.85	18
		21	22	8.8	22
Redwood Falls, Minn.	6	17	26	15.9	18
				11.0	22
Cottonwood: New Ulm (nr), Minn.	11	24	26	11.8	25
Minnesota: Montevideo, Minn.	14	18	18	14.8	18
New Ulm, Minn.	797.5	20	July 14	806.8	23
Mankato, Minn.	19	22	28	22.6	24
Carver, Minn.	18	24	July 13	26.1	27
Chaska, Minn.	17.5	24	July 12	25.3	28
Savage, Minn.	697.5	23	July 15	708.4	29
East Branch Pecatonica: Blanchardville, Wis.	7	11	12	12.95	12
		14	15	#12.5	14
		17	17	#7.2	17
Salt: New London, Mo.	19	14	15	20.5	15
Illinois: Havana, Ill.	14	Apr. 28	3	17.6	May 5
Beardstown, Ill.	14	Apr. 27	5	19.6	May 5-6
Bourbeuse: Union, Mo.	15	15	17	21.5	15
				21.3	16
	15	28	July 2	24.5	30
Meramec: Sullivan, Mo.	11	30	July 1	22.2	30
Pacific, Mo.	11	8	8	12.8	8
		15	18	23.0	15
		28	July 4	15.0	28
				25.0	July 1
Valley Park, Mo.	16	15	18	28.2	15
		30	July 4	32.0	July 2
Mississippi: St. Paul, Minn.	14	27	July 4	16.7	29
Hastings, Minn.	15	27	July 4	16.6	30
Missouri Basin					
Yellowstone: Livingston, Mont.	8	4	7	8.2	5
Billings, Mont.	11	5	8	11.65	7
Big Sioux: Sioux Falls, S. Dak.	10	16	22	16.0	17
				14.3	19
Akron, Iowa	16	20	25	19.8	21
				19.6	21
Nishnabotna: Randolph, Iowa		16	16	17.6	16
Hamburg, Iowa	18	16	16	22.5	16
Saline: Wilson, Kans.	12	16	16	14.9	16
		18	20	25.8	18
		27	30	21.6	28
Trescott, Kans.	25	21	24	29.1	22
		28	July 6	29.55	July 1
North Fork: Lenora, Kans.	10	16	17	16.5	16
		27	28	12.0	28
Glade, Kans.	9	15	17	14.0	16
Downs, Kans.	18	16	18	29.75	17
		30	30	23.0	30
South Fork: Hill City, Kans.	8	15	16	#11.0	15-16
				#9.0	16
Damar, Kans.	7	16	17	12.0	17
		27	27	7.5	27
Alton, Kans.	12	16	18	20.6	17
		30	30	12.55	30
Stockton, Kans.	[illegible]	16	16	#9.9	16
		17	18	10.7	17
Osborne, Kans.	12	10	11	14.3	11
		14	14	13.6	14
		15	15	13.8	15
MISSISSIPPI SYSTEM (Cont'd.)					
Missouri Basin (Cont'd.)					
South Fork (Cont'd.): Osborne, Kans. (Cont'd.)		17	19	22.9	17
		22	22	13.6	22
		28	29	17.7	28
		30	July 2	18.1	July 2
Solomon: Beloit, Kans.	20	16	21	34.5	19
		23	24	21.05	23-24
Minneapolis, Kans.	26	21	23	31.4	22
Niles, Kans.	24	22	25	28.2	24
Beaver Creek: Beaver City, Nebr.	12	2	2	12.5	2
		16	16	12.9	16
Sappa Creek: Oberlin, Kans.	A10	16	18	13.8	18
		22	29	14.7	28
Beaver City, Nebr.	16	-	--	#16.35	16
Stamford, Nebr.	14	16	17	16.75	17
Prairie Dog Creek: Norton, Kans.	17	16	17	21.9	16
Woodruff, Kans.	18	16	19	26.9	16
Republican: Riverton, Nebr.	10	16	16	10.0	16
Orleans, Nebr.	9	1	1	10.1	1
		16	18	12.1	17
Guide Rock, Nebr	10	16	18	15.7	16
		27	27	10.7	27
Hardy, Nebr.	11	17	18	12.7	18
		28	28	11.0	28
Scandia, Kans.	10	17	19	13.9	18
Concordia, Kans.	10	18	19	13.4	18-19
Clay Center, Kans.	15	19	21	17.8	21
Wakefield, Kans.	11	21	21	11.2	21
Little Blue: De Weese, Nebr.		16	18	#13.4	17
Endicott, Nebr.	9	17	20	15.2	19
Hanover, Kans.	14	18	20	18.0	20
Lincoln Creek: Seward, Nebr.	A16	16	20	20.5	17
		22	22	16.65	22
Big Blue: Ulysses, Nebr.	15	15	20	22.5	17
		21	22	17.0	22
Seward, Nebr.	A16	17	21	22.3	18
Crete, Nebr.	16	17	26	27.6	19
Beatrice, Nebr.	16	18	23	23.4	21
Barneston, Nebr.	18	19	19	18.0	19
		20	23	23.2	22
Blue Rapids, Kans.	20	18	24	25.65	20
Stranger Creek: Tonganoxie, Kans.	23	30	30	25.9	30
Kansas: Manhattan, Kans.	17	21	21	17.6	21
Blue: Kansas City (nr), Mo.	21	30	30	29.4	30
Grand: Brunswick, Mo.	12	20	21	13.9	20
Marais des Cygnes: Quenemo, Kans.	28	29	29	31.05	29
Gasconade: Hazlegreen, Mo.	21	3	3	21.0	3
Missouri: St. Joseph, Mo.	17	18	19	17.85	18
Lexington, Mo.	22	19	19	22.1	19
Waverly, Mo.	18	19	20	20.5	19
Ohio Basin					
Paint Creek: Bourneville, Ohio	10	29	29	13.6	29
Scioto: La Rue, Ohio	11	29	July 2	#12.8	30
Prospect, Ohio	12	July 1	July 1	12.3	July 1
Embarrass: Ste. Marie, Ill.	18	29	1/	25.5	30
Eagle Creek: Indianapolis, Ind.	10	28	28	16.4	28
White: Muncie, Ind.	6	29	1/	8.2	29
Anderson, Ind.	10	14	17	11.2	16
		29	30	17.7	29
Indianapolis, Ind.	12	29	1/	14.2	30
Bowling Green, Ind.	17	29	30	23.3	29
Elliston, Ind.	18	28	1/		
Edwardsport, Ind.	12	1	9	15.3	4
		12	1/	17.9	15
Petersburg, Ind.	16	1	4	23.6	28
Skillet Fork: Wayne City, Ill.	15	17	20	18.3	19
Wabash: Bluffton, Ind.	10	30	1/	14.35	30
Wabash, Ind.	12	29	1/		
Marion, Ind.	13	30	1/	14.7	30
Lafayette, Ind.	11	29	1/		
Covington, Ind.	16	30	1/		
Crawfordville, Ind.	A8	29	1/	14.0	29
Montezuma, Ind.	14	16	17	14.8	16
		28	30	26.05	29
Clinton, Ind.	18	28	1/	27.50	30
Terre Haute, Ind.	14	28	1/	23.0	30
Hutsonville, Ill.	A20	29	1/		
Riverton, Ill.	18	30	1/		
Ohio: Cairo, Ill.	40	May 24	1	43.4	May 27
White Basin					
Black: Pocahontas, Ark.	17	May 23	11	23.4	May 29
Black Rock, Ark.	14	Apr. 4	17	26.9	Apr. 5
				21.0	Apr. 23
				24.7	Apr. 29
				25.8	May 24

FLOOD STAGE DATA

(All dates in June unless otherwise specified)

River and station	Flood stage	Above flood stages -dates From–	To–	Crest * Stage	Date
	Ft			Ft.	
MISSISSIPPI SYSTEM (Cont'd.) White Basin (Cont'd.)					
White: Newport, Ark.	26	May 24	4	27.8	May 25
Augusta, Ark.	32	May 21	19	33.6	May 28
Georgetown, Ark.	21	Apr. 7	23	25.7	Apr. 10
				27.0	May 4
				26.1	May 29
Des Arc, Ark.	24	Apr. 8	22	28.4	Apr. 12
				30.1	May 3
				29.3	May 30
Clarendon, Ark.	26	Apr. 9	1/	30.1	Apr. 16
				31.2	May 7
				30.9	1
St. Charles, Ark.	25	Apr. 12	1/	29.5	May 7
				#31.2	6
Arkansas Basin					
Little Arkansas: Sedgwick, Kans.	18	28	30	20.9	28
Ripley, Kans	12	28	28	12.3	28
Ninnescah: Belle Plaine, Kans.	18	27		29.9	27
Walnut: El Dorado, Kans.	15	27	28	17.4	27
Chikaskia: Blackwell, Okla.	26	13		28.3	13
		27	29	30.2	28
Salt Fork: Tonkawa, Okla.	17	23	30	21.9	24
Cimarron: Waynoka, Okla.	8	23		12.0	23
Guthrie, Okla.	10	11		10.4	11
		24	25	11.3	24
Perkins, Okla.	11	May 31	1	#11.45	May 31
		11	11	12.6	11
		23	25	14.3	25
		27		11.1	27
Mannford, Okla.	18	12	12	19.0	12
		25	25	18.8	25
Little Caney: Copan, Okla.	21	2	4	24.0	2
		11	14	26.8	13
		18	20	25.5	19
		22	24	23.2	24
Caney: Bartlesville, Okla.	29	11	15	35.0	12
		18	19	29.9	18
		23	25	32.1	23
Ramona, Okla	27	19	21	28.2	20
		23	29	29.3	26
Bird Creek: Sperry, Okla.	21	2	3	25.0	2
		12	14	29.1	13
		19		22.7	19
		24	24	28.5	24
Verdigris: Coyville, Kans.	28	1	2	35.8	2
		12	14	37.1	13
Independence, Kans.	30	2	4	35.35	4
		13	14	33.9	14
Claremore, Okla.	38	2	6	42.1	4
		12	20	46.7	15
		24	25	38.4	25
Inola, Okla	41.5	May 18	7	47.1	6
		12	22	52.8	16
		24	27	44.2	26-27
Spring: Quapaw, Okla.	19.5	3	4	21.9	3
		9	12	27.5	11
		15	15	21.7	15
Neosho: Leroy, Kans.	23	13	13	23.5	13
Iola, Kans.	15	13	13	15.8	13
Chanute, Kans.	20	2	2	22.0	2
		14	14	20.8	14
Oswego, Kans.	17	May 31	5	21.5	3
		13	18	22.15	15
Commerce, Okla.	15	May 31	6	18.8	3-4
		14	17	20.3	16
Illinois: Tahlequah, Okla.	11	3	3	12.9	3
		11	11	12.5	11
Deep Fork: Dewar (nr), Okla.	18	May 14	1/	22.6	19
				24.3	May 25
North Canadian: Woodward, Okla.	10	23	25	13.2	24
Poteau: Poteau, Okla.	24	5	7	24.6	6
Arkansas: Hutchinson, Kans.	6	28	July 4	9.15	30
Wichita, Kans.	12	30	July 2	12.3	July 1
Oxford, Kans.	14	28	29	14.5	29
Arkansas City, Kans.	16	28	July 5	21.3	29
Ralston, Okla.	16	13	14	17.5	13
		29	1/		
Webbers Falls, Okla.	23	May 18	1/	30.0	May 20
				31.0	May 23
				35.5	May 26
				27.7	2
Sallisaw, Okla.	23	May 18	29	29.65	May 20
				31.10	May 23
				34.85	May 27
				28.9	3
Van Buren, Ark.	22	May 19	1/	30.1	May 21
				32.2	May 24
				36.35	May 27
				30.5	3
Ozark, Ark.	22	May 20	1/	34.0	May 28-29
				26.3	14
				26.3	18
Dardanelle, Ark.	22		1/	26.1	18
Morrilton, Ark.	30	May 22	20	39.55	May 30
				33.10	14
MISSISSIPPI SYSTEM (Cont'd.) Arkansas Basin (Cont'd.)					
Arkansas (Cont'd.): Little Rock, Ark.	23	May 24	12	28.0	1
		14	17	24.0	15
		19	20	23.2	19
Pine Bluff, Ark.	25	May 24	13	30.85	May 31
		14	21	25.7	17
Red Basin					
Ouachita: Camden, Ark.	26	May 26	13	34.6	May 31
Monroe, La.	40	May 7	11	42.65	May 19
Black: Jonesville, La.	50	4	July 11	52.2	22
				52.3	28
Washita: Carnegie, Okla.	18	4	4	18.5	4
Little: Horatio, Ark.	27	6	7	28.5	6
Whitecliffs, Ark.	25	May 26	2	27.8	May 28
Sulphur: Hagansport, Tex.	38	May 23	11	42.6	May 27
				41.4	2
				43.0	5
Naples, Tex.	22	May 15	1/	30.0	May 17
				31.25	May 29
				31.0	9
Texarkana, Tex.	20		1/	27.3	23
Red: Arthur City, Tex.	26	6	9	28.1	6
Index, Ark.	25	3	13	29.2	8
Fulton, Ark.	27	May 27	14	31.1	9
Springbank, Ark.	23		22	29.6	10
Grand Ecore, La.	33	Apr. 30	29	#41.95	May 10
				41.76	15
Alexandria, La.	32	Apr. 30	1/	#40.7	13
				40.6	17
Lower Mississippi Basin					
St. Francis: Fisk, Mo.	20	May 19	19	24.2	May 23
				24.1	8
St. Francis, Ark.	18	Apr. 3	25	21.9	Apr. 10-11
				21.5	Apr. 19-20
				21.3	May 2
				22.9	May 27
				21.6	5-10
Parkin, Ark.	28	4	16	29.0	9-12
Atchafalaya Basin					
Atchafalaya: Atchafalaya, La.	29	6	18	29.3	12
Morgan City, La.	7	13	13	7.1	13
		14	14	7.1	14
		27	29	11.4	27
		30	30	7.0	30
WEST GULF OF MEXICO DRAINAGE					
Mermentau: Mermentau, La.	5	29	1/	7.8	July 1
Calcasieu: Old Town Bay, La.	4	28	July 1	6.1	28
Lake Charles, La.	6	27	28	7.0	27
Sabine: Quitman, Tex.	16	4	8	17.8	5
Mineola, Tex.	14	May 15	13	#18.4	May 17
				#18.6	May 29
				17.8	8
Gladewater, Tex.	26	May 19	19	#35.8	2
				34.0	10
Logansport, La.	25	8	26	30.5	11
Bon Wier, Tex.	17	28	July 2	18.5	29
				17.6	July 1
Deweyville, Tex.	14	May 1	6	16.0	May 20
				14.8	1
		23	1/	15.2	July 1
Elm Fork: Carrolton, Tex.	6	1	8	8.5	5
East Fork: Rockwall, Tex.	10	Apr. 30	2	20.8	May 26
Trinity: Dallas, Tex.	28	May 9	1/	41.7	May 26
				35.9	6
Rosser, Tex.	26	Apr. 23	21	38.0	May 29
		26	1/		
Trinidad, Tex.	28	Apr. 21	1/	43.5	May 1
				44.4	1
Long Lake, Tex.	40	Apr. 24	20	48.8	Apr. 29
				#45.7	5
Midway, Tex.	40	May 31	22	#44.9	9
Riverside, Tex.	40	10	17	#42.3	15
Liberty, Tex.	24	Apr. 26	1/	29.3	May 12
				#28.1	22
Clear Fork: Ft. Griffin, Tex.	25	5	6	#26.4	6
Little: Cameron, Tex.	30	2	6	#32.6	3
		13	14	#33.6	14
Navidad: Ganado, Tex.	21	2	8	24.0	7
Frio: Derby, Tex.	6	May 28	5	10.35	3-4
Calliham, Tex.	12	May 27	10	27.0	3
				23.1	8
Atascosa: Whitsett, Tex.	20	2	3	20.8	3
Nueces: Cotulla, Tex.	15	Apr. 30	9	15.6	Apr. 30
				17.3	2
Tilden Crossing, Tex.	11	May 28	18	20.6	1
				19.85	6

FLOOD STAGE DATA

(All dates in June unless otherwise specified)

River and station	Flood stage	Above flood stages -dates		Crest*	
		From–	To–	Stage	Date
	Ft.			Ft.	
WEST GULF OF MEXICO DRAINAGE (Cont.)					
Nueces: Three Rivers, Tex.	35	May 30	9	38.4	3
				36.2	8
Mathis Dam Spillway, Tex.	74	Apr. 21	23	76.7	6
Calallen, Tex.	7	Apr. 24	20	9.9	May 7
				9.2	May 18
				8.8	May 30
				9.9	7
Rio Grande: Lobatos Bridge, Colo.	4	9	9	4.0	9
		12	12	4.05	12
		28	30	4.3	30
Albuquerque, N. M.	6	2	2	6.1	2
		8	10	6.1	9-10
GULF OF CALIFORNIA DRAINAGE Colorado Basin					
Eagle: Eagle, Colo.	5	5	10	5.9	8
		25	Jul. 6	7.4	30
Gunnison: Delta, Colo.	11	2	17	13.5	6
		21	Jul. 8	13.1	30 - Jul.1
Colorado: Grand Junction, Colo.	11	6	12	12.1	9-10
		27	Jul. 6	12.0	Jul. 1
Fruita, Colo.	14	6	11	14.9	9
		30	Jul. 2	14.45	Jul. 1
GULF OF CALIFORNIA DRAINAGE (Cont.) Colorado Basin (Cont'd.)					
Animas Durango, Colo.	4	1	16	#8.1	6
		19	30	7.2	29
San Juan: Pagosa Springs, Colo.	8	5	10	8.7	6
PACIFIC SLOPE DRAINAGE Columbia Basin					
Henrys Fork: Rexburg, Idaho	A6	May 9	14	9.65	May 22
				9.1	8
Willamette: Portland, Oreg.	18	May 13	16	23.0	May 23
Columbia: Vancouver, Wash.	15	May 9	20	23.3	May 23
Ridgefield, Wash.	18	May 17	12	21.2	May 23,24
St. Helens, Oreg.	20	May 20	9	23.0	May 23

* Provisional
# Highest Stage Observed
1 Continued at end of month
A Tentative

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TROPICAL STORMS JUNE 1957

Compiled by H. C. Sumner
Weather Bureau
Washington, D. C.

UNNAMED TROPICAL STORM OF JUNE 8 - 12, 1957

Unsettled conditions, accompanied by abnormally low pressure, prevailed over the southwest Gulf of Mexico and the Yucatan area on June 7. Late that day and during the morning hours of June 8, pressure changes indicated that a depression with a poorly defined circulation existed over the Gulf. At 10 a.m. (c.s.t.) on the 8th it was centered 200 to 250 miles south of Mobile, Ala. Although aircraft reconnaissance on the 8th was unable to locate a definite center, observations from ships in the area indicated that the storm had an exceptionally fast forward movement of about 25 m.p.h. It crossed the mainland east of Apalachicola, Fla., and during the night of the 8th moved northeastward through northern Florida and southern Georgia.

Rainfall was heavy over most of northern Florida. During the 2-day period between noon of the 7th and noon of the 9th, Cross City, Fla., reported over 8 inches of rain and Panama City, Fla., over 5 inches. Winds of about 35 m.p.h. were maintained during passage over Florida, Georgia, and South Carolina. Having lost its tropical storm characteristics the extratropical LOW crossed the east coast a short distance south of Charleston, passed eastward over the Atlantic, and reached the vicinity of Bermuda during the morning of the 12th of June. No loss of life or severe property damage has been reported.

HURRICANE AUDREY JUNE 25 - 28, 1957

Highlights

Hurricane Audrey, one of the most destructive June hurricanes recorded, reached the coastline near the Louisiana-Texas border on the morning of June 27, 1957. A late count indicates that the storm claimed 353 lives and wrought damage estimated at about $150,000,000. Extreme tides of more than 10 feet and winds in excess of 100 m.p.h. accompanied the hurricane as it moved onto the coast. Rainfall exceeded 10 inches in Jefferson Davis and Acadia Parishes, a maximum of 10.40 inches falling at Jennings, La., during passage of the storm. Greatest damage extended from Sabine Lake to Cote Blanche Bay with extensive damage from the Atchafalaya River westward and northward into La Salle Parish. The cities hardest hit were Cameron and Lake Charles, La., and Port Arthur, Tex.

History of the Hurricane

The existence of a tropical depression in the southwestern Gulf of Mexico was first suspected when upper air winds showed evidence of a weak circulation over the Bay of Campeche on June 24, 1957. Later in the day additional confirmation came in an observation received from a boat of the shrimp fleet. At 10:30 p.m. (c.s.t.), with the strongest winds associated with the storm 35-40 m.p.h., the Hurricane Warning Center at New Orleans issued the first public bulletin.* During the night the circulation increased rapidly in intensity and by the following morning aircraft reconnaissance reports and an observation from the S.S. TERRIER indicated that the storm, while remaining almost stationary in location, had increased to hurricane intensity.

The hurricane, now known as Audrey, began a northward movement as it increased in size and intensity. Moving forward at a speed of approximately 15 m.p.h. the center crossed the coastline during the morning of June 27 near the Texas-Louisiana line, at a point about midway between Beaumont, Tex., and Lake Charles, La. The center of the storm passed east of Sabine Pass, with the City of Orange, Tex., in the western portion of the eye between 9:00 and 10:00 a.m. (c.s.t.).

From this point the storm moved northeastward across Louisiana and into northwestern Mississippi losing strength as it progressed. The center passed over Vinton, Hackberry, De Ridder, Winnfield, and Monroe, La., on the 27th and over Greenville, Minter City, Oxford, and Corinth, Miss., during the morning of June 28. The eye of the hurricane was approximately 35 miles in diameter as it moved across the coast gradually closing until it lost its identity in the vicinity of Winnfield. Moving on a northeastward course the storm reached northern Louisiana on the morning of the 28th and became extratropical. It continued to move northeastward along the West Virginia-Ohio border and passed through the western portion of Pennsylvania and New York, crossing Lake Ontario during the night.

Pressure

A low pressure of 958 millibars (28.30 inches) was observed by the Fish and Wildlife Service at Hackberry, La., at 9:45 a.m. (c.s.t.) on June 27. The lowest pressure observed at a Weather Bureau Station was 966 millibars (28.52 inches) at Port Arthur, Tex., which at the time was in the western edge of the hurricane eye. The Weather Bureau Airport Station at Lake Charles, La., reported a low of 972 millibars (28.69 inches) at 11:40 a.m. (c.s.t.)

A tabular listing of low pressures and high winds and tides reported during the passage of Audrey is given as table 1. The tracks of this hurricane and the tropical storm that occurred earlier in June are shown in figure 3.

Wind

Gusts of wind near or exceeding 100 m.p.h. were reported at a number of locations along the coast. A maximum gust of 105 m.p.h. at 9:40 a.m. (c.s.t.) was recorded on the Cities Service Corporation's wind dial located 10 miles to the west of Lake Charles. A gust recorder chart from the Drill Barge "Vinegarroon", a portion of which is reproduced as figure 1, shows that a gust in excess of 100 m.p.h. was recorded at that location before the wind indicator failed shortly after 6:00 a.m. (c.s.t.) on June 27.

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*A complete listing of official warnings, advisories and bulletins issued by the Weather Bureau in connection with hurricane Audrey is given in a preliminary report "Hurricane Audrey" dated July 8, 1957. This report can be secured by request made to the U. S. Weather Bureau, 24th and M Streets, N. W., Washington 25, D. C. Attention: Publications Section.

The Sabine Pass Coast Guard Station reported a fastest mile of 85 m.p.h., with gusts of 100 m.p.h. from the northwest. At the Weather Bureau Airport Station at Lake Charles, the fastest mile was recorded as 69 m.p.h. from the south-southeast, accompanied by gusts between 90 and 100 m.p.h. There were an unusual number of tornadoes and local storms that accompanied Audrey as she moved northeastward across Louisiana and Mississippi.

Tides and Inundation

Tides rose along the east Texas and entire Louisiana coastline reaching 6 feet or higher from Sabine Lake to Cocodrie, La. The highest tides were 10.6 feet above m.s.l. measured from a water mark inside a building at Cameron and 9.5 feet above m.s.l. at Pecan Island. High tides caused the Atchafalaya River to rise to a height of 8.5 feet above m.s.l. at Morgan City, which exceeded the previous record by 1.7 feet.

Tidal salt water covered all of Cameron and most of Vermilion Parishes and penetrated far inland in Terrebonne, La Fourche, and Jefferson Parishes. Along the Texas coast flooding was largely local in nature due to inadequate drainage. Storm tides were, however, 3 to 4 feet above normal in the Corpus Christi-Port Aransas section, causing some minor damage to beach installations and roads. At Galveston, a tide of slightly over 6.0 feet above m.s.l. caused flooding to depths of 6 to 12 inches over parts of the Galveston Airport.

Figure 2 indicates the extensive coastal area that was inundated by salt water during the passage of Audrey. At some points inundation extended 20 to 25 miles inland.

Loss of Life and Property Damage

A recent survey indicates that the loss of life attributed to hurricane Audrey reached a total of 353, with most of these fatalities the result of drownings in inundated areas along the western Louisiana and eastern Texas coasts. Some lives were lost in other areas, as a result of tornadoes, and 7 deaths were reported in the sinking of the fishing boat M/V KOTURAH which was under tow in heavy seas off Galveston.

Many lives were saved through mass evacuations in which a reported 75,000 persons moved from low-lying coastal areas to higher ground. There was extensive advance evacuation of persons from the Bolivar Peninsula southwest of High Island and almost complete evacuation from the Sabine Pass section.

Total damage resulting from Audrey has been estimated at $150,000,000, -- $120,000,000 in Louisiana, $9,000,000 in Mississippi, $8,000,000 in Texas and lesser amounts eastward and northward as far as Canada. Major property losses included the destruction of, or severe damage to, 90 to 95 percent of all buildings in Cameron and lower Vermilion Parishes and to thousands of automobiles and much farm equipment; while farther inland roof damage, shattered windows, and downed trees and power and communication lines were extensive. About 4,500 homes were destroyed or irreparably damaged in Louisiana, with 100,000 in Louisiana and 50,000 in Mississippi suffering lesser damage. Salt water inundation of a large rice acreage, corn blown down, and flooded cotton fields were the chief crop losses, which have been roughly estimated at $50,000,000 for Louisiana and Mississippi combined. Thousands of cattle drowned or starved and the trapping industry was probably wiped out for years. Scattered wind damage occurred over the northwestern half of Alabama on the night of the 27th and the morning of the 28th with no concentrated damage. There were a few instances of structural damage to buildings, the most notable being the unroofing of a school building near Ryland in Madison County. Maximum recorded wind gusts were 71 m.p.h. at Birmingham, 60 at Mobile, 55 at Muscle Shoals, and 48 at Montgomery. Hurricane damage in Alabama has been estimated at $200,000.

In addition, over an area south of Montgomery, Ala., an outbreak of 8 tornadoes occurred between 8:30 a.m. and 11:00 a.m. (c.s.t.) on the 28th as a result of atmospheric conditions associated with Audrey at a time when the storm was centered near the northwestern corner of the State. Fourteen persons were injured in these tornadoes, with property damage estimated at about $600,000. The area in which these tornadoes occurred extends from Clarke, Monroe, and Conecuh Counties northeastward into Montgomery and Bullock Counties. Following the northeastward course taken just prior to reaching the coast, the storm became extratropical as it reached the Tennessee-Kentucky area about midday on the 28th. In this area and in Ohio, the generally minor wind damage which occurred was concentrated to the east of the storm path. Strongest gusts observed were near 50 m.p.h. at Chattanooga, Knoxville, and Crossville. Flooding was minor and restricted mainly to small tributary streams and low-lying farmlands where runoff was excessive due to heavy antecedent rains.

The storm which had been weakening over the Mississippi and Ohio Valleys reintensified considerably over the Great Lakes area, due to extratropical processes. Flood and wind damage was reported from widespread areas in the States bordering the Great Lakes.

Over Illinois, rains of 8 to 10 inches along a line from Pana to Paris caused severe flooding of farmlands and placed many highways under water for 1 to 3 days. Rains up to 10 inches fell over central Indiana on June 28 and 29, resulting in floods that drowned 5 persons, damaged over 1,000 homes, flooded 125 business places, washed away approximately a half million acres of crops, and knocked out highway and railroad bridges. Losses by the railroads are estimated at $1,200,000. An 18-car work train fell into Big Walnut Creek near Reelsville when a bridge, weakened by flood water, collapsed. During this storm, areas were inundated where previous flooding was unknown. Total damage in Indiana has been set at $2,450,000.

Damage in Pennsylvania, confined mostly to the western portion, was relatively light and resulted mostly from thunderstorms and gusty winds associated with the storm as it moved across the northwestern portion of the State. Winds reached 65 m.p.h. in the Pittsburgh area and an estimated 40 to 50 m.p.h. at Harrisburg. Damage was confined mostly to trees, utility lines, and a few house roofs. One person was killed by lightning and another injured by a falling tree.

Damage in New York State was almost entirely a result of wind effects. The greatest damage occurred in western and central counties near and

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south of Lake Ontario. Winds reported at 95 to 100 m.p.h. at Jamestown resulted in a general power failure in the area. There were some 150 separate breaks in main powerlines over the western counties.

At the Buffalo Airport, winds over 50 m.p.h. were observed. Over the north-central counties south of Lake Ontario, damage was almost entirely from winds as dry soils prevented flooding. In some areas there is evidence that the heavy rains probably counter-acted other damage in their relief to crops.

Along the shores of Lake Erie, there was considerable damage to small boats as the wind raised the water level 3 feet above normal. There was no flooding of consequence, but a marked rise in the Niagara River caused damage to sight-seeing facilities and river docks below the falls. Overall damage in New York State is estimated between $250,000 and $500,000 and there were 4 deaths attributed to the storm.

HISTORICAL GULF COAST STORMS

The passage of hurricane Audrey is reminiscent of an equally fatal storm which, on the night of August 10, 1856, completely devastated the fashionable hotel and pleasure resort on Last Island, or Isle Derniere as the French call the dot of land lying off the Louisiana coast, 150 miles east of Cameron. During the earlier hurricane, a storm tide swept an estimated 400 persons to their deaths. Last Island is now only a haven for pelicans and other sea birds, mute testimony to the fury of the storm that struck a century ago.

The development of storm tides on the low-lying coasts of the Gulf of Mexico is not unusual with hurricanes. When a hurricane approaches the coast slowly in a direction nearly normal to the coastline, as in the case of Audrey, the storm tide is often the most destructive feature of the hurricane. Some other notable hurricane-caused tides in Gulf coastal areas are the following:

(1) Sept. 16, 1875, Indianola, Tex.; disastrous inundation from Matagorda Bay; wind estimated 100 m.p.h.; 176 lives lost.

(2) Aug. 19, 1886, Indianola, Tex.; water in the bay rose rapidly; not a house remained undamaged; the town was not rebuilt.

(3) Oct. 1, 1893, New Orleans, La.; the storm was accompanied by a tidal wave and caused a loss of approximately 2,000 lives.

(4) Sept. 8, 1900, Galveston, Tex.; the water rose at a steady rate from 3 p.m. until about 7:30 p.m. when there was a sudden rise of about 4 feet; approximately 6,000 persons lost their lives.

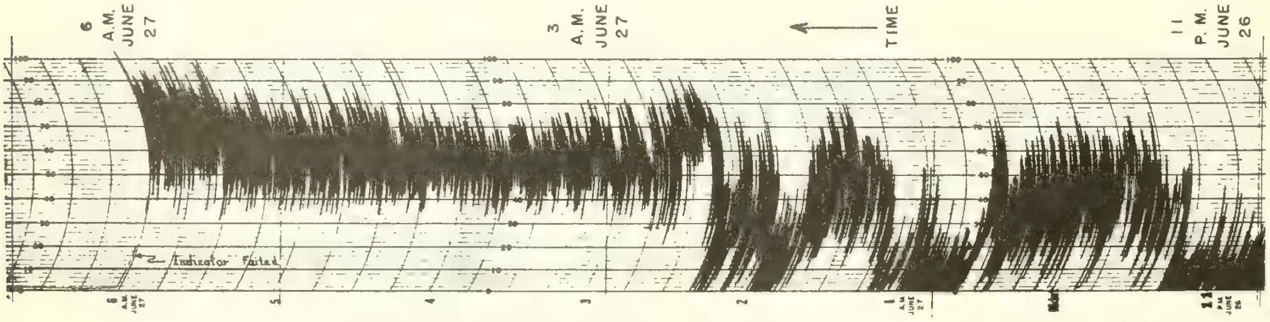
(5) Aug. 17, 1915, Galveston, Tex.; the tide at Galveston was 12 feet above normal; extreme wind speed was 120 m.p.h.; 275 lives lost; property damage estimated at $50,000,000.

(6) Sept. 29, 1915, Mississippi Delta; highest tides of record (to that time) observed on delta; extreme wind speed was 140 m.p.h.; 99 out of 100 houses destroyed in Leeville; 275 deaths reported.

(7) July 5, 1916, Mobile, Ala; tide was 11.6 feet above normal; wind reached 107 m.p.h.; 4 deaths and $3,000,000 property damage in Mobile.

(8) Oct. 25, 1921, Tampa, Fla.; tide at Tampa rose to 10.5 feet; 6 deaths and $3,000,000 property damage.

(9) Oct. 4, 1949, Freeport, Tex.; storm tide exceeded 11 feet at Freeport; $5,000,000 damage to Texas rice crop.



HURRICANE AUDREY, Gust Recorder Chart from the Drill Barge VINEGARROON. - Period: 11:00 p.m. June 26 through 6:00 a.m. June 27, 1957. Approximate Location: Lat. 29° 38' N., Long. 93° 05' W.

FIGURE I

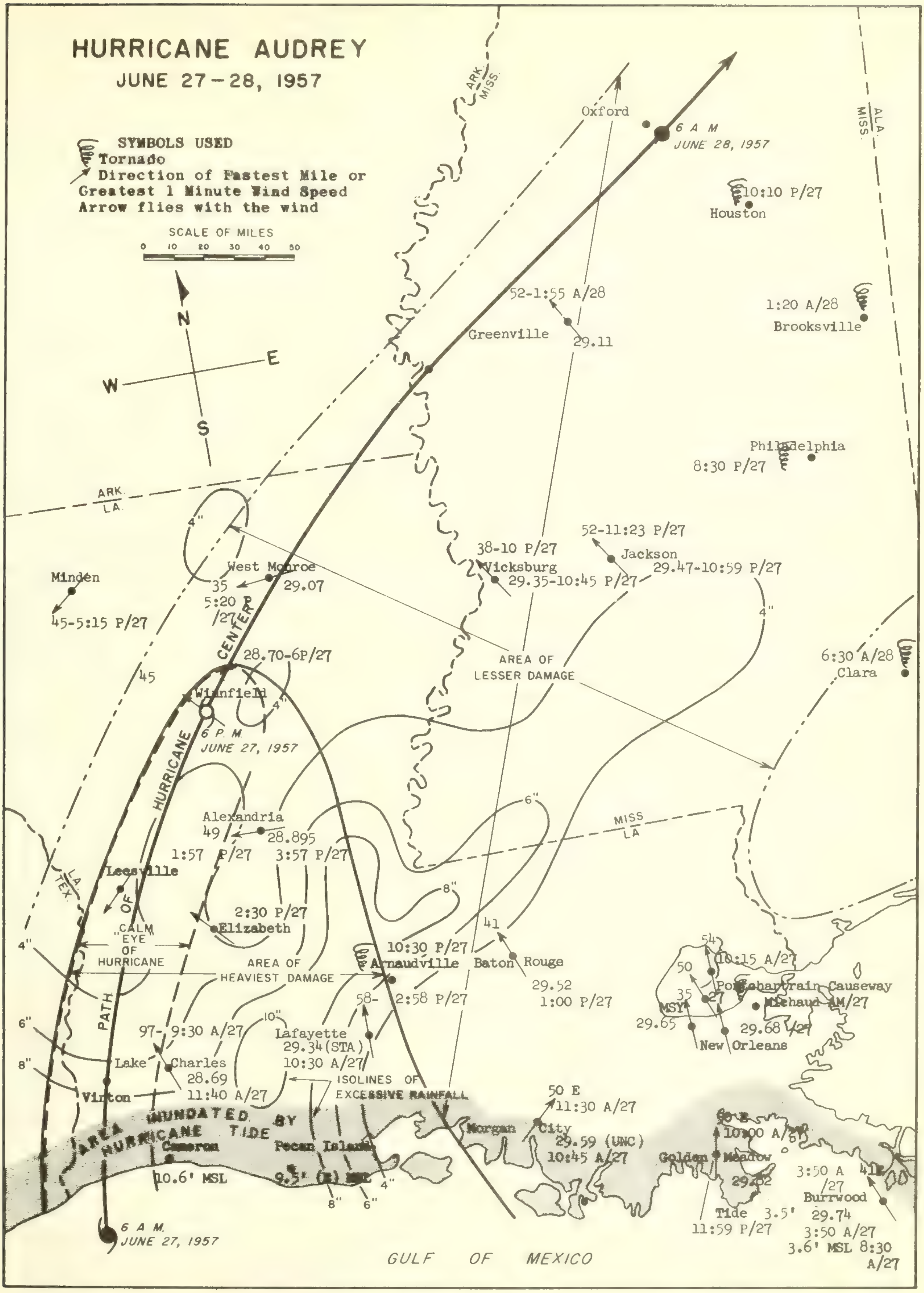


FIGURE 2

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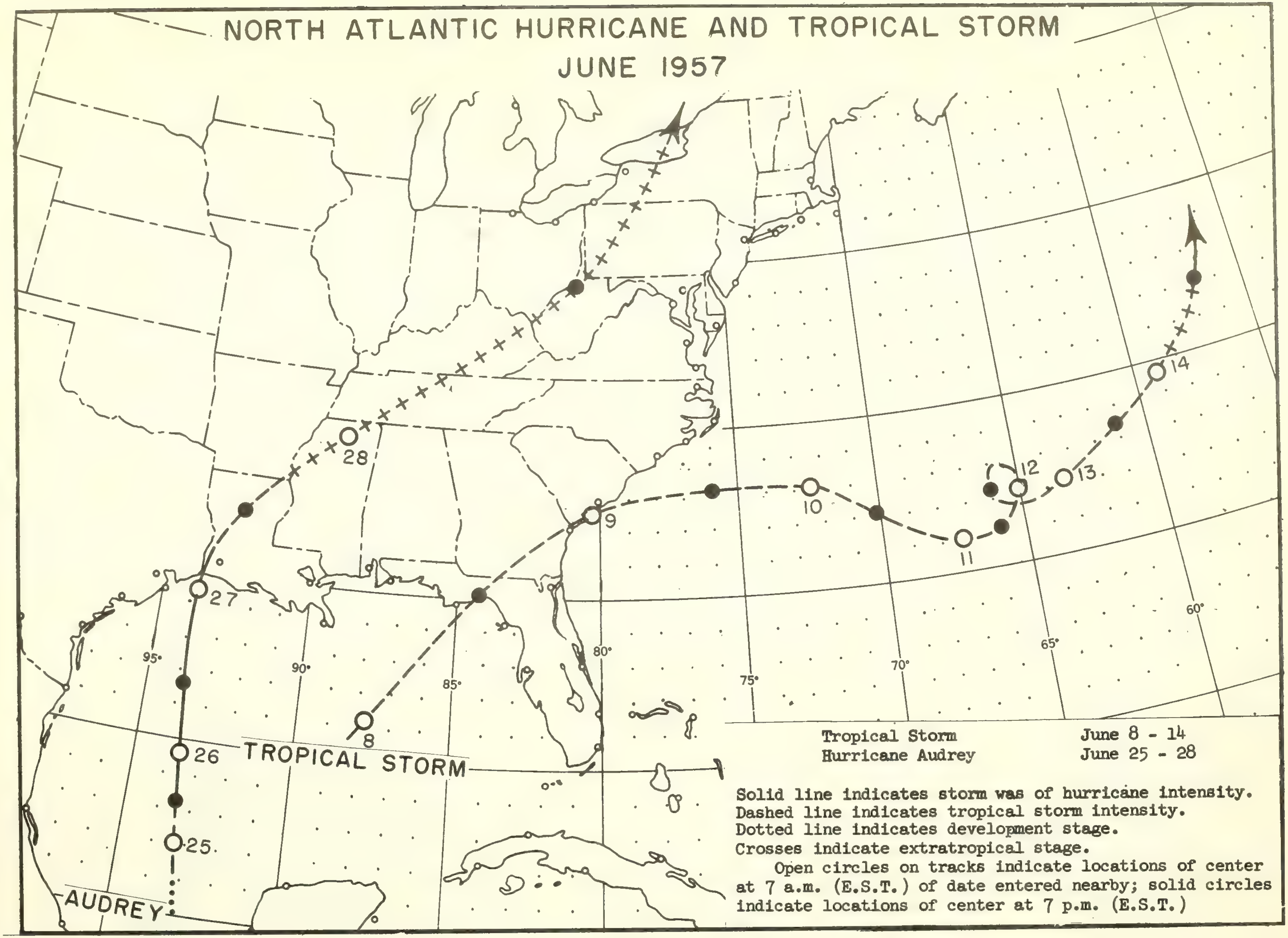

NORTH ATLANTIC HURRICANE AND TROPICAL STORM

JUNE 1957

Tropical Storm	June 8 - 14
Hurricane Audrey	June 25 - 28

Solid line indicates storm was of hurricane intensity.
Dashed line indicates tropical storm intensity.
Dotted line indicates development stage.
Crosses indicate extratropical stage.

Open circles on tracks indicate locations of center at 7 a.m. (E.S.T.) of date entered nearby; solid circles indicate locations of center at 7 p.m. (E.S.T.)

FIGURE 3

TROPICAL STORM DATA

AUDREY

JUNE 25-28, 1957

Station	Date	Pressure (inches)		Wind (m.p.h.)				Rainfall (Inches)	Remarks
		Low	Time	Fastest mile	Time	Gusts	Time		
LOUISIANA									
Alexandria AFB	27	28.90	3:57 p.	48 E	1:57 p.	65	2:48p.	3.90	
Baton Rouge WBAS	27	29.52	1:00 p.	40 SSE	11:50 a.	69	11:50a.	1.51	
Bay St. Elaine	27	29.80	10:11 a.	65*	6:00 a.	--	--	--	High tide 6.5 feet above m.s.l. at 12:30 p.m.
Bunkie	27	--		80*SSW	3-4 p.	--	--	4.30	
Cameron	27	28.35	8:30 a.	--	--	--	--	--	High tide 10.6 feet above m.s.l. Wave peaks 5 - 10 feet higher.
Clinton	27	--	--	69*	11:00 p.	--	--	4.31	
Cocodrie	27	--	--	65*	6:00 a.	--	--	--	High tide 6.5 feet above m.s.l. at 12:30 p.m.
DeRidder	27	--	--	70* E	12-1 p.	--	--	3.15	Wind calm 2:00-2:45 p.m.
Elizabeth	27	--	--	--	--	75* SE	2:30 p.	3.99	
Franklin	27	29.46	6:00 a.	--	--	--	--	--	High tide 8.0 feet above m.s.l.
Garden Island	27	--	--	40*ESE	--	--	--	--	High tide 4.0 feet above m.s.l. at 8:30 a.m.
Golden Meadow	27	29.82	10:00 a.	50*SSW	10:00 a.	--	--	0.74	High tide 3.5 feet above m.s.l. at 11:59 p.m.
Grand Ecaille	27	--	--	40* SE	--	45*	--	--	High tide 4.6 feet above m.s.l. at 12 noon.
Hackberry	27	28.30	9:45 a.	--	--	--	--	--	Gust of wind estimated as high as 110 m.p.h.
Hineston	27	--	--	60*S/SE	2:30-3p.	85*S	2:45p.	4.75	
Lafayette CAA AP	27	29.34	10:30 a.	58 S	2:58 p.	92	12:00m.	3.69	
Lake Charles WBAS	27	28.69	11:40 a.	69 SSE	9:30 a.	97	--	6.83	Cities Service Refinery reported wind of 105 m.p.h. at 9.40 a.m.
Leesville	27	--	--	--	--	--	--	2.05	Calm 2:15-3:45 p.m.
Louisa	27	29.46	6:30 a.	--	--	--	--	--	High tide 7.0 feet above m.s.l.
Monroe CAA AP	27	29.07	9:00 p.	35 E	--	64	--	2.85	
Morgan City	27	29.59	10:45 a.	50*SW	11:30 a.	--	--	2.06	High tide 8.5 feet above m.s.l. at 3:30 p.m.
New Orleans WBO	27	29.68	--	27 S	10:11 a.	--	--	0.16	
New Orleans WBAS	27	29.65	--	35 S	1:30 p.	54SSE	10:17a.	0.15	
Opelousas	27	29.37	2:00 p.	--	--	80 E	--	--	
Port Sulphur	27	--	--	45* SE	11:30 a.	--	--	2.18	High tide 3.6 feet above m.s.l. at 6 p.m.
Rayne	27	29.32	11:50 a.	--	--	--	--	8.59	Calm 10:30 - 11:30 a.m.
Shreveport WBAS	27	29.27	4:55 p.	--	--	51	--	0.45	
Tallulah	27	--	--	55*SSE	8-12 p.	--	--	2.39	Damage slight.
Urania	27	--	--	75* SE	5:00 p.	--	--	5.62	
Winnfield	27	28.70	6:00 p.	45* E	4:00 p.	65*	4:00p.	2.76	
TEXAS									
Beaumont	27	28.67	9:28 a.	72 NW	10:36 a.	86 NW	10:33a.	7.57	
Galveston	27	29.11	6:00 a.	61 N	5:18 a.	78 N	4:33a.		High tide 6.1 feet above m.s.l. at 5:00 a.m.
Orange	27	--	--	55 NE	--	100*	--	5.10	Wind calm 9:15 - 11:15 a.m., increasing to estimated 80 m.p.h. after passage of the eye.
Port Arthur USAE	27	28.52	9:23 a.	--	--	--	--	5.75	Considerable damage to plateglass and from falling trees.
Sabine Pass-Coast Guard	27	28.68#	8:00 a.	85 NW	--	100NW	9:30a.	--	High tide 8.1 feet above m.s.l. Center passed to the eastward.
MISSISSIPPI									
Greenwood CAA AP	28	29.11	1:53 a.	52SSE	1:55 a.	--	--	0.43	
Jackson WBAS	27	29.47	10:59 p.	52 SE	11:23 p.	55	11:23p.	2.52	
Vicksburg	27	29.35	11:45 p.	38 SE	10:18 p.	60*	10:18p.	1.81	
ARKANSAS									
El Dorado	27	--	--	30 NNE	5:58 p.	43NNE	5:58p.	0.63	Minor damage.
Lowest Pressure & Highest Wind	27	28.30	8:30 a.	85 NW		100NW			

All Times - Central Standard
* Estimated
# Lowest pressure not observed

TABLE 1

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RAWINSONDE DATA

Average monthly values

JUNE 1957

ALBANY, N. Y.
(1004 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	29	86	18.0	84	189	3.3
1,000	29	119			174	1.9
950	29	555	17.0	67	245	6.2
900	29	1,019	14.9	64	271	10.3
850	29	1,501	11.9	62	277	14.0
800	29	2,007	9.2	56	274	15.0
750	29	2,540	7.0	45	269	16.5
700	29	3,105	4.2	43	266	19.2
650	29	3,699	.7	42	265	21.8
600	29	4,345	-2.5		266	25.1
550	29	5,024	-6.3		265	25.5
500	29	5,772	-10.6		263	27.4
450	29	6,565	-16.0		265	28.4
400	29	7,454	-22.2		266	30.7
350	29	8,422	-29.1		265	33.2
300	29	9,507	-37.1		271	38.1
250	29	10,743	-46.4		272	40.8
200	28	12,198	-56.4		284	44.3
175	28	13,037	-60.4		286	42.2
150	28	13,998	-60.4		284	32.8
125	27	15,139	-60.7		287	27.4
100	27	16,528	-60.6		291	21.8
80	27	17,920	-59.6		305	14.2
60	25	19,728	-56.0		357	4.1
50	24	20,898	-53.8		61	7.2
40	21	22,338	-51.3		86	9.7
30	11	24,219	-48.9			
20						
15						

ALBUQUERQUE, N. MEX.
(838 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	1,619	16.8	43	98	2.3
1,000	30	74				
950	30	523				
900	30	997				
850	30	1,492				
800	30	2,012	17.5	34	245	2.7
750	30	2,556	14.0	36	276	6.2
700	30	3,138	9.9	40	293	10.1
650	30	3,745	5.3	42	298	11.3
600	30	4,398	.5	44	284	10.9
550	30	5,083	-4.5	41	279	12.8
500	30	5,834	-9.7	38	269	13.4
450	30	6,632	-15.2		273	13.6
400	30	7,519	-21.8		290	13.0
350	30	8,488	-29.1		299	14.4
300	30	9,571	-37.9		300	15.0
250	30	10,802	-47.5		282	15.5
200	30	12,245	-56.5		267	22.5
175	30	13,086	-59.3		268	23.3
150	30	14,044	-62.5		277	22.5
125	30	15,164	-64.5		276	18.8
100	28	16,519	-66.1		284	9.7
80	27	17,874	-64.9		29	1.7
60	26	19,647	-59.6		71	6.2
50	26	20,795	-57.2		83	9.5
40	22	22,212	-54.2		88	11.1
30	16	24,068	-51.3		92	14.8
20	5	26,747	-46.7			
15						

AMARILLO, TEX.
(890 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	1,099	16.0	81	169	2.1
1,000	30	87				
950	30	532				
900	30	998				
850	30	1,487	18.3	62	208	6.8
800	30	2,006	17.3	49	232	7.0
750	30	2,552	14.0	47	248	6.8
700	30	3,133	10.2	48	251	7.8
650	30	3,739	5.8	52	260	8.5
600	30	4,395	1.2	50	260	9.3
550	30	5,077	-3.9	47	265	10.9
500	30	5,834	-9.0	44	276	12.4
450	30	6,632	-14.7	37	265	13.0
400	30	7,524	-21.2		266	14.0
350	30	8,497	-28.2		267	14.8
300	30	9,585	-36.5		263	16.5
250	30	10,823	-46.2		262	16.1
200	30	12,274	-55.8		252	20.0
175	29	13,119	-59.4		258	20.4
150	28	14,077	-61.6		254	22.5
125	28	15,201	-63.9		251	21.4
100	27	16,568	-64.7		251	13.6
80	26	17,937	-63.6		179	3.5
60	22	19,715	-59.8		98	7.2
50	21	20,866	-57.0		100	10.5
40	21	22,289	-54.0		93	13.0
30	21	24,152	-50.1		86	14.2
20	21	26,834	-45.0		88	19.0
15	13	28,798	-41.7			

ANCHORAGE, ALASKA
(1007 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	30	11.6	79	196	4.5
1,000	30	90			195	5.6
950	30	522	11.7	66	190	6.6
900	30	972	9.8	67	190	3.3
850	30	1,446	7.4	69	71	.0
800	30	1,943	4.7	71	46	2.1
750	30	2,460	1.7	65	65	4.1
700	30	3,020	-1.8	65	75	4.5
650	30	3,597	-5.4	61	79	4.7
600	30	4,230	-9.3	51	70	4.7
550	30	4,890	-13.3	38	63	5.6
500	30	5,617	-18.1	35	67	6.6
450	30	6,390	-23.4	32	77	7.4
400	30	7,248	-29.7		66	9.3
350	30	8,186	-37.1		51	9.3
300	30	9,233	-45.4		65	12.8
250	30	10,426	-54.1		53	15.0
200	26	11,847	-55.6		58	8.9
175	21	12,693	-52.9		70	2.1
150	21	13,693	-50.7		297	.6
125	21	14,883	-50.2		303	1.4
100	19	16,339	-50.2		189	.8
80	18	17,802	-49.4		99	2.1
60	18	19,693	-48.3		101	4.7
50	16	20,895	-47.6		91	8.5
40	13	22,369	-46.4		90	8.2
30						
20						
15						

ANNETTE, ALASKA
(1010 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	37	10.2	90	135	5.4
1,000	30	119	10.1	89	142	6.0
950	30	542	8.8	85	151	8.5
900	30	992	6.2	86	167	9.5
850	30	1,459	3.5	84	168	8.2
800	30	1,949	1.4	81	178	7.6
750	30	2,463	-1.2	76	182	7.4
700	30	3,016	-4.1	68	176	7.0
650	30	3,591	-7.2	60	176	5.2
600	30	4,217	-11.1	53	170	6.2
550	30	4,874	-15.6	53	162	6.4
500	30	5,594	-20.2	48	151	6.2
450	30	6,357	-25.7	46	131	6.0
400	30	7,211	-31.9	47	112	7.8
350	30	8,141	-38.7		101	8.5
300	30	9,183	-45.9		87	7.8
250	30	10,381	-51.1		66	5.4
200	30	11,831	-50.6		354	4.1
175	30	12,704	-49.4		293	7.0
150	30	13,716	-49.1		278	6.8
125	30	14,910	-49.9		275	6.2
100	30	16,368	-50.5		268	7.4
80	29	17,825	-50.7		279	4.3
60	28	19,703	-50.4		330	.6
50	26	20,892	-49.7		48	1.4
40	22	22,358	-48.3		71	7.6
30	18	24,270	-46.9			
20						
15						

ATHENS, GA.
(987 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	246	21.1	94		0.0
1,000	30	135				
950	30	582	20.6	84	242	2.9
900	30	1,049	18.5	80	253	4.1
850	30	1,538	15.9	77	227	4.1
800	30	2,052	13.0	73	224	5.1
750	30	2,589	10.2	67	228	5.2
700	30	3,165	6.7	65	243	6.0
650	30	3,767	3.2	59	253	5.8
600	30	4,416	-.5	53	262	8.4
550	30	5,099	-4.2	44	260	8.2
500	30	5,855	-8.3	36	251	9.3
450	30	6,661	-13.1		256	8.9
400	30	7,555	-19.0	33	253	9.9
350	30	8,536	-25.8		252	13.0
300	30	9,635	-34.0		251	15.7
250	30	10,887	-43.6		259	21.8
200	30	12,353	-54.5		270	24.7
175	28	13,192	-60.4		273	25.6
150	28	14,142	-65.0		275	21.0
125	28	15,248	-67.1		277	16.5
100	28	16,593	-67.4		314	8.5
80	28	17,940	-66.5		34	4.7
60	27	19,696	-61.5		65	10.1
50	27	20,840	-57.0		82	14.0
40	25	22,264	-53.5		87	15.5
30	20	24,128	-50.5		92	17.3
20						

BARROW, ALASKA
(1014 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	8	-0.2	90	122	3.5
1,000	30	117	-.4	90	120	4.7
950	30	530	.5	82	190	4.5
900	30	963	.8	71	234	6.4
850	30	1,422	-.4	66	265	8.9
800	30	1,906	-2.1	62	273	11.3
750	30	2,414	-4.3	55	269	13.2
700	30	2,960	-6.8	55	269	16.1
650	30	3,529	-10.0	57	263	18.8
600	30	4,148	-13.6	56	278	18.1
550	30	4,801	-17.7	54	274	18.3
500	30	5,513	-22.7	55	286	23.7
450	30	6,273	-28.0	55	294	23.7
400	30	7,115	-33.8	51	284	25.6
350	30	8,040	-40.2		269	34.2
300	30	9,077	-46.6		261	29.0
250	30	10,275	-50.2		265	28.8
200	30	11,737	-48.4		271	18.1
175	30	12,620	-46.7		298	15.5
150	30	13,644	-46.6		277	11.9
125	29	14,855	-46.8		313	11.3
100	29	16,336	-46.5		324	8.5
80	29	17,820	-45.7		291	4.1
60	28	19,742	-44.5		9	4.9
50	28	20,965	-43.7		77	9.5
40	26	22,476	-42.6		77	9.3
30	15	24,420	-41.8			
20						

BARTER IS., ALASKA
(1013 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	15	-0.4	91	80	3.9
1,000	30	119	.1	89	69	3.3
950	30	536	2.3	79	94	1.2
900	30	970	2.3	66	254	3.7
850	30	1,431	1.0	57	261	7.4
800	30	1,917	-1.2	56	266	11.7
750	30	2,427	-4.1	58	266	15.0
700	30	2,971	-7.4	60	266	17.3
650	30	3,539	-10.6	53	269	18.7
600	30	4,158	-14.2	50	267	20.8
550	30	4,806	-18.5	48	268	21.2
500	30	5,519	-23.2	45	269	24.1
450	29	6,272	-28.6	45	271	28.0
400	29	7,116	-34.3	43	274	31.9
350	29	8,040	-40.1		276	36.9
300	29	9,079	-45.9		277	40.0
250	29	10,280	-50.5		279	37.1
200	28	11,737	-47.9		273	25.6
175	28	12,622	-46.4		281	19.8
150	28	13,646	-46.4		280	14.4
125	28	14,857	-46.4		286	11.3
100	26	16,335	-46.4		291	7.0
80	25	17,819	-45.7		338	2.3
60	24	19,741	-44.8		26	4.1
50	23	20,961	-44.2		63	5.6
40	21	22,462	-43.4		61	8.2
30	19	24,415	-42.0		59	10.7
20	15	27,175	-39.9		69	14.0

BETHEL, ALASKA
(1011 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	4	10.9	88	272	2.7
1,000	30	92	11.3	82	289	2.5
950	30	523	11.4	66	235	1.7
900	30	972	9.4	65	160	2.9
850	30	1,444	7.0	65	154	5.2
800	30	1,940	4.0	64	143	8.0
750	30	2,460	.7	62	137	8.9
700	30	3,014	-2.7	58	138	10.5
650	30	3,593	-6.4	51	136	11.5
600	30	4,220	-9.6	43	143	13.4
550	30	4,880	-13.7	41	140	10.7
500	30	5,607	-18.5	40	136	11.9
450	30	6,379	-23.8	39	139	15.2
400	30	7,238	-29.9	39	126	18.7
350	30	8,176	-36.9	37	123	18.1
300	30	9,225	-45.1		133	20.0
250	30	10,420	-53.9		127	21.0
200	30	11,838	-55.7		132	16.1
175	30	12,696	-52.0		134	9.5
150	29	13,701	-50.4		126	6.6
125	29	14,892	-50.0		140	5.6
100	29	16,350	-49.8		129	3.5
80	28	17,814	-49.1		123	3.3
60	28	19,706	-48.3		104	5.2
50	27	20,909	-47.8		106	7.2
40	25	22,386	-46.6		103	9.7
30	23	24,305	-45.0		98	14.6
20	13	27,018	-42.5			

BISMARCK, N. DAK.
(952 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	505	11.7	85	102	2.3
1,000	30	88				
950	30	524			117	1.0
900	30	977	14.4	63	248	2.7
850	30	1,459	11.9	60	270	7.6
800	30	1,964	8.9	62	280	10.7
750	30	2,493	5.3	59	284	12.4
700	30	3,056	1.7	56	284	15.3
650	30	3,643	-1.9	52	284	16.7
600	30	4,282	-5.6	50	282	20.0
550	30	4,952	-9.9	46	284	23.3
500	30	5,690	-14.7	37	281	23.1
450	30	6,471	-20.2	38	279	26.2
400	30	7,343	-26.3	41	276	29.1
350	30	8,295	-33.3	40	263	33.8
300	30	9,360	-41.7		259	34.8
250	30	10,572	-50.3		250	39.8
200	30	12,012	-54.7		249	43.7
175	30	12,866	-54.3		247	41.2
150	29	13,857	-53.7		258	29.1
125	28	15,028	-54.5			
100	28	16,455	-55.0			
80	27	17,885	-55.1			
60	26	19,730	-54.0			
50	26	20,905	-52.4			
40	26	22,354	-50.9			
30	19	24,251	-48.9			
20	9	26,976	-45.2			

BOISE, IDAHO
(915 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	868	12.1	68	166	3.3
1,000	30	111				
950	30	549				
900	30	1,005	14.9	55	255	1.4
850	30	1,490	14.6	46	321	6.0
800	30	2,000	11.5	46	313	8.0
750	30	2,533	7.6	48	302	9.9
700	30	3,101	3.6	48	286	14.0
650	30	3,695	-.1	43	277	17.3
600	30	4,336	-4.3	41	272	21.4
550	30	5,010	-8.6	35	272	23.9
500	30	5,749	-13.7	32	269	22.9
450	30	6,533	-19.1	31	270	24.9
400	30	7,409	-25.4	30	266	29.3
350	30	8,364	-32.7		263	28.8
300	30	9,432	-40.8		258	31.3
250	30	10,650	-49.3		276	29.9
200	30	12,090	-55.9		283	37.5
175	29	12,939	-57.6		286	35.8
150	29	13,913	-57.2			
125	27	15,066	-57.5			
100	26	16,474	-57.7			
80	25	17,887	-57.5			
60	25	19,711	-55.6			
50	25	20,877	-54.1			
40	25	22,316	-51.8			
30	16	24,182	-49.1			
20						

BROWNSVILLE, TEX.
(1009 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	7	24.5	93	137	4.5
1,000	30	89	24.9	87	137	7.0
950	30	541	22.9	82	159	13.2
900	30	1,012	20.9	73	166	13.8
850	30	1,505	18.7	62	175	8.7
800	30	2,024	16.3	52	167	6.4
750	30	2,569	13.4	46	153	2.5
700	30	3,149	9.8	44	26	.6
650	30	3,753	5.9	42	352	3.1
600	30	4,411	1.6	39	320	6.2
550	30	5,099	-3.0	37	323	7.6
500	30	5,857	-7.4		319	6.2
450	30	6,665	-12.6		317	7.4
400	30	7,561	-18.6		325	4.5
350	30	8,543	-25.7		288	6.2
300	30	9,642	-33.9		267	11.1
250	30	10,896	-43.3		258	16.9
200	30	12,364	-54.0		251	23.3
175	30	13,211	-59.5		256	14.6
150	28	14,170	-64.4		253	12.0
125	27	15,273	-68.9		269	7.2
100	27	16,593	-73.0		83	7.4
80	24	17,907	-70.4		94	16.9
60	24	19,643	-63.1		91	24.7
50	24	20,776	-59.3		85	25.6
40	21	22,180	-56.7		83	29.1
30	19	24,016	-52.1		84	34.4
20						

BUFFALO, N. Y.
(992 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	182	16.7	83	223	4.9
1,000	30	112				
950	30	548	17.3	70	239	10.5
900	30	1,012	15.0	69	252	14.4
850	30	1,495	12.4	70	255	16.9
800	30	2,003	10.0	62	256	19.8
750	30	2,536	7.1	59	258	22.3
700	30	3,102	3.9	57	258	23.3
650	30	3,701	.6	52	257	24.3
600	30	4,340	-3.0	47	255	26.4
550	30	5,019	-6.9	48	253	28.2
500	30	5,762	-11.5	45	254	28.0
450	30	6,558	-16.8	44	256	30.5
400	30	7,438	-22.9	42	257	32.4
350	30	8,404	-29.5	39	258	35.8
300	30	9,487	-37.3		261	40.2
250	30	10,722	-46.6		262	45.9
200	30	12,170	-56.4		269	49.2
175	30	13,011	-59.6		271	47.0
150	30	13,975	-59.5		268	36.3
125	29	15,122	-59.8		270	28.2
100	29	16,513	-61.0		271	21.8
80	27	17,898	-60.2		277	12.6
60	23	19,696	-57.0		305	2.9
50	22	20,855	-54.9		49	3.3
40	22	22,290	-52.4		74	8.2
30	17	24,160	-49.2		87	10.7
20	6	26,821	-45.1			

BURRWOOD, LA.
(1013 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	29	3	26.0	86	159	4.7
1,000	29	118	25.5	81	161	6.8
950	29	563	22.5	81	163	8.7
900	29	1,038	19.5	78	169	8.7
850	29	1,529	16.8	71	164	8.5
800	29	2,045	14.0	63	166	7.8
750	29	2,581	10.9	60	178	7.4
700	29	3,160	7.7	52	182	5.4
650	28	3,763	4.3	51	212	4.1
600	28	4,416	.5	48	243	3.3
550	28	5,103	-3.5	42	228	2.9
500	28	5,858	-7.9	36	235	3.3
450	28	6,661	-13.1		226	4.5
400	28	7,557	-19.3		250	6.8
350	28	8,537	-25.9		249	8.4
300	28	9,635	-33.9		243	12.2
250	28	10,889	-43.3		250	15.5
200	28	12,356	-54.0		241	21.4
175	25	13,201	-59.4		245	22.5
150	25	14,155	-64.2		257	18.7
125	25	15,261	-67.6		287	6.8
100	25	16,597	-69.1		76	5.4
80	25	17,933	-68.4		99	10.1
60	24	19,682	-62.1			
50	22	20,812	-58.3			
40	20	22,230	-54.4			
30	15	24,071	-52.2			
20						

CAPE HATTERAS, N. C.
(1015 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	28	4	24.0	87	229	3.3
1,000	28	131	23.4	84	232	3.7
950	28	573	20.8	79	258	4.9
900	28	1,046	18.3	75	268	4.7
850	28	1,535	15.4	72	275	3.3
800	28	2,047	12.4	66	269	5.6
750	28	2,587	9.8	59	264	7.2
700	28	3,158	6.6	57	271	8.0
650	28	3,760	3.3	51	264	8.7
600	28	4,409	-.4	45	267	9.7
550	28	5,094	-4.0	39	264	8.7
500	28	5,849	-8.1	33	266	9.1
450	28	6,655	-13.2		262	9.3
400	28	7,549	-18.8		273	10.9
350	28	8,530	-26.1		273	12.6
300	28	9,628	-34.4		285	11.7
250	28	10,877	-44.2		290	15.0
200	28	12,337	-55.3		311	17.7
175	27	13,178	-60.8		305	17.7
150	26	14,123	-64.8		311	15.7
125	26	15,234	-65.1		314	12.4
100	25	16,594	-65.0		326	9.3
80	25	17,959	-63.3		13	6.8
60	25	19,745	-58.7		71	8.2
50	25	20,899	-55.5		77	11.3
40	24	22,334	-52.4		92	13.0
30	19	24,205	-48.2		88	14.0
20						

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

RAWINSONDE DATA

Average monthly values

CARIBOU, ME (991 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	191	13.8	82	200	3.7
1,000	30	114				
950	30	546	12.8	73	230	6.4
900	30	1,000	11.4	70	256	10.1
850	30	1,477	9.0	68	260	13.8
800	30	1,977	6.7	64	276	18.3
750	30	2,503	3.8	59	275	21.0
700	30	3,064	.8	58	276	24.1
650	30	3,650	-1.7	51	279	25.3
600	30	4,291	-5.2	53	275	29.1
550	30	4,964	-9.1	45	275	34.0
500	30	5,702	-13.7	46	275	36.1
450	30	6,489	-19.1	41	278	38.1
400	30	7,362	-25.1	41	277	40.8
350	30	8,319	-31.9	43	280	45.1
300	30	9,392	-39.8		280	49.5
250	30	10,616	-48.0		283	53.6
200	30	12,063	-55.5		290	51.5
175	30	12,911	-57.2		292	45.1
150	30	13,886	-57.0		287	36.5
125	30	15,041	-57.3		281	29.3
100	29	16,448	-57.0		288	24.9
80	29	17,864	-56.4		288	13.8
60	27	19,693	-53.7		331	3.7
50	25	20,870	-51.9		108	4.5
40	25	22,321	-50.5		110	2.3
30	21	24,232	-48.0		90	10.9
20						

CHARLESTON, S. C. (1014 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	13	22.5	92	197	0.8
1,000	30	136	22.7	86	220	2.3
950	30	582	21.2	81	252	4.5
900	30	1,052	18.7	76	250	3.5
850	30	1,541	15.9	75	253	1.7
800	30	2,055	13.0	72	274	.8
750	30	2,593	10.3	64	258	2.5
700	30	3,168	7.1	58	249	3.1
650	30	3,772	3.8	56	251	3.7
600	30	4,422	.3	51	254	6.0
550	30	5,109	-3.6	46	268	6.4
500	30	5,864	-7.9	43	270	7.0
450	30	6,670	-12.4	37	276	9.5
400	30	7,570	-18.3	34	269	10.1
350	30	8,553	-25.3		264	10.1
300	30	9,656	-33.4		280	11.7
250	30	10,911	-43.1		284	11.9
200	30	12,378	-54.8		310	16.3
175	30	13,222	-60.1		320	16.9
150	30	14,173	-64.8		331	16.1
125	30	15,278	-67.2		337	11.5
100	29	16,627	-66.5		349	10.9
80	27	17,980	-65.1		37	9.7
60	26	19,751	-60.5		69	15.0
50	26	20,896	-57.2		86	18.7
40	25	22,319	-53.6		94	19.6
30	18	24,191	-49.8		99	19.8
20						

COLD BAY, ALASKA (1008 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	29	7.5	90	170	1.6
1,000	30	96			157	2.5
950	30	516	6.0	84	101	5.4
900	30	960	4.8	79	68	6.2
850	30	1,426	3.1	76	68	8.9
800	30	1,916	1.3	70	93	7.2
750	30	2,428	-1.3	66	96	7.8
700	30	2,981	-4.2	62	105	7.6
650	30	3,552	-7.1	50	99	7.2
600	30	4,183	-10.5	41	100	8.7
550	30	4,838	-14.5	36	110	9.1
500	30	5,565	-19.3	40	108	9.9
450	30	6,330	-24.9	41	113	11.9
400	30	7,188	-31.3	42	124	13.2
350	30	8,120	-38.3		129	15.3
300	30	9,163	-46.2		100	15.2
250	30	10,355	-52.9		96	10.3
200	30	11,798	-50.6		134	9.9
175	29	12,675	-49.7		140	7.6
150	29	13,686	-49.0		150	9.3
125	29	14,882	-49.3		154	4.3
100	28	16,345	-49.5		182	5.4
80	26	17,805	-49.8		166	1.7
60	25	19,688	-49.8		152	2.5
50	23	20,882	-49.4		108	5.6
40	17	22,325	-48.9		101	8.9
30	9	24,210	-46.9			
20						

COLUMBIA, MO (985 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	238	18.5	91	175	2.7
1,000	30	106				
950	30	548	20.0	73	218	7.4
900	30	1,016	18.4	69	248	12.2
850	30	1,504	15.6	68	251	10.1
800	30	2,016	12.6	65	259	10.7
750	30	2,554	9.7	58	257	11.9
700	30	3,127	6.4	57	256	13.8
650	30	3,726	2.6	56	260	15.0
600	30	4,374	-1.3	47	258	16.7
550	30	5,053	-5.1		257	17.9
500	30	5,807	-9.4		260	18.5
450	30	6,605	-14.6		263	21.0
400	30	7,497	-20.9		264	23.1
350	30	8,471	-27.5		268	26.6
300	30	9,562	-35.5		266	29.0
250	30	10,806	-45.3		264	30.9
200	30	12,260	-55.7		261	37.9
175	30	13,102	-59.7		259	38.7
150	30	14,061	-61.0		260	37.3
125	30	15,194	-61.5		264	26.8
100	30	16,574	-62.7		262	17.9
80	29	17,947	-62.5		262	6.8
60	28	19,739	-58.4		99	5.4
50	28	20,895	-55.1		95	8.7
40	28	22,331	-52.0		92	11.7
30	26	24,208	-48.7		85	14.2
20	13	26,930	-43.4			

CURACAO, N.W.I. (1012 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	8	27.5	77	113	15.7
1,000	30	114	26.4	77	110	19.2
950	30	565	22.6	83	111	24.3
900	30	1,036	20.6	80	119	23.7
850	30	1,531	18.5	75	124	22.2
800	30	2,050	16.1	66	124	21.4
750	30	2,597	13.4	57	121	23.1
700	30	3,176	10.2	53	120	18.5
650	30	3,790	7.0	45	119	17.5
600	30	4,444	3.0	43	116	14.6
550	30	5,140	-1.5	40	114	13.0
500	30	5,897	-6.1	38	111	13.4
450	30	6,712	-11.1	39	117	10.9
400	30	7,610	-17.4	44	144	5.2
350	30	8,597	-24.4	39	220	5.1
300	30	9,701	-32.9	37	243	10.9
250	30	10,958	-43.0		244	15.9
200	30	12,424	-54.9		272	19.2
175	30	13,265	-61.5		278	22.0
150	30	14,206	-67.8		287	24.9
125	30	15,289	-72.4		284	22.0
100	29	16,598	-73.4		277	8.4
80	28	17,902	-72.1		76	11.1
60	28	19,631	-64.1		92	24.5
50	25	20,758	-60.0		91	26.8
40	18	22,162	-56.2		91	25.1
30	7	24,023	-51.0			
20						

DAYTON, OHIO (979 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	297	18.2	81	184	0.8
1,000	30	118				
950	30	554	18.2	75	236	5.4
900	30	1,022	16.8	71	259	9.9
850	30	1,508	14.1	67	257	11.9
800	30	2,018	11.3	62	252	14.8
750	30	2,547	8.3	59	252	16.7
700	30	3,122	5.1	56	252	18.3
650	30	3,714	1.6	49	252	19.4
600	30	4,365	-1.9	39	255	21.0
550	30	5,042	-5.4	36	257	19.2
500	30	5,795	-9.7		259	22.2
450	30	6,594	-15.0		260	23.7
400	30	7,482	-21.2	36	259	25.8
350	30	8,454	-27.7		260	27.4
300	30	9,545	-35.7		259	28.6
250	30	10,789	-45.0		262	35.9
200	30	12,244	-55.4		266	42.0
175	28	13,085	-59.8		269	39.6
150	27	14,043	-60.9		271	33.2
125	26	15,176	-61.5		269	28.0
100	24	16,551	-63.0		275	21.6
80	23	17,931	-62.1		282	9.3
60	21	19,724	-58.2		59	4.5
50	20	20,882	-54.9		82	8.5
40	20	22,321	-51.3		88	9.1
30	14	24,185	-48.4		84	12.4
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DENVER, COLO. (837 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	1,608	11.4	74	227	4.1
1,000	30	96				
950	30	535				
900	30	997				
850	30	1,484				
800	30	1,995	14.2	57	254	5.6
750	30	2,534	12.1	49	272	7.4
700	30	3,113	8.1	49	286	10.3
650	30	3,712	3.5	52	291	13.4
600	30	4,364	-1.6	56	289	19.0
550	30	5,043	-6.4	51	286	20.4
500	30	5,790	-11.5	49	281	21.6
450	30	6,581	-17.2	44	278	22.3
400	30	7,464	-23.4	38	276	24.9
350	29	8,423	-31.0		274	26.8
300	29	9,498	-39.5		273	31.1
250	29	10,721	-48.8		268	33.6
200	29	12,159	-56.8		267	37.3
175	29	13,002	-58.5		265	37.3
150	29	13,972	-58.3		266	29.9
125	28	15,116	-60.3		257	24.9
100	25	16,506	-61.4		268	16.1
80	23	17,890	-61.3		267	2.7
60	22	19,693	-57.7		111	4.3
50	22	20,849	-55.8		106	8.0
40	16	22,294	-53.3		85	13.6
30	11	24,162	-49.4			
20						

DODGE CITY, KANS. (922 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	792	16.0	85	180	2.9
1,000	30	93				
950	30	534				
900	30	999	18.4	67	185	3.3
850	30	1,489	18.0	46	214	4.5
800	30	2,007	16.0	42	244	5.6
750	30	2,550	12.5	45	281	8.9
700	30	3,127	8.3	48	279	11.9
650	30	3,734	4.0	52	274	16.5
600	30	4,382	-.3	49	278	17.3
550	30	5,066	-5.0	46	279	16.5
500	30	5,815	-10.0	43	282	17.5
450	30	6,613	-15.3	39	277	18.1
400	30	7,501	-21.6	31	274	22.9
350	30	8,472	-28.5		270	22.7
300	30	9,559	-36.8		265	22.3
250	30	10,796	-46.5		255	19.2
200	30	12,244	-56.3		250	18.5
175	30	13,085	-59.7		253	19.8
150	29	14,044	-61.4		261	23.5
125	26	15,179	-62.4		274	19.4
100	26	16,553	-63.5		271	9.9
80	26	17,925	-62.9		314	5.8
60	26	19,709	-59.1		52	6.0
50	26	20,861	-56.3		80	7.6
40	25	22,288	-53.5		78	9.3
30	19	24,150	-50.3			
20	10	26,806	-46.4			

EL PASO, TEX. (880 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	1,195	21.8	33	311	1.7
1,000	30	62				
950	30	514				
900	30	993				
850	30	1,495	22.5	31	311	3.3
800	30	2,019	19.4	32	307	7.6
750	30	2,563	15.8	31	304	9.1
700	30	3,152	11.6	31	289	8.0
650	30	3,759	7.1	34	285	8.0
600	30	4,419	2.2	35	268	8.9
550	30	5,105	-3.2	34	282	7.2
500	30	5,863	-8.8		289	8.5
450	30	6,664	-14.0		273	8.5
400	30	7,557	-20.5		298	10.5
350	30	8,532	-27.7		297	13.0
300	30	9,622	-36.1		291	14.2
250	30	10,863	-45.3		283	19.6
200	30	12,321	-54.7		285	27.8
175	30	13,166	-59.1		286	25.3
150	30	14,125	-62.2		278	22.5
125	29	15,242	-65.2		274	20.4
100	28	16,592	-67.0		275	11.7
80	28	17,940	-66.4		267	3.5
60	27	19,710	-60.8		94	11.3
50	27	20,853	-57.7		98	14.2
40	25	22,274	-54.1		90	17.7
30	20	24,142	-50.5		89	23.7
20	5	26,812	-46.0			

ELY, NEV. (809 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	1,908	7.6	62	181	6.0
1,000	30	118				
950	30	556				
900	30	1,015				
850	30	1,498				
800	30	2,004	12.0	51	177	4.5
750	30	2,545	12.3	40	289	1.7
700	29	3,120	8.3	41	296	6.2
650	29	3,726	3.7	44	283	9.7
600	29	4,373	-.7	39	265	13.0
550	29	5,057	-5.7	41	259	15.2
500	29	5,803	-10.8	36	272	17.7
450	29	6,601	-16.1		269	18.8
400	29	7,482	-22.4		276	20.4
350	29	8,449	-29.7		273	15.9
300	29	9,529	-38.2		280	17.5
250	29	10,759	-47.5		255	15.7
200	29	12,204	-56.0		263	20.0
175	27	13,041	-58.3		255	24.9
150	26	14,014	-60.0			
125	21	15,158	-60.6			
100	20	16,543	-62.0			
80	16	17,946	-60.5			
60	15	19,756	-57.1			
50	14	20,916	-55.3			
40	14	22,345	-53.4			
30	12	24,214	-50.2			
20						

FAIRBANKS, ALASKA (994 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	135	12.6	75	348	3.3
1,000	30	85				
950	30	517	14.9	54	356	2.5
900	30	976	12.8	50	22	1.7
850	30	1,453	9.2	53	321	3.1
800	30	1,953	5.3	59	306	3.9
750	30	2,474	1.2	63	286	6.2
700	30	3,029	-2.8	62	283	6.4
650	30	3,607	-6.4	55	285	8.4
600	30	4,236	-10.1	49	287	10.7
550	30	4,896	-14.4	44	282	11.7
500	30	5,619	-19.1	38	287	13.2
450	30	6,389	-24.4	35	294	17.1
400	30	7,245	-30.6		297	20.2
350	30	8,180	-37.6		298	21.4
300	30	9,226	-45.7		302	22.3
250	30	10,417	-54.2		297	15.7
200	28	11,843	-56.2		309	13.6
175	28	12,698	-53.3		325	8.9
150	28	13,696	-51.0		310	3.5
125	27	14,886	-50.5		339	2.9
100	27	16,344	-49.8		358	1.9
80	27	17,808	-48.7		74	5.4
60	24	19,704	-47.7		66	7.4
50	24	20,911	-46.8		70	8.7
40	22	22,394	-45.5		76	9.7
30	13	24,310	-44.4			
20						
15						

FLINT, MICH. (986 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	234	15.7	87	209	2.1
1,000	30	112				
950	30	546	16.3	78	231	6.4
900	30	1,009	14.6	72	258	10.7
850	30	1,492	12.5	64	263	13.8
800	30	1,999	9.8	57	263	16.9
750	30	2,528	7.1	52	261	18.3
700	30	3,098	4.1	49	260	20.8
650	30	3,692	.7	53	256	23.7
600	30	4,337	-3.0	48	262	23.3
550	30	5,015	-6.9	44	260	26.2
500	30	5,761	-11.4	38	256	28.8
450	30	6,552	-16.7	35	259	29.9
400	30	7,438	-23.0		260	35.0
350	30	8,404	-29.8		261	39.6
300	30	9,486	-37.5		261	43.1
250	30	10,722	-46.1		262	49.0
200	30	12,175	-55.6		260	52.7
175	30	13,020	-58.0		264	49.4
150	30	13,992	-57.8		264	40.4
125	30	15,139	-59.0		266	32.3
100	29	16,535	-60.2		265	24.3
80	27	17,927	-59.7		277	13.6
60	26	19,736	-56.7		45	1.9
50	26	20,899	-54.2		85	4.7
40	21	22,342	-51.7		75	9.3
30	17	24,220	-48.9		90	9.7
20						
15						

FORT WORTH, TEX. (991 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	178	22.7	87	174	3.1
1,000	29	96				
950	30	544	21.8	84	187	11.1
900	30	1,014	19.8	77	200	14.2
850	30	1,507	18.4	62	209	11.5
800	30	2,025	16.1	54	210	8.2
750	30	2,566	13.1	49	217	5.1
700	30	3,148	9.5	45	252	2.1
650	30	3,753	5.3	46	295	2.5
600	30	4,407	.7	47	306	3.7
550	30	5,092	-4.0	39	314	4.5
500	30	5,846	-8.6	34	296	3.9
450	30	6,648	-13.9		283	5.8
400	30	7,540	-20.0		255	7.8
350	30	8,515	-27.5		260	7.8
300	30	9,605	-36.0		263	11.3
250	30	10,847	-45.2		254	14.6
200	30	12,305	-54.7		254	17.7
175	29	13,156	-59.0		250	17.5
150	29	14,116	-62.0		244	19.2
125	26	15,247	-65.4		244	19.4
100	25	16,595	-67.3		238	10.3
80	23	17,944	-67.3		141	4.7
60	22	19,705	-61.7		97	10.5
50	19	20,844	-59.0		94	11.3
40	18	22,257	-55.1		84	14.2
30	16	24,100	-51.7		88	16.1
20	13	26,746	-46.8		81	22.7
15	[illegible]	28,665	-43.7			

GLASGOW, MONT. (931 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	695	11.3	82	32	2.7
1,000	30	89				
950	30	522				
900	30	979	14.2	65	313	3.7
850	30	1,460	12.3	56	298	7.8
800	30	1,965	8.7	59	298	9.1
750	30	2,493	4.9	63	304	11.3
700	30	3,056	.8	65	308	12.6
650	30	3,644	-3.0	63	293	15.5
600	30	4,278	-6.9	56	287	18.8
550	30	4,945	-10.9	47	288	21.2
500	30	5,680	-15.3	45	285	25.1
450	30	6,457	-20.9	44	285	27.8
400	30	7,328	-27.1	43	280	29.3
350	30	8,278	-34.1	39	279	34.4
300	30	9,339	-42.2		272	32.6
250	30	10,551	-50.4		270	34.6
200	30	11,991	-54.2		260	33.8
175	29	12,847	-53.0		262	26.0
150	29	13,844	-52.5		267	26.2
125	29	15,020	-53.1		264	22.0
100	29	16,458	-53.6		267	15.7
80	29	17,889	-54.4		256	8.4
60	26	19,737	-53.4		274	2.1
50	25	20,920	-51.9		23	4.5
40	23	22,372	-50.5		98	8.5
30	16	24,263	-48.8		81	11.5
20						
15						

GRAND JUNCTION, COLO. (851 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	1,474	14.9	51	108	6.0
1,000	30	79				
950	30	525				
900	30	989				
850	30	1,481			113	6.6
800	30	1,998	16.1	41	142	5.6
750	30	2,540	12.8	40	223	3.9
700	30	3,120	8.7	42	269	7.6
650	30	3,721	4.1	45	272	10.9
600	30	4,373	-1.1	50	273	15.3
550	30	5,053	-5.9	47	267	18.1
500	30	5,802	-11.1	45	267	19.6
450	30	6,592	-16.8	41	271	17.9
400	30	7,477	-23.4	36	283	19.2
350	30	8,440	-30.7		291	20.8
300	30	9,517	-38.9		290	22.0
250	30	10,745	-47.8		284	20.6
200	30	12,188	-55.9		293	22.7
175	30	13,033	-57.8		288	25.8
150	30	14,004	-58.5		279	21.6
125	29	15,148	-59.7		273	15.0
100	29	16,538	-61.3		277	11.1
80	29	17,924	-61.0		277	5.8
60	28	19,724	-57.4			
50	28	20,883	-55.0			
40	27	22,314	-52.5			
30	24	24,200	-48.8			
20						
15						

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

CLEMSON COLLEGE LIBRARY

RAWINSONDE DATA

Average monthly values

Standard pressure surface (mb.)	GREAT FALLS, MONT. (886 MB.)						GREEN BAY, WIS. (986 MB.)						GREENSBORO, N. C (985 MB.)						INTERNAT. FALLS, MINN. (967 MB.)						JACKSON, MISS. (1002 MB.)					
					Wind						Wind						Wind						Wind						Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	30	1,123	11.0	70	232	9.3	30	210	14.0	86	235	1.6	30	273	20.0	93		0.0	30	360	10.7	80	283	1.4	30	101	22.2	93	203	1.7
1,000	30	96					30	93					30	144					30	79					30	122			189	2.1
950	30	532					30	528	15.0	72	236	6.6	30	586	20.6	80	269	3.5	30	510	11.8	71	273	3.5	30	570	21.5	82	208	9.7
900	30	992					30	985	13.3	70	248	11.1	30	1,055	18.9	75	268	4.5	30	960	10.3	69	284	7.4	30	1,039	19.3	77	206	10.9
850	30	1,470	12.4	56	260	12.8	30	1,465	10.8	70	251	14.2	30	1,545	16.1	74	264	5.6	30	1,435	8 0	66	288	10.5	30	1,530	16.6	72	205	10.7
800	30	1,977	9.2	56	279	10.9	30	1,969	8.2	68	254	16.1	30	2,060	13.3	72	271	6.6	30	1,933	5.4	63	298	12.4	30	2,045	14.0	64	202	9.5
750	30	2,510	5.2	58	285	10.3	30	2,497	5.2	62	257	18.1	30	2,598	10.2	66	273	7.6	30	2,459	2.8	60	291	14.2	30	2,586	10.8	59	205	8.2
700	30	3,069	.8	62	286	10.9	30	3,061	2.4	53	263	20.6	30	3,173	6.7	63	267	8.4	30	3,015	- .3	55	286	17.5	30	3,160	7.5	56	204	7.2
650	30	3,656	- 2.9	56	287	14.2	30	3,653	- .7	47	268	22.5	30	3,774	3.2	60	264	9.5	30	3,599	- 3.4	46	284	17.9	30	3,763	3.8	54	209	7.0
600	30	4,292	- 6.7	50	278	18.1	30	4,293	- 4.2	44	273	25.1	30	4,424	- .6	51	253	10.5	30	4,235	- 7.2	44	282	20.4	30	4,414	.1	52	233	8 0
550	30	4,961	-10.9	44	276	21.6	30	4,970	- 8.2	39	272	26.0	30	5,110	- 4.1	44	250	11.5	30	4,902	-11.0	41	283	23.1	30	5,102	- 3.8	52	234	7.8
500	30	5,694	-15.4	43	276	25.6	30	5,710	-12.7	35	266	27.8	30	5,862	- 8.2	40	259	11.3	30	5,636	-15.7	39	282	25.1	30	5,855	- 8.4	48	240	5.8
450	30	6,474	-20.8	45	275	29.3	30	6,501	-17.8	35	267	32.6	30	6,668	-13.2	38	261	12.2	30	6,417	-20.8	41	280	28.0	30	6,657	-13.5	42	239	7.6
400	30	7,345	-26.8	44	274	34.6	30	7,378	-24.0		268	35.6	30	7,562	-18.9	40	270	11.7	30	7,286	-27.0	41	278	32.3	30	7,553	-19.4	38	241	9.7
350	30	8,294	-34.2	40	273	32.8	30	8,339	-30.8		267	38.1	30	8,544	-25.8	34	269	14.6	30	8,236	-33.6		278	39.6	30	8,533	-26.0		241	13.0
300	30	9,354	-42.7		273	39.2	30	9,416	-38.5		262	46.2	30	9,642	-34.2		266	17.3	30	9,301	-41.2		276	43.1	30	9,631	-33.9		242	15.7
250	30	10,561	-51.1		277	43.5	30	10,646	-47.0		259	49.4	30	10,893	-43.8		274	20.4	30	10,518	-49.3		278	49.5	30	10,885	-43.1		243	21.0
200	29	11,999	-54.7		275	48.6	30	12,098	-54.5		264	47.0	29	12,354	-55.1		279	23.7	30	11,963	-53.0		268	53.2	29	12,356	-53.8		250	26.4
175	29	12,854	-54.4		275	37.3	30	12,951	-55.4		262	43.1	29	13,197	-60.0		292	21.2	29	12,829	-52.2		267	46.4	29	13,204	-59.0		251	27.4
150	29	13,843	-53.9		275	34.8	30	13,935	-55.0		258	38.5	27	14,154	-63.6		289	17.5	29	13,827	-51.9		267	35.2	29	14,160	-63.5		258	22.3
125	29	15,013	-54.2		276	26.8	30	15,097	-56.4		253	33.6	27	15,273	-63.8		290	14.2	29	15,006	-53.2		268	30.5	28	15,270	-66.5		263	15.2
100	29	16,443	-54.6		271	20.2	30	16,508	-57.6				26	16,636	-64.7		302	10.7	29	16,441	-54.0		270	24.7	26	16,613	-68.4		284	2.1
80	29	17,871	-55.0		280	9.7	30	17,918	-57.5				25	17,997	-63.5		8	5.2	29	17,873	-54.0		267	15.7	26	17,956	-66.5		93	4.7
60	29	19,711	-54.1		327	3.9	29	19,750	-54.5				25	19,781	-59.2		66	9.3	28	19,730	-52.0		321	3.3	26	19,714	-63.6		85	12.8
50	29	20,886	-52.5		36	1.7	28	20,926	-53.1				25	20,933	-56.1		78	13.0	28	20,913	-50.9		77	4.7	26	20,859	-56.8		92	14.6
40	29	22,335	-50.4		73	8.9	28	22,372	-50.9				25	22,365	-52.4		92	13.6	26	22,377	-49.2		85	10.1	23	22,289	-53.4		91	15.0
30	27	24,223	-48.1		90	12.4	23	24,254	-48.6				15	24,247	-49.4		95	15.0	21	24,281	-46.9		86	15.9	22	24,157	-49.8		87	17.9
20	19	26,911	-44.9		89	14.2	9	26,960	-44.8										6	26,983	-42.5				14	26,837	-44.0		88	21.2

Standard pressure surface (mb.)	JACKSONVILLE, FLA. (1016 MB.)						KING SALMON, ALASKA (1010 MB.)						KOTZEBUE, ALASKA (1012 MB.)						LAKE CHARLES, LA. (1012 MB.)						LANDER, WYO. (828 MB.)					
SURFACE	30	6	23.3	93	197	1.0	30	15	8.4	89	164	4.9	30	5	8.5	84	310	1.9	29	5	23.3	96	120	1.9	30	1,696	10.1	72	212	2.5
1,000	30	143	23.2	88	204	2.5	30	101	9.3	85	194	6.4	30	101	9.8	75	358	1.4	29	108	23.9	91	133	4.1	30	95				
950	30	588	21.4	82	225	5.4	30	528	9.6	73	180	3.9	30	526	9.8	63	277	1.2	29	558	22.4	84	175	9.3	30	529				
900	30	1,060	18.9	77	232	6.2	30	976	8.4	66	112	4.7	30	977	8.0	60	236	4.3	29	1,028	19.6	80	179	10.9	30	993				
850	30	1,550	16.1	75	234	3.3	30	1,447	6.0	68	108	5.4	30	1,447	5.5	60	239	6.8	29	1,520	17.1	71	181	11.1	30	1,478				
800	30	2,064	13.2	72	224	2.7	30	1,941	3.0	68	105	8.4	30	1,940	2.8	58	245	7.6	29	2,037	14.7	62	180	9.9	30	1,986	12.2	57	277	.8
750	30	2,600	10.5	63	232	2.5	30	2,459	.2	66	110	9.3	30	2,459	- .3	55	235	9.5	29	2,578	11.6	56	178	8.2	30	2,518	9.6	51	323	3.5
700	30	3,179	7.7	56	247	3.3	30	3,013	- 3.2	67	104	9.9	30	3,009	- 3.6	54	234	11.1	29	3,155	8.2	52	172	6.2	30	3,095	5.7	50	300	7.2
650	30	3,782	4.4	52	262	4.3	30	3,590	- 6.9	64	100	11.5	30	3,588	- 6.9	53	236	13.2	29	3,757	4.9	51	179	4.5	30	3,688	1.4	51	295	12.2
600	30	4,435	.6	51	268	6.0	30	4,216	-10.4	53	103	13.2	30	4,213	-10.6	49	236	14.6	29	4,413	1.2	48	189	3.7	30	4,337	- 3.1	51	286	17.7
550	30	5,125	- 3.0	42	263	7.0	30	4,873	-14.3	46	102	14.0	30	4,872	-14.6	45	236	17.3	29	5,102	- 2.8	41	215	2.9	30	5,011	- 7.5	50	280	23.5
500	30	5,880	- 7.2	38	263	6.6	30	5,599	-19.0	46	106	14.0	30	5,595	-19.4	38	239	18.7	29	5,860	- 7.4	35	223	1.4	30	5,756	-12.7	46	284	25.1
450	30	6,686	-12.4	36	265	6.6	30	6,364	-24.2	44	106	16.7	30	6,363	-24.7	35	235	21.4	28	6,664	-12.7		311	1.0	30	6,541	-18.5	43	282	26.8
400	30	7,586	-18.6	33	273	6.0	30	7,227	-30.2	41	106	18.8	30	7,218	-30.8	34	241	21.6	27	7,567	-18.9		274	5.6	30	7,422	-24.9	43	281	29.0
350	30	8,568	-25.7		294	6.8	30	8,163	-37.4		107	21.0	30	8,152	-38.0		242	23.3	27	8,547	-25.6		248	8.2	30	8,379	-32.2	42	279	29.7
300	30	9,668	-34.0		291	6.4	30	9,210	-45.5		105	22.7	30	9,196	-46.0		236	26.0	27	9,647	-31.5		244	10.7	30	9,448	-40.7		278	30.1
250	30	10,920	-43.7		308	8.9	30	10,402	-54.1		99	25.1	29	10,393	-53.7		233	20.0	27	10,899	-43.2		238	15.9	30	10,664	-50.0		277	31.1
200	30	12,383	-55.1		308	15.9	29	11,828	-53.8		109	17.1	28	11,819	-54.5		241	14.6	27	12,368	-53.7		241	19.0	29	12,096	-56.2		275	27.0
175	30	13,225	-60.9		314	19.8	29	12,691	-51.6		122	11.3	28	12,680	-51.6		235	13.8	27	13,217	-58.7		257	17.9	28	12,951	-57.6		270	29.5
150	30	14,172	-66.2		319	18.8	29	13,696	-50.1		125	7.4	28	13,686	-49.8		238	8.4	27	14,174	-63.2		266	15.9	26	13,922	-56.8		267	28.0
125	30	15,268	-68.9		338	15.9	29	14,888	-50.0		148	3.7	27	14,877	-49.4		301	1.7	27	15,286	-66.6		272	9.5	26	15,076	-57.7		268	23.7
100	27	16,601	-69.5		16	11.1	27	16,348	-50.1		159	3.1	27	16,347	-48.9		152	.8	27	16,627	-69.2		136	1.9	26	16,481	-58.6		266	19.0
80	27	17,936	-68.0		51	12.4	26	17,809	-49.6		148	3.1	27	17,817	-47.6		90	3.3	26	17,965	-68.2		98	9.3	26	17,882	-59.2		268	8.4
60	24	19,689	-62.9		72	19.8	23	19,699	-49.1		106	3.3	27	19,723	-46.3		104	6.2	24	19,719	-61.7		95	18.8	24	19,698	-56.9		61	2.9
50	23	20,822	-59.4		87	21.6	22	20,902	-48.3		99	6.4	26	20,938	-45.4		88	8.2	24	20,862	-57.3		95	21.4	24	20,859	-54.8		77	5.2
40	22	22,230	-56.2		94	24.5	22	22,376	-47.2		99	8.2	25	22,432	-44.1		89	11.9	23	22,281	-54.3		89	19.8	24	22,294	-52.5		63	5.1
30	20	24,081	-52.0		95	25.5	21	24,290	-45.7		89	13.0	24	24,372	-42.7		87	13.6	19	24,147	-50.9		87	23.9	21	24,171	-49.5		94	9.9
20	5	26,724	-48.3				18	27,008	-42.8		89	19.8	8	27,138	-39.9				7	26,818	-46.9									
15							9	28,908	-40.0																					

Standard pressure surface (mb.)	LAS VEGAS, NEV. (933 MB.)						LITTLE ROCK, ARK. (1003 MB.)						McGRATH, ALASKA (998 MB.)						MEDFORD, OREG. (970 MB.)						MIAMI, FLA. (1015 MB.)					
SURFACE	29	660	23.9	20	228	4.1	30	79	21.4	91	185	1.6	30	103	12.5	77	240	1.7	30	401	12.6	75	310	1.0	30	4	25.4	87	142	1.0
1,000	29	46					30	108			183	1.7	30	88			276	1.4	30	141					30	137	25.1	81	138	2.5
950	29	497					30	552	21.0	78	212	7.4	30	521	15.7	56	343	.6	30	575	13.9	68	297	1.7	30	587	22.3	81	156	5.4
900	29	976	26.5	19	285	1.4	30	1,022	18.7	77	215	10.5	30	979	13.4	53	72	1.0	30	1,030	12.7	64	293	2.9	30	1,057	19.7	76	165	6.0
850	29	1,477	23.6	20	331	3.3	30	1,512	16.4	68	222	11.5	30	1,457	9.8	56	98	1.6	30	1,508	10.4	66	313	1.4	30	1,549	16.9	70	186	4.5
800	29	2,002	19.7	21	327	3.9	30	2,027	13.9	62	223	10.9	30	1,958	6.0	60	179	.6	30	2,013	9.0	50	292	1.9	30	2,064	13.9	66	189	4.7
750	29	2,549	15.2	24	314	3.3	30	2,571	11.0	56	222	9.9	30	2,478	2.1	64	000	.0	30	2,542	6.6	44	255	6.0	30	2,603	10.8	62	195	4.5
700	29	3,132	10.2	29	270	1.9	30	3,142	7.2	56	226	7.0	30	3,037	- 1.7	61	260	1.4	30	3,109	3.4	36	257	10.9	30	3,180	7.4	62	204	4.1
650	29	3,739	5.5	33	231	4.1	30	3,748	3.3	52	239	5.8	30	3,615	- 5.4	55	223	1.4	30	3,701	.2	27	260	14.0	30	3,781	4.1	60	200	4.5
600	29	4,392	.9	35	233	6.2	30	4,393	- .4	46	241	6.8	30	4,247	- 9.3	47	192	1.7	30	4,344	- 3.5		261	18.8	30	4,434	.3	58	236	2.7
550	29	5,078	- 4.1	32	261	8.4	30	5,078	- 4.6	42	251	10.1	30	4,908	-13.3	37	186	2.5	30	5,019	- 7.7		264	22.7	30	5,116	- 3.6	52	269	2.3
500	29	5,831	- 8.7		277	10.9	30	5,829	- 9.1		247	9.9	30	5,636	-17.9	31	178	3.1	30	5,763	-12.3		261	26.0	30	5,875	- 7.8	42	327	4.1
450	29	6,631	-14.7		280	14.4	30	6,633	-14.2		255	9.7	30	6,408	-23.0		192	4.5	30	6,550	-18.0	33	262	28.4	30	6,680	-12.9	39	324	4.7
400	29	7,520	-21.5		288	17.1	30	7,522	-20.2		264	9.7	30	7,269	-29.4		179	5.2	30	7,432	-24.4		260	30.7	30	7,576	-18.9	36	337	7.0
350	29	8,490	-29.0		285	19.0	30	8,498	-27.1		258	10.1	30	8,209	-36.4		178	3.9	30	8,391	-31.6		247	34.6	30	8,557	-25.7	37	340	8.2
300	29	9,573	-37.7		283	21.6	30	9,592	-35.4		256	11.1	30	9,261	-44.5		173	2.7	30	9,464	-40.0		241	34.8	30	9,657	-33.8		334	11.7
250	29	10,807	-46.6		282	25.5	30	10,837	-44.6		261	17.5	30	10,457	-54.0		98	2.3	30	10,685	-49.3		240	34.0	30	10,910	-43.6		339	13.8
200	27	12,271	-56.0		280	28.8	30	12,298	-54.5		266	21.2	30	11,871	-57.1		129	3.9	29	12,128	-56.7		246	34.8	30	12,373	-54.8		335	18.8
175	27	13,112	-60.0		284	30.7	30	13,144	-59.2		260	23.1	28	12,722	-53.8		85	1.2	29	12,970	-58.6		244	31.3	30	13,216	-60.4		344	22.9
150	26	14,066	-61.8		281	28.8	30	14,102	-62.7		260	22.7	28	13,720	-51.1		113	1.7	29	13,941	-58.3				30	14,166	-65.3		353	21.8
125	23	15,204	-63.3		277	21.0	30	15,221	-64.5		259	17.9	27	14,911	-50.5		177	1.4	29	15,086	-59.0				30	15,264	-69.1		3	17.9
100	21	16,560	-64.3		275	15.9	30	16,578	-66.4		256	13.6	27	16,369	-49.9		107	2.7	29	16,484	-59.5				30	16,594	-69.6		30	13.0
80	21	17,928	-63.6		281	5.1	30	17,932	-65.3		248	2.5	27	17,832	-48.9		97	3.3	29	17,883	-58.9		245	8.7	30	17,929	-68.5		60	16.5
60	21	19,709	-59.7		77	5.6	30	19,702	-60.0		87	7.8	26	19,731	-47.3		96	5.4	29	19,698	-56.7		57	6.4	30	19,679	-62.3		76	25.1
50	21	20,856	-57.4		85	9.1	30	20,849	-56.8		80	9.7	26	20,939	-46.6		96	7.4	29	20,858	-55.3		62	9.9	29	20,816	-58.4		85	29.7
40	20	22,278	-54.3		84	11.9	30	22,273	-54.0		82	10.7	24	22,429	-45.7		86	9.7	29	22,290	-53.0				29	22,231	-55.1		93	31.5
30	20	24,139	-50.5		88	16.1	25	24,122	-50.7		89	12.6	21	24,346	-44.3		89	11.5	26	24,161	-49.9		83	12.8	26	24,086	-50.4		90	30.1
20	5	26,771	-46.0										5	27,070	-42.8				6	26,878	-46.6				11	26,767	-45.0			
15																									5	28,679	-43.7			

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

RAWINSONDE DATA

Average monthly values

MIDLAND, TEX. (913 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	871	19.9	81	143	3.1
1,000--	30	77				
950----	30	523				
900----	30	996	20.2	75	158	4 5
850----	30	1,490	20.2	61	207	7.8
800----	30	2,013	18.7	48	241	6.6
750----	30	2,559	15.4	41	266	6.4
700----	30	3,145	11.2	40	287	6.4
650----	30	3,752	6.4	40	307	6.6
600----	30	4,410	1.6	40	318	7.4
550----	30	5,098	- 3.5	40	325	6.8
500----	30	5,851	- 8.9	34	301	6.0
450----	30	6,653	-14.3		306	6.0
400----	30	7,543	-20.6		290	7.6
350----	30	8,516	-28.1		284	9.1
300----	30	9,605	-36.2		284	9.9
250----	30	10,846	-45.6		279	12.0
200----	30	12,302	-55.0		273	18.5
175----	29	13,150	-58.9		268	17.3
150----	28	14,108	-61.6		260	15.9
125----	28	15,229	-65.0		251	13.8
100----	27	16,581	-67.0		241	4.9
80-----	26	17,928	-65.9		85	2.9
60-----	26	19,700	-59.9		84	11.1
50-----	26	20,847	-57.1		87	15.5
40-----	25	22,269	-53.9		88	17.1
30-----	22	24,131	-50.8			
20-----						

MONTGOMERY, ALA. (1008 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	61	22.0	96	132	1.6
1,000--	30	129	22.4	91	152	2.5
950----	30	577	22.1	79	207	6.2
900----	30	1,047	19.7	77	216	7.4
850----	30	1,539	16.7	74	209	7.0
800----	30	2,054	13.9	67	218	6.0
750----	30	2,594	10.8	61	225	5.6
700----	30	3,169	7 4	57	228	5.2
650----	30	3,771	3.7	53	241	5.1
600----	30	4,422	.2	50	240	7.2
550----	30	5,111	- 3.6	49	251	7.0
500----	30	5,864	- 8.0	40	256	8.0
450----	30	6,671	-13.0	36	263	8.7
400----	30	7,564	-18.9		257	9.3
350----	30	8,545	-25.9		258	12.4
300----	30	9,644	-33.9	35	257	16.1
250----	30	10,897	-43.2		252	21.8
200----	30	12,363	-54.4		257	23.5
175----	30	13,209	-59.8		263	24.7
150----	30	14,161	-64.3		275	20.8
125----	30	15,267	-67.4		277	15.0
100----	30	16,609	-68.2		315	6.6
80-----	28	17,948	-66.6		63	7.6
60-----	27	19,705	-61.3		81	14.0
50-----	27	20,849	-56.9		87	17.9
40-----	26	22,279	-52.9		96	16.9
30-----	25	24,149	-50.0		87	19.8
20-----	5	26,844	-44.7			

NANTUCKET, MASS (1015 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	14	17.9	85	222	2.7
1,000--	30	138	17.6	81	227	4 5
950----	30	575	17.9	65	249	6.2
900----	30	1,040	15.7	59	261	6.8
850----	30	1,524	13.1	58	267	8 2
800----	30	2,033	10.6	54	270	11.7
750----	30	2,566	7.9	49	272	15.3
700----	30	3,135	4.7	45	275	15.2
650----	30	3,730	1.6	39	283	16.7
600----	30	4,378	- 1.7	31	281	17.5
550----	30	5,058	- 5.8	28	280	18.3
500----	30	5,807	-10.3	29	278	18.7
450----	30	6,603	-15.4		283	18.7
400----	30	7,492	-21.6		286	19.6
350----	30	8,462	-28.7		290	19.0
300----	30	9,549	-36.8		292	24.1
250----	30	10,785	-46.6		306	25.1
200----	30	12,231	-57.3		310	25.3
175----	30	13,066	-61.9		313	24.5
150----	30	14,017	-63.2		309	23.1
125----	30	15,139	-62.8		310	17.5
100----	30	16,516	-62.4		318	12.6
80-----	30	17,899	-61.1		2	7.6
60-----	30	19,697	-58.3		60	8.4
50-----	30	20,851	-55.9		75	11.5
40-----	29	22,281	-53.4		86	14.8
30-----	26	24,148	-51.0		86	18.7
20-----	16	26,827	-46.7			

NASHVILLE, TENN (994 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	177	20.9	92	179	2.1
1,000--	30	126				
950----	30	571	21.7	76	216	8.5
900----	30	1,042	19.1	74	232	10.7
850----	30	1,532	16.1	71	242	10.9
800----	30	2,046	13.0	67	249	9.9
750----	30	2,584	9.8	61	248	10.1
700----	30	3,158	6.6	57	248	9.9
650----	30	3,759	3.2	55	252	11.1
600----	30	4,409	- .5	53	255	10.5
550----	30	5,091	- 4.3	44	257	11.7
500----	30	5,847	- 8.5		242	11.9
450----	29	6,652	-13.5		241	12.4
400----	29	7,549	-19.9		247	12.8
350----	29	8,526	-27.0		250	13.4
300----	29	9,620	-35.2		247	15.2
250----	29	10,867	-44.4		252	21.0
200----	29	12,330	-54.5		258	26.2
175----	29	13,174	-59.6		261	31.3
150----	29	14,131	-62.7		265	25.8
125----	29	15,251	-64.2		259	17.5
100----	29	16,612	-65.3		266	12.0
80-----	29	17,970	-65.3		289	2.7
60-----	29	19,741	-60.4		76	5.6
50-----	29	20,887	-57.0		79	11.5
40-----	29	22,313	-52.9		95	11.3
30-----	28	24,179	-50.0		84	10.7
20-----	13	26,844	-47.0			

N.Y. INT. AP, IDLEWILD (1015 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	5	20.1	81	238	0.8
1,000--	30	133	19.1	77	269	1.2
950----	30	575	17.7	69	269	5.2
900----	30	1,036	15.7	64	271	7.0
850----	30	1,520	13.2	59	270	8.0
800----	30	2,029	10.7	55	268	10.1
750----	30	2,566	8.0	47	272	13.8
700----	30	3,131	5.1	43	269	15.9
650----	30	3,728	1.7	42	268	18.3
600----	30	4,374	- 1.6	35	271	19.4
550----	30	5,054	- 5.7	35	272	19.6
500----	30	5,803	-10.2		269	20.2
450----	30	6,600	-15.1		269	21.4
400----	30	7,489	-21.1		270	22 9
350----	30	8,462	-27.9		270	25.3
300----	30	9,552	-36.0		274	28.6
250----	30	10,792	-45.8		278	32.8
200----	29	12,248	-56.7		286	34.6
175----	29	13,085	-61.0		288	34.0
150----	28	14,044	-62.3		287	27.8
125----	27	15,175	-62.6		285	21.8
100----	26	16,552	-62.3		296	16.9
80-----	26	17,931	-61.6		322	9.1
60-----	25	19,731	-57.1		54	4.9
50-----	25	20,893	-54.4		86	8.7
40-----	22	22,331	-52.4		91	13.2
30-----	15	24,224	-48.4		96	17.9
20-----						

NOME, ALASKA (1012 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	7	8.5	79	312	1.9
1,000--	30	105	9.7	72	311	1.2
950----	30	531	10.0	58	193	1.2
900----	30	981	8.3	54	181	4.1
850----	30	1,452	6.3	51	186	6.6
800----	30	1,948	3.7	51	192	8.2
750----	30	2,464	.4	55	201	9.9
700----	30	3,021	- 2.8	57	208	8.9
650----	30	3,596	- 6.5	52	208	9.1
600----	30	4,227	-10.1	47	203	10.3
550----	30	4,886	-13.9	40	203	13.6
500----	30	5,612	-18.5	36	197	14.0
450----	30	6,379	-24.0	33	200	14.4
400----	30	7,242	-30.2	36	204	15.9
350----	30	8,179	-37.2	38	201	15.7
300----	30	9,227	-45.1		197	15.3
250----	30	10,423	-53.1		197	14.2
200----	30	11,847	-55.0		221	8.2
175----	30	12,708	-51.4		210	3.5
150----	30	13,714	-50.1		328	1.9
125----	30	14,907	-49.5		314	1.6
100----	28	16,369	-48.7		35	1.6
80-----	28	17,840	-47.8		76	3.3
60-----	28	19,746	-46.5		84	6.2
50-----	28	20,959	-45.8		96	7.2
40-----	27	22,451	-44.7		93	10.9
30-----	24	24,397	-43.1		94	13.8
20-----	8	27,160	-40.4			
15-----						

NORFOLK, VA. (1015 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	9	22.0	85	177	0.8
1,000--	30	136	21.6	82	210	1.7
950----	30	582	20.6	75	273	5.2
900----	30	1,048	18.1	75	280	4.7
850----	30	1,536	15.3	74	285	5.2
800----	30	2,049	12.3	72	275	6.6
750----	30	2,586	9.6	58	265	8.0
700----	30	3,158	6.5	48	270	8.2
650----	30	3,759	3.1	44	271	9.5
600----	30	4,407	- .6	38	268	11.1
550----	30	5,094	- 4.2		264	12.2
500----	30	5,845	- 8.7	35	264	12.6
450----	30	6,648	-13.7		263	13.0
400----	30	7,541	-19.4		266	14.0
350----	30	8,521	-26.9		271	15.0
300----	30	9,614	-35.3		280	17.3
250----	30	10,859	-45.2		288	21.2
200----	30	12,313	-56.4		299	22.0
175----	29	13,150	-61.4		300	23.7
150----	29	14,099	-64.7		301	22.2
125----	28	15,208	-64.7		295	16.7
100----	28	16,570	-65.2		307	12.8
80-----	26	17,933	-64.2		352	6.2
60-----	25	19,707	-62.6		68	7.6
50-----	25	20,857	-57.0		80	11.9
40-----	23	22,279	-53.3		91	12.6
30-----	20	24,144	-49.8		88	14.2
20-----	[illegible]	26,835	-46.6			
15-----						

NORTH PLATTE, NEBR. (915 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	848	13.3	91	281	0.8
1,000--	30	86				
950----	30	523				
900----	30	983	15.4	74	355	.8
850----	30	1,469	15.5	60	281	2.9
800----	30	1,983	13.7	53	285	7.4
750----	30	2,521	11.0	48	282	9.7
700----	30	3,097	7.0	48	290	12.4
650----	30	3,694	2.6	49	292	15.0
600----	30	4,345	- 1.8	45	284	19.4
550----	30	5,025	- 6.2	39	275	21.6
500----	30	5,771	-11.2	40	275	23.7
450----	30	6,563	-16.5	36	273	25.8
400----	30	7,448	-23.0		284	26.4
350----	30	8,414	-29.8		285	31.3
300----	30	9,495	-38.1		283	29.0
250----	30	10,726	-47.5		275	31.9
200----	30	12,172	-56.0		254	33.8
175----	30	13,016	-58.4		260	29.5
150----	30	13,987	-58.0		265	34.0
125----	30	15,134	-59.0		269	26.4
100----	30	16,529	-60.1		270	19.4
80-----	29	17,919	-60.5		313	7.6
60-----	29	19,724	-57.0		56	7.6
50-----	27	20,886	-54.9		60	10.9
40-----	26	22,322	-52.2		84	9.1
30-----	21	24,192	-49.6		80	12.6
20-----	7	26,863	-45.4			
15-----						

OAKLAND, CALIF (1012 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	6	14.2	83	259	1.9
1,000--	30	110	14.0	80	262	2.7
950----	30	542	16.8	61	296	5.2
900----	30	1,009	19.1	37	320	10.7
850----	30	1,499	17.9	29	317	8.7
800----	30	2,015	15.1	24	303	7.8
750----	30	2,550	11.9		297	7.4
700----	30	3,132	8.4		298	9.3
650----	30	3,732	4.7		294	10.7
600----	30	4,388	.8		283	12.0
550----	30	5,070	- 3.9		274	15.0
500----	30	5,827	- 9.1		271	19.8
450----	30	6,624	-15.0		274	23.5
400----	30	7,515	-21.4		279	26.6
350----	30	8,485	-29.1		280	29.0
300----	30	9,567	-38.1		279	29.5
250----	30	10,797	-47.8		280	31.9
200----	30	12,238	-57.5		280	34.8
175----	30	13,074	-60.7		278	34.2
150----	29	14,033	-61.7		276	32.6
125----	28	15,159	-63.1		266	24.7
100----	26	16,536	-64.0		271	15.9
80-----	25	17,908	-62.9		267	4.9
60-----	25	19,693	-59.7		77	5.6
50-----	25	20,840	-57.5		80	9.3
40-----	25	22,257	-55.0		80	11.7
30-----	23	24,119	-51.5		83	15.7
20-----	21	26,791	-46.3		79	17.1
15-----	12	28,741	-43.4		81	21.0

OKLAHOMA CITY, OKLA. (966 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	391	19.3	94	156	3.7
1,000--	30	94				
950----	30	537	20.4	84	164	5.2
900----	30	1,005	19.8	75	216	9.9
850----	30	1,498	18.1	62	236	10.7
800----	30	2,016	15.7	56	238	10.7
750----	30	2,558	12.7	49	239	9.1
700----	30	3,137	9.0	48	238	8.9
650----	30	3,743	5.1	45	255	9.3
600----	30	4,395	.5	45	268	10.5
550----	30	5,081	- 4.3	48	274	10.3
500----	30	5,832	- 9.1	41	269	13.4
450----	30	6,633	-14.6		269	16.1
400----	30	7,522	-20.7		274	15.7
350----	28	8,498	-27.6		272	17.7
300----	28	9,589	-35.8		277	16.1
250----	28	10,832	-45.0		271	15.3
200----	28	12,293	-54.3		262	19.6
175----	28	13,141	-58.5		258	21.8
150----	26	14,107	-60.2		256	21.2
125----	26	15,239	-62.5		256	20.4
100----	25	16,607	-64.0		256	9.7
80-----	22	17,970	-62.9		200	3.9
60-----	22	19,759	-58.4		88	9.7
50-----	22	20,915	-55.4		93	10.5
40-----	19	22,352	-52.3		93	8.7
30-----	18	24,226	-49.0		94	12.0
20-----						
15-----						

OMAHA, NEBR. (964 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	403	15.8	86	180	1.9
1,000--	30	92				
950----	30	531	17.2	72	187	2.3
900----	30	993	16.8	58	242	6.0
850----	30	1,479	14.6	54	256	9.5
800----	30	1,989	12.1	50	263	11.9
750----	30	2,524	8.8	51	263	13.0
700----	30	3,095	4.9	53	266	15.0
650----	30	3,695	1.5	42	268	17.3
600----	30	4,338	- 2.4	37	263	20.4
550----	30	5,019	- 6.7	36	267	22.0
500----	30	5,763	-11.2	34	268	24.1
450----	30	6,559	-16.4		265	27.8
400----	30	7,442	-22.0		264	29.5
350----	30	8,412	-28.7		261	34.4
300----	30	9,497	-37.0		258	39.6
250----	30	10,734	-46.5		253	43.1
200----	30	12,182	-56.4		249	45.9
175----	30	13,024	-59.1		255	42.0
150----	30	13,988	-59.7		257	39.2
125----	30	15,130	-59.7		261	31.9
100----	30	16,523	-60.5		257	19.2
80-----	30	17,913	-60.9		258	10.5
60-----	29	19,710	-57.5		304	.8
50-----	29	20,868	-55.2		54	4.1
40-----	28	22,300	-52.4		84	9.1
30-----	26	24,174	-49.9		86	10.1
20-----	17	26,840	-45.3		[illegible]	15.2

PEORIA, ILL. (989 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	201	18.0	87	202	2.1
1,000--	30	105				
950----	30	547	18.5	69	240	6.6
900----	30	1,011	16.6	66	259	9.9
850----	30	1,496	13.9	64	264	12.0
800----	30	2,006	11.1	58	267	12.4
750----	30	2,543	8.2	52	276	15.0
700----	30	3,110	5.1	50	271	17.3
650----	30	3,712	1.5	50	263	19.8
600----	30	4,353	- 2.1	40	259	20.4
550----	30	5,036	- 5.9	40	258	22.9
500----	30	5,781	-10.4	37	262	25.1
450----	30	6,580	-15.4		266	26.2
400----	30	7,466	-21.1		267	29.3
350----	30	8,439	-28.0		261	35.0
300----	30	9,527	-36.3		261	36.3
250----	30	10,767	-46.0		258	42.2
200----	30	12,216	-56.0		255	48.6
175----	30	13,059	-59.2		258	48.8
150----	30	14,023	-59.6		260	41.4
125----	29	15,166	-60.4		261	32.1
100----	29	16,553	-61.6		259	22.7
80-----	29	17,933	-61.8		258	11.1
60-----	28	19,734	-57.6		113	3.7
50-----	28	20,894	-55.0		90	7.4
40-----	27	22,334	-51.9		86	10.7
30-----	26	24,211	-48.5		81	13.4
20-----	17	26,889	-44.7			

PHOENIX, ARIZ. (969 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	341	23.7	41	111	2.5
1,000--	30	60				
950----	30	509	27.5	28	111	2.7
900----	30	989	26.5	24	248	.8
850----	30	1,490	23.7	24	244	3.5
800----	30	2,016	20.0	25	256	3.5
750----	30	2,564	15.7	30	237	6.0
700----	30	3,148	11.0	34	224	8.4
650----	30	3,757	6.6	36	242	9.7
600----	30	4,414	2.1	36	249	11.3
550----	30	5,100	- 3.0	36	259	8.5
500----	30	5,858	- 8.4	35	268	8.5
450----	30	6,660	-13.9		292	7.8
400----	30	7,552	-20.7		299	9.3
350----	30	8,525	-28.1		305	9.7
300----	30	9,613	-36.6		297	10.5
250----	30	10,852	-45.7		289	15.9
200----	30	12,307	-55.2		274	20.8
175----	30	13,152	-59.0		279	23.3
150----	29	14,113	-62.1		281	21.2
125----	28	15,230	-64.5		291	12.6
100----	27	16,586	-66.1		307	10.1
80-----	26	17,940	-65.4		39	3.1
60-----	24	19,710	-60.6		85	12.4
50-----	22	20,850	-57.4		88	14.4
40-----	20	22,268	-54.9		82	14.0
30-----	19	24,121	-51.3		76	15.9
20-----	5	26,788	-46.3			

PITTSBURGH, PA. (974 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	353	17.8	84	177	1.9
1,000--	30	131				
950----	30	572	18.4	77	223	4.9
900----	30	1,034	16.8	74	256	10.5
850----	30	1,520	13.9	76	255	12.0
800----	30	2,029	11.2	69	255	14.0
750----	30	2,565	8.4	63	254	16.1
700----	30	3,134	5.2	56	253	18.5
650----	30	3,730	1.6	54	251	20.0
600----	30	4,377	- 2.1	52	251	22.2
550----	30	5,057	- 6.0	48	251	23.1
500----	30	5,805	-10.1	42	252	24.1
450----	30	6,604	-15.3	37	256	26.6
400----	30	7,490	-21.5	35	261	27.6
350----	30	8,460	-28.7		261	31.1
300----	30	9,546	-36.6		262	34.4
250----	30	10,785	-45.9		265	38.7
200----	29	12,229	-56.7		271	39.8
175----	27	13,065	-60.5		270	40.8
150----	27	14,019	-62.6		269	34.8
125----	26	15,152	-62.0		270	26.8
100----	25	16,528	-63.4		276	21.2
80-----	24	17,906	-62.8		300	11.3
60-----	23	19,692	-59.3		29	3.7
50-----	23	20,842	-56.9		73	8.5
40-----	20	22,270	-53.3		84	11.9
30-----	13	24,132	-50.0		90	14.0
20-----						

PORTLAND, ME (1013 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	20	16.3	82	000	0.0
1,000--	30	130	16.2	75	315	2.1
950----	30	566	16.6	65	251	3.9
900----	30	1,027	14.8	62	258	8.0
850----	30	1,509	12.0	60	262	10.9
800----	30	2,015	9.3	58	262	13.0
750----	30	2,547	6.6	53	262	16.5
700----	30	3,113	3.9	49	267	21.6
650----	30	3,706	.6	47	266	23.3
600----	30	4,350	- 3.1	43	270	24.3
550----	30	5,029	- 6.5		268	27.6
500----	30	5,775	-11.0		269	27.6
450----	30	6,571	-16.2		270	29.7
400----	30	7,455	-22.1		269	31.1
350----	30	8,424	-29.1		273	32.1
300----	30	9,508	-37.5		274	34.8
250----	30	10,742	-46.6		275	42.9
200----	30	12,193	-55.6		280	42.6
175----	29	13,029	-59.1		281	41.6
150----	29	13,994	-59.7		281	34.0
125----	29	15,135	-59.3		279	31.1
100----	29	16,534	-58.5		279	27.0
80-----	29	17,940	-57.8		288	19.6
60-----	28	19,765	-54.7		313	8.7
50-----	24	20,932	-52.7		27	8.2
40-----	20	22,386	-50.2		76	8.7
30-----	13	24,263	-48.1		84	16.5
20-----						

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

CLEMSON

RAWINSONDE DATA

Average monthly values

RAPID CITY, S. DAK. (902 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	966	11.9	82	74	0.6
1,000	30	91				
950	30	523				
900	30	983			77	.8
850	30	1,467	13.6	62	253	6.0
800	30	1,976	11.4	60	261	7.4
750	30	2,507	7.8	63	265	7.8
700	30	3,079	4.0	62	282	11.5
650	30	3,668	- .1	63	283	15.3
600	30	4,314	- 4.4	60	283	20.2
550	30	4,985	- 8.9	53	283	24.3
500	30	5,727	-13.7	47	279	26.2
450	30	6,509	-19.5	46	276	30.1
400	30	7,385	-25.5	45	276	33.8
350	30	8,341	-32.6	44	271	35.8
300	30	9,408	-41.1		270	37.1
250	30	10,624	-49.6		267	41.0
200	30	12,060	-56.2		263	43.1
175	28	12,898	-57.4		261	42.6
150	27	13,881	-56.7		264	37.5
125	27	15,037	-57.1		270	27.2
100	26	16,446	-58.2		269	20.8
80	25	17,845	-59.3		261	10.9
60	22	19,660	-57.1		315	2.1
50	21	20,822	-55.2		88	3.1
40	20	22,252	-52.7		89	7.4
30	18	24,127	-50.1		85	10.5
20	16	26,806	-46.1		88	11.5

ST. CLOUD, MINN (973 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	316	13.6	86	194	1.0
1,000	30	82				
950	30	517	15.0	76	208	1.9
900	30	974	14.1	67	270	6.4
850	30	1,455	11.5	62	272	9.1
800	30	1,960	8.7	60	268	12.2
750	30	2,487	5.7	51	272	14.4
700	30	3,053	2.7	47	277	16.1
650	30	3,645	- .6	44	276	17.9
600	30	4,286	- 4.3	40	281	20.2
550	30	4,958	- 8.4	37	282	21.6
500	30	5,701	-13.1	35	280	23.9
450	30	6,487	-18.4	38	277	28.2
400	30	7,366	-24.3	39	281	32.6
350	30	8,327	-31.3		275	33.0
300	30	9,401	-39.4		272	38.5
250	30	10,626	-48.0		280	45.7
200	30	12,073	-55.1		265	50.9
175	30	12,924	-55.5		270	42.2
150	30	13,908	-54.9		271	34.8
125	30	15,072	-55.5		269	29.7
100	30	16,492	-56.5		264	18.8
80	30	17,908	-56.5		271	11.9
60	30	19,741	-54.8		285	5.6
50	30	20,912	-52.9		82	3.1
40	27	22,363	-51.0		73	12.6
30	26	24,251	-48.9		89	12.0
20	8	26,993	-45.1			

ST. PAUL IS., ALASKA (1012 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	10	4.9	95	352	2.3
1,000	30	107	5.4	91	1	1.0
950	30	528	5.3	84	82	2.5
900	30	969	3.9	84	104	3.7
850	30	1,432	2.6	69	114	5.2
800	30	1,922	.4	61	116	6.0
750	30	2,436	- 2.0	58	114	7.8
700	30	2,983	- 4.6	54	119	8.2
650	30	3,558	- 7.8	49	125	8.2
600	30	4,182	-11.1	42	122	8.5
550	30	4,841	-15.1	39	124	7.4
500	30	5,560	-19.9	38	123	8.2
450	30	6,328	-25.3	37	133	8.9
400	30	7,179	-31.7	39	125	9.3
350	30	8,109	-38.7		107	12.0
300	30	9,150	-46.6		108	10.1
250	30	10,341	-53.7		97	9.1
200	30	11,777	-50.8		115	8.2
175	30	12,652	-48.6		125	7.8
150	30	13,667	-48.2		122	5.6
125	30	14,868	-48.7		129	3.3
100	30	16,334	-49.0		135	4.3
80	29	17,800	-48.9		135	3.9
60	27	19,690	-48.7		128	3.5
50	26	20,895	-48.4		110	6.4
40	25	22,370	-47.5		103	9.1
30	20	24,297	-45.8		94	14.2
20						

SALEM, OREG. (1010 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	61	11.1	91	196	0.6
1,000	30	147	12.4	84	355	.8
950	30	572	11.7	76	331	3.3
900	30	1,029	9.7	72	311	3.3
850	30	1,503	7.8	68	272	5.6
800	30	2,001	6.1	53	262	8.0
750	30	2,524	4.0	43	262	10.9
700	30	3,087	1.2	38	256	12.8
650	30	3,675	- 1.8	37	258	16.9
600	30	4,314	- 5.4	36	257	19.2
550	30	4,981	- 9.8	37	256	22.5
500	30	5,721	-14.5	39	256	26.6
450	30	6,500	-19.5	34	259	30.7
400	30	7,377	-25.7	35	260	34.8
350	30	8,331	-32.8		260	40.2
300	30	9,399	-40.8		262	42.4
250	30	10,615	-49.8		266	46.4
200	30	12,051	-56.0		264	47.2
175	30	12,899	-57.0		265	44.5
150	30	13,878	-55.9		263	37.1
125	29	15,036	-56.7		264	26.2
100	28	16,445	-57.0		264	18.7
80	28	17,859	-57.0		264	9.1
60	27	19,686	-55.7		19	1.7
50	26	20,854	-54.4		69	5.1
40	22	22,289	-52.3		72	8.4
30	16	24,175	-49.6		89	13.2
20	8	26,886	-45.3			

SALT LAKE CITY, UTAH (870 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	1,288	12.8	74	155	3.3
1,000	30	97				
950	30	537				
900	30	999				
850	30	1,496	17.0	50	157	2.9
800	30	2,012	14.8	42	198	3.1
750	30	2,551	11.0	46	250	3.9
700	30	3,127	6.6	51	284	7.2
650	30	3,725	2.3	51	285	13.0
600	30	4,374	- 2.3	52	282	18.1
550	30	5,048	- 6.9	49	277	19.4
500	30	5,798	-11.8	42	273	20.4
450	30	6,587	-17.2	32	274	22.5
400	30	7,471	-23.6		274	24.7
350	30	8,436	-31.3		274	28.2
300	30	9,510	-39.6		274	28.6
250	30	10,736	-48.2		273	32.4
200	30	12,180	-55.8		279	33.2
175	30	13,025	-57.6		280	29.9
150	29	13,996	-58.0		278	28.4
125	27	15,142	-58.9		268	23.1
100	26	16,536	-59.9		264	15.7
80	25	17,929	-59.7		276	6.0
60	24	19,737	-57.1		86	4.3
50	23	20,896	-54.9		69	6.2
40	22	22,326	-52.1		81	9.1
30	20	24,209	-48.6		85	12.8
20						

SAN ANTONIO, TEX. (983 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	243	22.8	90	153	1.9
1,000	30	96				
950	30	541	21.9	86	151	6.8
900	30	1,012	19.5	83	172	10.9
850	30	1,504	17.5	72	180	10.5
800	30	2,022	15.8	59	193	7.4
750	30	2,566	13.1	50	188	3.7
700	30	3,144	9.6	47	97	.8
650	30	3,754	5.5	46	8	3.1
600	30	4,404	1.3	45	350	4.1
550	30	5,090	- 3.2	40	348	4.9
500	30	5,847	- 8.1	37	323	4.1
450	30	6,652	-13.2		306	4.1
400	30	7,544	-19.5		287	6.0
350	30	8,522	-26.8		282	9.3
300	30	9,615	-35.1		264	10.9
250	30	10,861	-44.6		258	14.2
200	29	12,322	-54.0		255	19.2
175	29	13,171	-58.3		255	21.4
150	29	14,132	-62.3		260	21.0
125	29	15,246	-66.8		256	15.2
100	29	16,584	-69.7		245	5.6
80	28	17,915	-68.1		93	5.8
60	28	19,668	-62.1		96	16.5
50	28	20,805	-58.6		94	17.5
40	26	22,218	-55.4		90	20.6
30	23	24,076	-51.7		85	26.2
20	9	26,751	-47.0			
15						

SAN DIEGO, CALIF (996 MB)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	124	15.9	90	187	1.0
1,000	30	93				
950	30	527	17.5	67	000	.0
900	30	995	19.9	43	318	3.3
850	30	1,488	20.3	26	316	8.2
800	30	2,008	18.0	22	302	9.1
750	30	2,547	14.7	23	296	7.4
700	30	3,136	11.0		290	7.0
650	30	3,742	7.2		276	7.8
600	30	4,404	3.1		283	11.5
550	30	5,094	- 1.7		288	12.6
500	30	5,854	- 7.3		285	12.8
450	30	6,657	-13.3		282	15.5
400	30	7,553	-20.3		285	15.7
350	30	8,527	-27.9		286	17.5
300	30	9,616	-36.3		289	21.6
250	30	10,856	-46.0		287	24.7
200	30	12,308	-55.9		286	28.6
175	30	13,150	-59.9		280	29.7
150	30	14,106	-63.2		273	26.4
125	29	15,221	-66.0		271	22.0
100	27	16,575	-67.6		271	9.9
80	27	17,921	-66.5		66	2.1
60	26	19,681	-61.4		86	9.7
50	26	20,821	-58.4		91	13.2
40	26	22,236	-54.8		83	17.1
30	24	24,093	-51.2		83	23.3
20	7	26,744	-46.6			
15						

SAN JUAN, P. R. (1017 MB)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	6	25.3	83	114	5.1
1,000	30	150	24.7	79	108	10.1
950	30	598	21.9	80	104	14.2
900	30	1,068	19.1	79	108	14.6
850	30	1,559	16.9	71	108	14.6
800	30	2,075	14.5	65	109	13.4
750	30	2,613	11.9	56	108	11.1
700	30	3,194	8.7	48	112	9.1
650	30	3,800	5.1	44	118	6.8
600	30	4,454	1.5	40	122	5.6
550	30	5,145	- 2.6	38	147	4.1
500	30	5,901	- 7.2	42	194	4.3
450	30	6,707	-12.8	46	226	7.0
400	30	7,603	-19.1	49	225	7.8
350	30	8,583	-26.2	45	236	8.0
300	30	9,679	-34.6	34	249	10.1
250	30	10,925	-44.8		251	11.7
200	30	12,378	-56.6		268	14.6
175	30	13,212	-62.9		276	19.4
150	28	14,152	-68.5		281	19.0
125	27	15,236	-71.2		280	13.6
100	23	16,553	-72.1		307	4.1
80	20	17,873	-69.9		59	10.7
60	20	19,613	-64.4		81	25.3
50	16	20,737	-60.9		85	33.0
40	15	22,135	-57.0		89	34.0
30	7	23,977	-51.3			
20						
15						

SANTA MARIA, CALIF. (1004 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	74	12.2	88	274	0.8
1,000	30	108	12.5	85	335	.8
950	30	548	19.0	54	17	7.4
900	30	1,009	20.6	33	12	8.5
850	30	1,502	19.3	23	354	7.8
800	30	2,020	16.3	24	338	6.6
750	30	2,563	12.9	24	324	8.4
700	30	3,142	10.1		308	9.3
650	30	3,751	6.4		298	9.5
600	30	4,406	2.3		301	11.7
550	30	5,095	- 2.2		296	13.6
500	30	5,853	- 7.5		288	16.5
450	30	6,658	-13.6		282	14.4
400	30	7,549	-20.5		281	16.3
350	30	8,523	-28.3		279	15.3
300	30	9,609	-37.2		270	16.7
250	30	10,843	-47.1		272	21.0
200	30	12,287	-56.7		266	23.9
175	30	13,126	-60.6		265	25.5
150	28	14,076	-63.1		263	23.3
125	24	15,189	-64.8		252	18.3
100	19	16,549	-65.8		245	7.8
80	18	17,908	-64.8		131	2.5
60	17	19,686	-60.3		95	9.7
50	17	20,829	-58.2		90	13.2
40	15	22,240	-54.9		87	11.3
30	9	24,089	-51.3			
20						
15						

SANTA MONICA, CALIF. (1007 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	38	17.3	80	132	0.8
1,000	30	101	17.3	80	137	.8
950	30	541	17.9	70	77	1.4
900	30	1,005	19.8	48	353	5.2
850	30	1,497	19.4	33	320	5.6
800	30	2,016	17.3	27	297	7.6
750	30	2,561	14.2	25	293	8.2
700	30	3,143	10.6	26	281	6.8
650	30	3,750	6.6	26	278	7.6
600	30	4,408	2.3		283	8.0
550	30	5,097	- 2.5		284	10.7
500	30	5,855	- 7.5		292	13.6
450	30	6,661	-13.8		294	16.1
400	30	7,551	-21.0		292	18.8
350	30	8,522	-28.8		291	20.6
300	30	9,606	-37.5		290	23.7
250	30	10,838	-47.2		289	27.2
200	30	12,284	-56.5		283	32.1
175	30	13,124	-60.1		282	30.9
150	30	14,079	-63.0		274	28.2
125	30	15,195	-65.2		272	22.0
100	29	16,547	-66.4		276	15.9
80	28	17,897	-65.2		300	4.7
60	28	19,667	-61.2		86	7.8
50	27	20,807	-58.4		84	10.9
40	27	22,221	-55.1		81	12.0
30	24	24,075	-51.8		82	18.7
20	23	26,740	-46.2		88	21.4
15	14	28,643	-43.1			

S. STE. MARIE, MICH. (986 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	221	11.3	89	99	2.5
1,000	30	102				
950	30	531	12.7	77	203	5.4
900	30	987	11.9	71	252	11.1
850	30	1,464	9.4	69	257	13.8
800	30	1,965	6.5	68	259	15.2
750	30	2,491	4.0	59	256	18.5
700	30	3,052	1.2	54	260	21.6
650	30	3,642	- 1.8	54	261	25.1
600	30	4,279	- 5.3	52	261	28.2
550	30	4,950	- 9.2	49	261	30.5
500	30	5,689	-13.9	47	262	34.0
450	30	6,476	-19.3	43	262	37.9
400	30	7,349	-25.2	41	264	42.6
350	30	8,305	-32.4	43	259	44.3
300	30	9,374	-40.4		256	51.3
250	30	10,596	-48.2		257	59.8
200	30	12,045	-53.5		261	58.7
175	30	12,904	-53.5		262	50.1
150	30	13,895	-54.2		261	41.6
125	30	15,060	-55.5		266	34.0
100	30	16,478	-56.8		264	26.0
80	29	17,898	-56.4		272	12.2
60	29	19,733	-54.0		26	2.9
50	29	20,907	-52.5		83	6.0
40	27	22,352	-50.3		90	8.4
30	15	24,210	-47.8		91	12.8
20	10	26,880	-43.8			
15						
10						

SEATTLE, WASH (1003 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	124	11.8	89	166	3.9
1,000	30	149			165	4.1
950	30	577	10.9	80	180	5.2
900	30	1,029	8.9	81	198	4.3
850	30	1,501	6.9	79	242	4.5
800	30	1,998	4.4	73	256	6.2
750	30	2,522	1.8	58	254	9.5
700	30	3,076	- .6	47	259	12.6
650	30	3,663	- 3.7	44	257	16.5
600	30	4,294	- 7.3	44	255	20.4
550	30	4,961	-11.7	43	255	22.3
500	30	5,690	-16.5	47	254	26.6
450	30	6,468	-21.8	47	255	28.8
400	30	7,333	-27.8	45	257	34.6
350	30	8,279	-34.9	44	258	39.8
300	30	9,337	-42.6		262	44.1
250	30	10,546	-50.7		261	50.1
200	30	11,982	-54.9		264	49.4
175	30	12,836	-54.6		263	40.6
150	30	13,825	-54.1		262	34.0
125	30	14,993	-54.6		266	26.8
100	30	16,422	-54.7		265	15.7
80	30	17,847	-55.5		268	8.7
60	30	19,685	-54.3		313	2.5
50	30	20,856	-53.5		51	3.1
40	27	22,293	-51.6		78	7.2
30	24	24,165	-49.2		80	13.8
20	18	26,871	-44.4		88	15.0
15	15	28,815	-41.2		86	20.6
10	6	31,594	-34.6			

SHREVEPORT, LA. (1004 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	76	22.1	93	144	3.1
1,000	30	106			145	3.5
950	30	551	21.0	83	195	10.5
900	30	1,021	19.2	77	198	11.7
850	30	1,512	17.2	62	198	9.9
800	30	2,028	14.5	55	191	8.0
750	30	2,568	11.3	52	191	6.6
700	30	3,145	7.9	53	199	5.4
650	30	3,749	4.1	50	206	2.3
600	30	4,399	.1	47	225	2.9
550	30	5,085	- 3.9	40	234	3.3
500	30	5,838	- 8.6	38	258	3.3
450	30	6,641	-14.0		269	3.1
400	30	7,532	-19.9		276	5.2
350	30	8,509	-27.0		262	8.4
300	30	9,603	-34.9		252	14.2
250	30	10,850	-44.2		251	16.1
200	30	12,312	-54.5		250	19.2
175	30	13,158	-59.2		246	22.7
150	30	14,115	-63.2		250	21.2
125	30	15,227	-66.5		248	15.0
100	30	16,570	-68.8		236	6.4
80	30	17,908	-67.5		134	2.9
60	30	19,664	-61.2		92	12.4
50	30	20,807	-57.8		90	14.8
40	30	22,227	-54.1		88	15.5
30	25	24,096	-50.2		88	19.6
20	[illegible]	26,797	-44.3			
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*** SPOKANE, WASH. (930 MB.)**

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	722	11.7	79	190	4.7
1,000	30	110				
950	30	547				
900	30	1,002	13.6	60	220	8.0
850	30	1,483	11.5	56	244	9.1
800	30	1,987	7.9	59	247	9.7
750	30	2,514	4.0	62	249	11.1
700	30	3,073	.3	59	250	11.7
650	30	3,658	- 3.3	55	259	14.4
600	30	4,292	- 7.2	48	262	19.0
550	30	4,959	-11.0	46	264	21.8
500	29	5,690	-16.2	44	262	22.9
450	29	6,464	-21.8	42	264	28.0
400	29	7,331	-28.2	43	263	31.1
350	29	8,275	-35.0	43	265	32.4
300	29	9,334	-42.5		264	32.8
250	29	10,545	-50.1		271	33.8
200	29	11,988	-54.2		270	41.4
175	29	12,845	-54.2		265	34.4
150	28	13,831	-53.3		267	26.4
125	28	15,002	-54.4		265	22.0
100	28	16,433	-54.3		262	18.8
80	27	17,861	-55.2		273	10.9
60	26	19,698	-54.4		308	2.9
50	26	20,871	-52.6		36	3.3
40	25	22,315	-51.2		74	7.0
30	25	24,195	-49.0		80	10.9
20	20	26,889	-45.0		83	15.3
15	18	28,822	-41.7		92	17.1
10	14	31,610	-36.4		85	18.5

SWAN ISLAND, W. I. (1011 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	10	27.1	83	109	13.2
1,000	30	108	26.3	84	110	14.4
950	30	557	22.8	86	120	17.1
900	30	1,031	19.7	85	124	17.9
850	30	1,524	17.4	76	127	17.1
800	30	2,041	15.1	65	127	15.5
750	30	2,588	12.6	53	131	13.4
700	30	3,162	9.4	48	132	12.2
650	30	3,773	5.7	49	131	9.5
600	30	4,425	1.7	49	138	6.4
550	30	5,118	- 2.6	48	142	4.9
500	30	5,872	- 7.1	48	124	2.9
450	30	6,687	-11.9	43	63	1.2
400	30	7,580	-17.7	41	25	4.1
350	30	8,566	-24.5	38	355	7.0
300	30	9,670	-32.8		330	9.1
250	30	10,926	-43.0		326	12.8
200	30	12,391	-54.9		336	17.9
175	30	13,232	-61.5		333	18.3
150	27	14,173	-68.3		338	19.2
125	26	15,250	-74.3		354	16.7
100	26	16,545	-74.6		46	14.6
80	22	17,849	-70.7		75	21.2
60	19	19,578	-64.2		84	29.3
50	16	20,697	-61.4		83	35.2
40	14	22,096	-57.7		89	39.2
30	11	23,927	-53.2		95	32.6
20						
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These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

* 7 mb, 7 obs., 34,079 m., -32.3°C.

RAWINSONDE DATA

Average monthly values

Standard pressure surface (mb)	TAMPA, FLA (1015 MB.)						TATOOSH IS., WASH. (1013 MB.)						TOPEKA, KANS. (980 MB.)					
					Wind						Wind						Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	30	7	23.7	96	114	3.9	30	31	11.4	92	209	4.5	30	270	17.9	91	138	1.6
1,000	30	139	23.0	87	134	4.7	30	141	11.1	87	218	3.9	30	98				
950	30	587	21.5	78	182	6.8	30	565	8.9	83	246	6.6	30	538	19.2	79	181	4.5
900	30	1,055	18.8	74	197	5.6	30	1,015	7.5	78	247	7.4	30	1,006	18.3	70	216	9.7
850	30	1,544	15.7	72	198	5.4	30	1,485	5.6	70	244	8.9	30	1,493	16.1	61	231	8.9
800	30	2,057	12.9	68	207	3.5	30	1,980	3.6	64	234	10.7	30	2,007	13.5	50	241	9.3
750	30	2,594	10.1	59	208	2.7	30	2,498	1.1	59	243	12.6	30	2,548	10.2	47	253	8.7
700	30	3,169	6.9	55	211	2.1	30	3,054	- 1.7	54	246	15.0	30	3,118	6.6	47	262	9.5
650	30	3,770	3.7	50	222	2.3	29	3,637	- 4.9	48	251	15.9	30	3,723	2.9	42	269	11.3
600	30	4,421	.0	47	250	3.5	29	4,269	- 8.4	43	250	18.1	30	4,369	- 1.0	39	269	13.6
550	29	5,104	- 3.7	44	278	3.1	29	4,932	-12.6	44	248	21.2	30	5,050	- 5.5	38	275	14.6
500	29	5,861	- 8.3	39	280	3.1	29	5,661	-17.3	44	250	25.8	30	5,801	-10.2		271	17.7
450	29	6,664	-13.5	38	280	2.5	29	6,432	-22.5		254	32.1	30	6,597	-15.1		265	21.4
400	29	7,559	-19.4	34	318	3.3	29	7,298	-28.7	39	255	36.5	30	7,486	-21.1		262	23.5
350	29	8,539	-26.2		321	5.2	29	8,241	-35.6		253	41.0	30	8,459	-27.8		261	22.7
300	29	9,636	-34.5		321	7.2	29	9,297	-43.3		256	48.4	30	9,549	-36.2		257	28.0
250	29	10,885	-43.9		321	11.3	29	10,505	-50.2		252	49.5	30	10,789	-45.9		255	31.3
200	29	12,349	-54.7		320	15.9	29	11,949	-53.2		262	43.3	29	12,238	-56.2		257	38.1
175	29	13,193	-60.5		318	17.5	29	12,810	-52.5		260	36.3	29	13,080	-59.7		258	34.0
150	28	14,142	-65.0		351	18.3	29	13,806	-52.4		263	27.8	27	14,043	-60.7		260	32.4
125	26	15,244	-68.5		7	18.1	29	14,983	-53.3		263	22.9	26	15,176	-61.2		264	26.2
100	25	16,578	-69.5		34	10.1	28	16,419	-54.0		259	13.4	25	16,554	-62.3		263	15.7
80	24	17,917	-67.6		65	13.6	28	17,850	-54.5		270	8.9	24	17,924	-62.5		264	6.6
60	23	19,671	-62.0		75	20.6	26	19,694	-53.9		301	2.5	22	19,708	-58.2		91	4.5
50	23	20,807	-58.5		88	23.9	26	20,867	-52.9		54	4.3	22	20,864	-55.5		93	8.2
40	21	22,222	-55.2		94	27.4	22	22,306	-51.1		70	5.8	21	22,296	-52.6		87	9.9
30	20	24,080	-50.0		94	26.0	16	24,188	-48.8		64	11.1	19	24,167	-49.7		78	9.5
20	6	26,782	-46.8										7	26,803	-46.0			

Standard pressure surface (mb)	TONOPAH, NEV. (834 MB.)						TUCSON, ARIZ. (922 MB.)					
					Wind						Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	30	1,650	13.3	34	359	8.0	30	781	23.1	32	158	3.7
1,000	30	85					30	62				
950	30	531					30	512				
900	30	999					30	992	25.7	26	173	5.8
850	30	1,488					30	1,492	23.0	25	201	6.0
800	30	2,004	16.7	29	346	8.9	30	2,016	19.4	27	212	3.9
750	30	2,547	13.2	31	308	8.0	30	2,561	15.4	29	240	4.3
700	30	3,125	9.0	33	285	8.7	30	3,148	11.1	31	247	5.6
650	30	3,730	4.6	35	261	8.9	30	3,759	6.8	30	245	8.5
600	30	4,381	.0	38	262	8.9	30	4,414	2.1	33	249	9.9
550	30	5,063	- 4.6	34	271	10.5	30	5,102	- 3.1	35	261	10.3
500	30	5,815	- 9.7		273	14.2	30	5,858	- 8.2		274	11.3
450	30	6,613	-15.3		281	17.1	30	6,662	-13.8		277	12.8
400	30	7,500	-22.0		282	21.0	30	7,553	-20.3		273	15.5
350	30	8,468	-29.5		280	22.2	30	8,528	-27.6		270	16.3
300	30	9,550	-37.9		284	24.9	30	9,618	-35.9		271	17.9
250	30	10,781	-47.3		281	27.8	30	10,860	-45.3		275	22.0
200	30	12,225	-56.7		282	32.8	30	12,316	-55.4		273	27.8
175	30	13,066	-59.4		281	34.0	30	13,159	-59.4		276	29.0
150	29	14,022	-60.5		277	35.0	30	14,117	-62.5		272	27.2
125	20	15,157	-61.6		273	29.1	27	15,236	-65.8		271	21.8
100	16	16,542	-62.2		271	12.2	24	16,583	-68.0		278	10.7
80	14	17,920	-62.1		272	5.2	22	17,926	-66.7		59	2.7
60	14	19,710	-59.0		67	3.5	21	19,689	-60.8		85	11.7
50	11	20,866	-56.8		107	7.2	19	20,828	-57.5		92	14.2
40	10	22,294	-54.3		82	9.9	16	22,246	-54.6		85	16.3
30	9	24,156	-51.7				13	24,100	-50.9		84	17.7
20							6	26,762	-45.7			

Standard pressure surface (mb)	WASHINGTON, D. C (1006 MB.)						WINNEMUCCA, NEV (869 MB.)						YAKUTAT, ALASKA (1012 MB.)					
					Wind						Wind						Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	30	88	20.3	87	174	0.8	30	1,310	9.8	62	179	0.8	30	12	8.5	93	97	1.2
1,000	30	137			85	1.0	30	119					30	109	9.9	87	103	1.4
950	30	575	19.4	75	256	2.7	30	556					30	537	9.2	75	128	.6
900	30	1,045	17.2	72	270	4.1	30	1,014					30	984	7.9	69	139	1.2
850	30	1,532	14.6	70	271	6.6	30	1,496	15.7	41	34	1.0	30	1,455	5.8	65	133	1.7
800	30	2,043	11.8	68	268	9.3	30	2,009	13.5	38	331	3.5	30	1,950	3.5	65	104	3.3
750	30	2,578	8.9	61	264	11.9	30	2,545	9.6	42	312	6.2	30	2,474	.7	63	92	5.8
700	30	3,150	5.6	56	261	12.4	30	3,118	5.4	44	283	8.9	30	3,023	- 2.6	61	89	8.0
650	30	3,750	2.2	57	262	13.8	30	3,718	1.5	43	269	12.4	30	3,605	- 6.2	56	90	9.5
600	30	4,395	- 1.3	46	265	14.8	30	4,360	- 2.7	41	258	16.5	30	4,232	- 9.6	46	85	8.4
550	30	5,080	- 5.0	39	263	15.7	30	5,042	- 7.1	40	260	19.4	30	4,894	-13.8	44	72	10.1
500	30	5,828	- 9.5		266	16.5	30	5,782	-11.8	36	267	23.3	30	5,618	-18.6	44	68	10.9
450	30	6,628	-14.6		264	17.5	30	6,579	-17.1		270	25.6	30	6,388	-24.1	40	64	10.9
400	30	7,518	-20.3		267	17.9	30	7,457	-23.3		273	29.9	30	7,246	-30.7	41	61	13.0
350	30	8,494	-27.1		272	17.7	30	8,420	-30.8		268	32.3	30	8,181	-38.0		54	14.6
300	30	9,587	-35.4		269	20.8	30	9,495	-39.3		262	37.7	30	9,224	-46.2		54	15.9
250	30	10,831	-45.0		279	24.5	30	10,721	-48.3		271	32.8	30	10,416	-53.2		45	15.9
200	30	12,285	-56.2		287	27.4	30	12,163	-56.7		275	35.6	30	11,850	-53.2		21	11.1
175	30	13,123	-60.8		287	27.4	28	13,010	-58.9		274	33.6	30	12,713	-51.8		5	7.8
150	30	14,074	-63.7		283	23.1	28	13,976	-59.3		277	31.1	30	13,718	-50.1		349	4.7
125	29	15,189	-63.1		290	21.2	27	15,112	-59.8		274	27.6	30	14,910	-49.9		324	3.7
100	26	16,551	-63.4		295	12.0	25	16,503	-60.2		274	13.4	30	16,370	-49.8		331	2.5
80	21	17,935	-61.7		338	6.6	25	17,896	-60.3		272	7.2	29	17,830	-49.5		328	1.6
60	16	19,732	-57.2		71	8.0	25	19,699	-57.9		50	4.5	28	19,723	-48.4		57	2.7
50	15	20,897	-54.4		86	12.6	23	20,858	-56.1		76	6.0	28	20,923	-47.4		83	6.0
40	14	22,343	-52.0		85	13.2	23	22,284	-53.7		70	10.7	26	22,405	-46.2		82	8.4
30	14	24,222	-48.4		86	14.0	21	24,146	-50.2		80	11.9	20	24,326	-44.8		84	14.4
20	12	26,918	-43.2		87	17.7												
15	9	28,850	-39.3															

Note: All observations scheduled at 1200, G.C.T. "Number of observations" refers to those of dynamic height only. Temperature, humidity or wind data may be missing for one or more pressure surfaces of some observations. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Relative humidity data are not published for standard pressure surfaces having less than 16 actual observations.

Relative humidity data beginning with October 1, 1948, were computed and expressed in these tables on the basis of vapor-pressure over water. Upper air values of relative humidity at levels with temperatures less than 0°C, have formerly been computed and expressed on the basis of the vapor-pressure over ice. All relative humidity observations are obtained by electric hygrometer and have been adjusted to compensate for the value occurring below the operating range of the humidity element

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

CLEMSON

SOLAR RADIATION DATA

Solar radiation intensities, tabulated in langleys per minute on a surface normal to the direction of the sun. JUNE 1957

ALBUQUERQUE, N. MEX.

Date	Sun's zenith distance								
	A.M.				0.0°	P.M.			
	78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°
	Air mass								
	4.19	3.35	2.51	1.67	0.84	1.67	2.51	3.35	4.19
June									
1-----	----	----	----	----	Cloudy	----	----	----	----
2-----	0.77	0.85	0.95	----	1.23	----	----	----	----
3-----	----	----	----	----	Cloudy	----	----	----	----
4-----	----	----	----	----	1.25	----	----	----	----
5-----	----	----	.93	1.06	1.23	1.05	0.95	0.86	0.79
6-8---	----	----	----	----	Cloudy	----	----	----	----
9-----	DH.46	DH.57	DH.72	DH.91	DH1.21	----	----	----	----
10,11-	----	----	----	----	Cloudy	----	----	----	----
12----	.79	.85	.95	1.07	----	1.05	.92	.81	.75
13----	.79	.87	.96	1.08	1.21	----	----	----	----
14----	*.70	*.77	*.87	*1.01	----	----	----	----	----
15----	----	----	----	----	Cloudy	----	----	----	----
16----	*.71	*.77	*.89	*1.03	*1.18	*1.03	*.88	*.77	*.68
17----	.82	.88	1.02	1.14	1.29	M	M	M	M
18----	----	----	*.85	*.98	*1.16	*.98	*.82	*.67	*.59
19----	DH.40	DH.47	DH.63	DH.80	DH1.06	----	----	----	----
20----	----	DH.52	DH.66	DH.85	*1.16	M	M	M	M
21----	.69	.77	.89	*1.05	*1.17	----	----	----	----
22----	.68	.77	.87	1.01	1.23	----	.93	.83	.77
23----	.71	.77	.89	1.04	DH1.13	1.00	*.82	*.72	*.65
24----	DH.30	DH.40	DH.57	DH.73	DH1.13	DH.86	----	----	----
25----	.75	.83	.94	1.07	1.23	----	----	D.49	D.31
26----	----	----	----	----	Cloudy	----	----	----	----
27----	----	----	----	----	1.21	1.04	.95	.85	.78
28----	.76	.82	.92	1.04	1.18	----	----	----	----
29,30-	----	----	----	----	Cloudy	----	----	----	----
Averages	.67	.73	.85	.99	1.19	1.00	.90	.75	.67

MADISON, WIS.

Date	Air mass								
	4.84	3.87	2.90	1.94	0.97	1.94	2.90	3.87	4.84
June									
2-----	S0.93	S1.01	S1.16	S1.30	S1.49	Ci	----	----	----
19----	----	----	1.03	1.20	S1.44	Ci	----	----	----
23----	S.86	----	----	----	----	----	----	----	----
26----	----	----	----	----	S1.44	----	----	----	----
30----	.84	.96	1.04	1.11	Ci	----	----	----	----
Averages	.88	.99	1.08	1.20	1.46	----	----	----	----

WASHINGTON, D. C. (WBCO)

Date	Air mass								
	5.00	4.00	3.00	2.00	1.00	2.00	3.00	4.00	5.00

Instrument inoperable during June 1957

*	slight dust haze
D	dust
DH	dust haze
IH	intense haze
K	smoke
M	moderate haze - indeterminable
MH	moderate haze
S	slight haze - indeterminable

TUCSON, ARIZ.

Date	Sun's zenith distance								
	A.M.				0.0°	P.M.			
	78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°
	Air mass								
	4.56	3.65	2.74	1.83	0.91	1.83	2.74	3.65	4.56
June									
1-----	----	----	----	----	1.38	1.12	0.94	0.80	0.71
2-----	0.57	0.65	0.79	0.95	1.28	----	----	----	----
3-----	----	----	----	----	1.42	----	----	----	----
6-----	.43	.55	.72	.95	1.09	----	----	----	----
8-----	.42	.60	.80	1.12	1.48	1.24	1.10	.99	.89
9-----	.68	.83	1.02	1.14	1.44	1.00	.50	.80	.00
12----	----	----	----	----	1.45	1.19	1.05	.93	.82
13----	.87	.97	1.03	1.21	1.41	1.25	1.09	.97	.88
14----	.87	.98	1.09	1.24	1.48	1.24	.99	.83	.68
15----	.83	.94	1.06	1.23	1.44	1.16	.95	.82	.68
16----	.64	.76	.92	1.11	1.40	1.13	.93	.81	.68
17----	.79	.91	1.04	1.23	1.40	1.20	1.03	.90	.78
18----	.75	.85	.97	1.12	1.28	.73	.54	.41	.30
19----	.37	.52	.70	.92	1.21	----	----	----	----
20----	.66	.76	.91	1.07	1.35	1.40	.99	.85	.74
21----	.92	1.02	1.14	1.27	1.44	1.21	1.06	.91	.80
22----	.81	.91	1.02	1.24	1.41	1.19	1.04	.92	.81
23----	.88	.94	1.06	1.21	1.38	----	----	----	----
27----	.59	.73	.88	----	----	----	----	----	----
Averages	.69	.81	.95	1.13	1.37	1.30	.94	.84	.67

TABLE MOUNTAIN, CALIF.

Date	Air mass								
	3.85	3.08	2.31	1.54	0.77	1.54	2.31	3.08	3.85
June									
3-----	0.83	0.96	1.10	1.27	IH	----	----	----	----
7-----	----	----	----	1.47	MH	----	----	----	----
12----	1.06	1.14	1.25	1.37	----	----	----	----	----
13----	1.05	1.14	1.24	1.40	----	----	----	----	----
14----	1.08	1.16	1.27	1.39	----	----	----	----	----
18----	1.07	1.16	1.27	1.40	MH	----	----	----	----
19----	1.03	1.13	1.24	1.36	MH	----	----	----	----
24----	.99	1.07	1.17	1.27	MH	----	----	----	----
27----	1.17	1.25	1.35	1.47	----	----	----	----	----
28----	1.14	1.23	1.33	1.44	IH	----	----	----	----
Averages	1.05	1.14	1.25	1.38	----	----	----	----	----

BLUE HILL, MASS.

Date	Air mass								
	4.89	3.92	2.94	1.96	0.98	1.96	2.94	3.92	4.89
June									
4-----	0.64	0.73	0.88	1.08	1.21	----	----	----	----
8-----	----	----	1.04	1.17	----	----	----	----	----
9-----	.86	.95	1.08	1.21	1.35	1.27	1.13	1.04	0.95
10----	.92	1.02	1.15	1.28	----	----	1.10	.97	----
16----	.66	.79	.90	1.04	----	----	----	----	----
18----	K.44	K.53	K.70	K.93	K1.08	K.90	K.68	----	----
20----	----	----	----	----	----	----	.96	.78	.67
21----	----	----	1.12	1.25	----	----	----	----	----
Averages	.70	.80	.98	1.14	1.21	1.09	.97	.93	.81

Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station listed above appears in the February 1957 issue, Vol. 8, No. 2, page 63, of this publication.

SOLAR RADIATION DATA

JUNE 1957

Daily totals and average daily totals by weeks of solar and sky radiation, plus the radiation reflected from the ground, as received on a vertical surface facing south at Blue Hill, Mass. during the month

								Avg								Avg								Avg
Date-------------	4	5	6	7	8	9	10		11	12	13	14	15	16	17		18	19	20	21	22	23	24	
Langleys---------	261	235	240	159	241	248	249	233	260	148	153	252	229	249	239	219	252	218	227	235	236	225	175	224
Date-------------	25	26	27	28	29	30	1																	
Langleys---------	145	188	153	238	226	189	240	211																

Daily totals and average daily totals by weeks of diffuse (sky) radiation as received on a horizontal surface at Blue Hill, Mass. during the month

								Avg								Avg								Avg
Date-------------	4	5	6	7	8	9	10		11	12	13	14	15	16	17		18	19	20	21	22	23	24	
Langleys---------	150	375	352	294	234	132	112	235	325	130	249	259	261	147	215	227	171	267	164	156	138	197	278	196
Date-------------	25	26	27	28	29	30	1																	
Langleys---------	286	307	273	218	202	155	135	225																

Note: Langley is the unit used to denote one gram calorie per square centimeter

Values adjusted to conform with the International Scale of Pyrheliometry July 1, 1957

NET RADIATION

Net radiation in langleys per day (midnight to midnight) at Raleigh, N. C., during the month

JUNE 1957

Date.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langleys. . .	321	404	*374	340	*172	*186	392	203	*	*231	306	420	429	407	442	414	383	307	*375	363	429	401	405	427	*246	*91	323	*353	415	391		343

* Estimated values owing to occurrence of rain during period. While rain is falling, radiation is assumed to be zero.

The measurement is made with a Beckman and Whitley net exchange radiometer over a plot of Bermuda grass. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the North Carolina State College at Raleigh. The instrument with which they were measured has not been checked by the Weather Bureau.

CLEMSON

SOLAR RADIATION DATA

Daily totals and weekly averages of solar radiation (direct and diffuse) received on a horizontal surface, tabulated in langleys.

1957	Aklavik, Mackenzie	Albuquerque, N.Mex	Annette, Alaska	Apalachicola, Fla.	Astoria, Oreg.	Atlanta, Ga.	Barrow, Alaska	Bethel, Alaska	Bismarck, N. Dak.	Blue Hill, Mass.	Boise, Idaho	Boston, Mass.	Brownsville, Tex.	Canton Island Pacific Area	Cape Hatteras, N.C	Caribou, Me.	Charleston, S. C.	Cleveland, Ohio	Columbia, Mo	Davis, Calif.
June 4------	639	813	704	537	---	254	515	742	775	735	712	721	513	591	759	337	485	625	262	679
June 5------	348	810	757	661	---	499	428	739	739	500	697	521	380	(605)	583	795	552	729	699	806
June 6------	381	598	288	741	---	369	479	450	266	553	671	584	378	607	375	820	595	563	682	768
June 7------	496	729	355	493	---	480	517	464	512	319	718	320	606	---	---	101	549	292	489	717
June 8------	657	564	337	150	---	271	590	655	319	632	466	596	648	519	482	580	203	207	517	753
June 9------	675	801	407	496	---	346	581	584	694	788	536	789	623	556	154	807	359	415	385	512
June 10------	620	645	120	500	---	181	366	461	406	795	806	788	624	419	793	673	265	690	569	789
Average-------	545	708	424	511	---	343	482	585	530	618	658	617	539	(550)	524	588	430	503	515	718
June 11------	734	570	103	638	---	427	651	592	785	713	640	670	683	571	883	563	479	297	571	708
June 12------	690	812	391	580	---	693	777	641	648	285	627	354	559	590	--	257	656	436	408	781
June 13------	510	819	602	745	---	580	426	80	365	301	669	233	553	570	752	628	657	563	566	793
June 14------	680	754	534	765	---	653	415	132	546	601	570	501	523	485	793	131	483	714	373	723
June 15------	366	695	755	750	---	741	256	271	561	640	469	601	687	382	781	381	(726)	750	591	817
June 16------	465	831	296	713	---	636	202	425	81	709	786	706	641	483	788	635	531	463	735	818
June 17------	617	861	464	746	---	691	203	570	214	633	769	622	675	538	744	708	676	661	681	812
Average-------	580	763	449	705	---	631	418	387	457	555	647	527	617	517	790	472	(601)	555	561	779
June 18------	312	809	607	736	---	650	538	---	791	704	693	674	272	536	(727)	215	700	495	697	790
June 19------	135	610	717	417	---	530	526	427	763	493	547	421	161	555	689	184	614	779	734	682
June 20------	534	785	536	724	---	684	359	653	417	731	599	712	227	453	536	569	331	725	747	760
June 21------	317	806	624	737	578	602	(383)	753	150	739	740	727	616	565	808	741	597	831	692	792
June 22------	269	820	98	676	756	599	637	698	274	719	794	712	726	552	795	360	621	605	596	764
June 23------	545	809	277	87	450	621	224	649	684	697	777	686	760	591	779	689	610	643	541	746
June 24------	678	770	437	569	787	460	528	679	700	421	724	511	614	448	823	653	417	131	798	775
Average---- --	399	773	471	564	643	592	(456)	643	540	643	696	635	482	529	(737)	487	556	601	686	759
June 25------	348	810	140	385	584	418	237	633	680	626	698	509	502	591	---	347	518	819	703	757
June 26------	(521)	772	233	439	212	573	261	718	700	418	476	341	544	590	459	76	212	772	195	740
June 27------	(687)	824	171	680	422	510	553	771	550	329	751	326	716	569	656	204	646	262	241	709
June 28------	449	---	676	582	620	235	520	237	599	651	752	653	679	523	789	380	(586)	277	776	724
June 29------	633	713	318	646	548	702	316	414	774	551	759	592	577	568	793	214	651	731	125	727
June 30------	685	688	356	645	609	477	725	665	572	556	695	531	705	359	684	438	392	780	548	710
July 1------	534	796	710	380	604	605	---	512	692	783	651	656	629	440	791	250	458	756	337	723
Average-------	(551)	767	372	537	514	503	435	564	652	559	683	516	622	520	696	273	(495)	628	418	727

1957	Dodge City, Kans	E. Lansing, Mich	Edmonton, Alberta	El Paso, Tex	Ely, Nev	Fairbanks, Alaska	Ft. Worth, Tex	Fresno, Calif	Gainesville, Fla	Glasgow, Mont	Grand Junction, Colo	Grand Lake, Colo	Great Falls, Mont	Greensboro, N.C.	Griffin, Ga	Indianapolis, Ind	Inyokern, Calif	Ithaca, N.Y.	Lake Charles, La	Lander, Wyo.
June 4------	792	735	677	856	553	[illegible]	270	659	418	[illegible]	[illegible]	[illegible]	709	[illegible]	541	579	[illegible]	[illegible]	575	512
June 5------	772	479	432	806	631	695	417	705	398	696	743	471	711	312	[illegible]	751	[illegible]	[illegible]	[illegible]	[illegible]
June 6------	753	597	465	776	762	688	686	720	294	187	728	354	79	123	182	451	---	570	667	545
June 7------	645	287	652	679	800	---	(621)	696	215	712	679	329	532	701	[illegible]	415	[illegible]	[illegible]	641	633
June 8------	719	658	251	764	---	707	664	675	67	673	741	395	555	446	275	[illegible]	570	[illegible]	521	[illegible]
June 9------	634	773	499	812	300	701	640	249	107	342	701	391	554	50	[illegible]	[illegible]	417	526	666	[illegible]
June 10------	729	628	501	796	253	646	619	591	332	455	108	368	736	313	201	[illegible]	774	700	665	[illegible]
Average-------	721	594	497	784	550	688	(560)	614	309	[illegible]	639	[illegible]	558	386	[illegible]	480	771	614	[illegible]	[illegible]
June 11------	714	281	499	580	786	658	697	658	[illegible]	748	727	308	557	461	293	470	[illegible]	652	615	790
June 12------	284	799	557	770	694	630	313	700	445	743	758	471	550	619	611	735	561	457	[illegible]	[illegible]
June 13------	792	429	764	760	717	512	736	739	628	616	420	230	351	756	169	517	--	641	[illegible]	[illegible]
June 14------	770	525	635	807	720	666	622	712	662	597	688	702	555	650	651	[illegible]	843	346	652	[illegible]
June 15------	649	547	406	831	700	614	639	727	134	727	209	107	542	712	625	[illegible]	920	626	662	101
June 16------	(516)	655	735	799	---	486	648	712	535	531	172	209	314	701	---	679	910	[illegible]	[illegible]	230
June 17------	(521)	638	756	804	847	485	665	707	549	470	735	233	795	496	---	562	911	701	530	654
Average-------	(607)	553	622	765	744	583	624	708	523	576	571	324	495	629	530	506	885	581	634	471
June 18------	802	539	449	765	829	634	554	689	412	586	801	700	724	681	636	524	898	675	--	733
June 19------	760	526	452	777	796	664	724	675	506	735	794	648	466	491	459	792	870	315	629	661
June 20------	744	773	242	772	650	718	683	708	561	712	684	565	575	599	482	789	898	662	362	471
June 21------	615	744	668	761	853	283	620	695	440	382	717	371	530	650	478	793	885	773	512	419
June 22------	806	693	548	779	831	622	636	693	339	546	784	461	513	185	537	563	884	742	178	632
June 23------	521	731	691	783	833	588	551	681	446	737	796	618	808	579	541	697	875	594	---	751
June 24------	791	245	686	748	808	650	758	672	518	562	791	696	704	631	278	317	542	556	---	667
Average---- --	720	607	534	769	800	594	647	685	460	609	767	580	589	546	487	639	879	585	421	620
June 25------	742	386	192	716	822	549	740	645	88	752	762	576	736	149	446	748	838	173	(636)	675
June 26------	383	302	503	821	799	557	(733)	685	497	368	696	308	479	386	477	641	850	694	469	489
June 27------	417	417	589	750	780	550	(583)	660	551	596	773	612	660	474	469	415	855	473	50	682
June 28------	757	137	604	811	738	530	711	660	720	701	767	655	791	450	217	233	872	616	614	753
June 29------	676	793	690	---	751	583	714	639	---	730	413	604	793	740	615	580	844	197	641	612
June 30------	715	703	410	723	816	425	(695)	671	---	774	688	297	807	561	543	751	880	515	704	662
July 1------	742	715	461	769	817	---	585	658	604	533	740	672	578	673	516	667	877	813	656	721
Average-------	633	493	493	765	789	532	(680)	660	492	636	691	532	692	491	440	576	860	497	(539)	656

Note.--Langley is the unit used to denote one gram calorie per square centimeter.
Values in parentheses are interpolated.

SOLAR RADIATION DATA

Daily totals and weekly averages of solar radiation (direct and diffuse) received on a horizontal surface, tabulated in langleys. - Continued

1957	Las Vegas, Nev.	Lemont, Ill.	Little Rock, Ark.	Los Angeles, Calif.	Los Angeles, Calif. (urban)	Madison, Wis.	Matanuska, Alaska	Medford, Oreg.	Miami, Fla.	Midland, Tex.	Nashville, Tenn.	Newport, R. I.	New York, N. Y.	North Omaha, Nebr.	Oak Ridge, Tenn.	Oklahoma City, Okla.	Ottawa, Ontario	Phoenix, Ariz.	Portland, Me.	Rapid City, S. Dak.	Riverside, Calif.	St. Cloud, Minn.	San Antonio, Tex.	Santa Maria, Calif.	S. Ste. Marie, Mich.	Sayville, N. Y.	Schenectady, N. Y.	Seattle-Tacoma, Wash.	Shreveport, La.	Spokane, Wash.	State College, Pa	Stillwater, Okla.	Tampa, Fla.	Toronto, Ontario	Tucson, Ariz.	Upton, N. Y.	Wake Island Pacific Area	Washington, D. C. (Silver Hill Obs.)	Winnipeg, Manitoba
June 4------	736	757	539	732	749	709	---	658	419	---	317	752	591	629	---	372	622	756	553	704	763	697	497	683	786	750	358	736	438	782	508	---	673	678	753	761	(658)	---	730
June 5------	734	514	624	659	719	367	723	689	630	665	143	432	362	---	205	732	744	717	732	834	793	682	430	575	616	436	511	452	479	482	225	---	722	669	736	491	459	83	650
June 6------	827	704	526	644	697	601	706	737	559	729	---	574	656	704	359	735	625	663	342	427	744	636	723	698	118	684	321	369	662	143	513	805	529	544	710	686	709	452	593
June 7------	811	123	627	406	374	278	712	646	287	722	619	307	355	217	603	707	451	548	425	146	732	693	579	673	801	409	500	418	578	415	634	---	240	464	646	457	693	582	737
June 8------	748	380	490	331	307	553	722	722	495	689	487	593	260	155	543	540	774	794	808	688	298	522	700	690	781	349	545	390	661	250	118	525	138	756	803	444	720	96	486
June 9------	474	708	351	501	343	451	715	(694)	510	709	415	799	779	332	373	617	767	704	797	722	325	402	726	256	764	844	610	506	704	766	876	564	675	767	789	852	682	570	95
June 10------	473	558	510	683	314	460	623	743	700	711	256	813	719	268	173	690	641	---	764	286	453	215	563	640	590	876	595	625	733	810	672	647	707	589	417	867	685	762	605
Average-------	686	535	524	565	500	488	700	(698)	514	704	373	610	532	384	376	628	661	697	631	544	587	550	603	602	637	621	491	499	608	521	507	635	526	638	683	651	(658)	424	557
June 11------	774	400	685	530	568	549	597	---	651	716	473	724	690	613	363	667	561	(767)	711	709	673	---	658	597	82	808	547	429	696	223	485	683	581	350	622	807	648	701	516
June 12------	810	432	674	398	554	511	207	(727)	636	734	578	312	460	354	641	468	659	765	398	546	722	632	349	683	700	585	389	606	648	700	613	468	570	710	789	625	522	624	242
June 13------	794	280	367	208	189	221	588	---	652	723	554	437	599	614	591	738	409	772	662	336	479	390	487	749	94	742	557	482	595	643	642	818	724	306	787	757	714	680	[illegible]
June 14------	781	197	617	570	408	484	---	---	730	706	552	595	483	763	---	489	423	780	375	719	493	608	338	734	249	684	326	601	705	605	502	580	716	519	800	679	700	658	[illegible]
June 15------	837	542	615	636	551	750	308	---	636	638	565	644	609	179	(691)	576	488	(791)	680	220	596	530	619	753	759	740	480	616	708	378	705	652	705	624	801	722	647	598	766
June 16------	851	737	667	752	769	708	370	(769)	575	667	597	698	638	511	(616)	650	725	779	729	419	824	165	666	749	541	733	581	764	688	821	504	756	622	583	798	733	616	664	(487)
June 17------	842	684	490	772	784	728	587	734	609	664	508	656	685	170	561	578	716	800	589	485	828	458	501	740	631	754	544	444	737	695	740	671	643	638	800	735	562	674	108
Average-------	813	467	588	552	546	564	443	---	641	693	547	581	595	458	(577)	595	569	(779)	592	491	659	464	517	715	436	721	489	563	682	581	599	661	652	532	771	723	630	657	(350)
June 18------	794	601	566	787	775	685	222	683	611	705	611	---	594	772	568	595	486	772	720	833	807	---	504	731	616	736	550	391	621	699	718	---	559	428	631	720	721	---	440
June 19------	819	799	615	---	735	797	349	673	692	673	525	565	552	729	373	783	492	753	369	795	777	773	553	732	229	574	327	552	537	507	504	857	453	504	732	611	719	603	[illegible]
June 20------	808	763	744	726	742	732	199	687	589	697	674	663	603	738	792	733	784	774	752	673	757	677	553	744	509	715	532	---	461	599	654	836	568	672	769	770	673	685	183
June 21------	825	715	582	722	729	698	277	749	640	688	587	765	666	645	743	693	518	786	758	498	760	411	449	721	499	816	594	393	508	640	777	793	657	663	797	799	698	665	(635)
June 22------	811	549	214	424	536	681	398	756	500	689	420	739	699	750	511	485	689	790	712	645	604	---	---	731	469	816	600	766	196	810	723	641	329	692	794	[illegible]	686	598	341
June 23------	805	816	393	650	730	324	718	748	668	484	291	720	628	564	412	263	358	799	676	(821)	760	313	708	638	(416)	725	340	543	609	725	568	397	450	485	780	707	724	616	[illegible]
June 24------	814	487	610	518	630	248	441	760	686	625	---	577	452	774	324	766	480	(745)	---	847	577	638	---	696	136	663	392	604	---	773	178	823	597	448	669	629	685	635	720
Average-------	811	476	532	638	697	595	372	723	627	652	518	672	599	710	532	617	544	(774)	665	(730)	720	562	553	713	(410)	721	476	542	488	679	589	725	516	556	774	715	701	634	(520)
June 25------	766	650	755	440	549	408	---	726	407	647	730	720	649	290	---	689	183	633	27	780	675	780	712	684	231	725	353	554	753	606	240	803	449	439	706	744	727	472	289
June 26------	770	505	656	665	617	697	749	719	285	689	804	537	183	340	---	377	591	732	133	(405)	752	758	696	700	227	227	475	239	596	683	252	---	684	555	729	(297)	735	632	(717)
June 27------	783	371	400	688	697	402	429	698	445	658	508	441	488	378	---	669	435	735	189	552	797	365	598	635	692	644	420	590	143	736	637	700	387	187	756	650	710	640	261
June 28------	732	385	666	464	566	406	673	718	515	682	300	594	499	712	---	---	256	708	503	758	638	747	582	556	193	723	499	436	726	804	454	770	692	130	683	678	696	570	684
June 29------	761	802	686	522	587	786	601	744	475	679	722	676	583	643	725	---	143	661	418	748	616	751	667	355	458	637	254	433	639	[illegible]	550	697	727	239	542	610	683	679	[illegible]
June 30------	807	818	307	658	746	790	587	679	477	---	316	733	645	708	429	---	188	748	579	683	769	771	640	534	616	608	106	557	633	804	710	---	680	594	736	655	601	637	464
July 1------	788	698	313	724	721	564	569	444	612	---	659	752	783	355	682	---	716	734	484	768	756	583	688	757	806	814	637	434	603	648	654	558	634	767	683	786	584	695	498
Average-------	773	604	540	595	640	579	601	675	459	671	577	636	547	490	---	---	359	707	333	(670)	715	679	655	603	460	625	435	463	585	727	500	706	608	416	695	(632)	677	618	(515)

Note.--Langley is the unit used to denote one gram calorie per square centimeter.
Values in parentheses are interpolated.

CLEMSON COLLEGE LIBRARY

CONDENSED CLIMATOLOGICAL SUMMARY

DELAYED DATA

Section	Temperature						Precipitation			
	Monthly extremes						Monthly extremes			
	Station	Highest	Date	Station	Lowest	Date	Station	Greatest	Station	Least
		°F			°F			In.		In.
November 1956										
Alaska	Wrangell	56	25	Allakaket	-54	15+	Yakutat WB AP	43.88	Wales AP	0.08
December 1956										
Alaska	2 Stations	53	19+	Tanacross	-70	13	Little Port Walter	30.07	4 Stations	T
Hawaii	do	90	1+	Mauna Loa Slope Obs.	28	2+	Kilauea Field	14.99	Mauna Loa Slope Obs.	.00
January 1957										
Alaska	Cape Sarichef Lgt. St.	55	26	Allakaket	-61	7	Adak	12.92	Chitina	.10
Hawaii	2 Stations	88	3+	Haleakala RS	34	13+	N Wai Ditch	35.83	Puukolii	.00
February 1957										
Alaska	Shearwater Bay	64	3	Allakaket	-65	14	Little Port Walter	15.82	Anaktuvuk Pass	.00
Hawaii	Pahala	89	25	Mauna Loa Slope Obs.	22	17	Waikamoi Dam	31.11	Puako	.02
March 1957										
Alaska	Tree Point Lgt. Sta.	63	29	Barter Island WB	-47	22	Shearwater Bay	11.83	Chitina	.00
Hawaii	Puunene CAA AP	87	2+	Mauna Loa Slope Obs	23	1	Keanae	9.60	6 Stations	.00
April 1957										
Alaska	Matanuska Agr. Exp. Sta.	66	13	Barrow WB AP	-30	3	Little Port Walter	14.93	2 Stations	.00

See footnotes with current data

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure		Temperature												Average relative humidity	Precipitation							Wind					No. of days (sunrise to sunset)			Sky cover, tenths (sunrise to sunset)	Possible sunshine
												No. of days								No. of days		Snow, Sleet				Fastest mile							
		Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F. or above	Min. 32° F. or below	Average dew point			Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max. depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy		
	Ft.	Mb.	Mb.	°F.	°F	°F.	°F.	°F		°F.				°F	%		In.	In.	In.			In.	In.	M. p. h.		M. p. h.			0–3	4–7	8–10	0–10	%
Taguac, Guam (U)																																	
October 1956	361	------	------	86	72	78.6	----	87	1+	68	16	0	0	--	--		8.16	----	1.91	26	--	.0	0	----	---	--	---	--	--	--	--	---	--
November 1956	361	------	------	85	74	79.3	----	86	2+	66	4	0	0	--	--		13.45	----	2.51	25	--	.0	0	----	---	--	---	--	--	--	--	---	--
December 1956	361	------	------	83	73	78.1	----	86	6	68	9+	0	0	--	--		10.44	----	1.63	25	--	.0	0	----	---	--	---	--	--	--	--	---	--
January 1957	361	------	------	83	71	76.8	----	84	2+	63	8+	0	0	--	--		5.51	----	1.23	21	--	.0	0	----	---	--	---	--	--	--	--	---	82
February 1957	361	------	------	82	72	77.1	----	85	27	68	11+	0	0	--	--		3.77	----	1.01	18	--	.0	0	----	---	--	---	--	--	--	--	---	78
March 1957	361	------	------	84	71	77.4	----	86	21+	61	15	0	0	--	--		3.00	----	.54	22	--	.0	0	----	---	--	---	--	--	--	--	---	77

See footnotes with current data

CORRECTIONS

	Month:	November 1956
page 415:	Denver, Colo.	10 mb. level-height should be 31,444 m., and 7 mb., 33,830 m.
	Rantoul, Ill.	10 mb. level-height should be 31,495 m.
	Month:	December 1956
page 449:	Ithaca, New York	data for July, August and September are reprinted as corrected data.
	Month:	February 1957
page 49:	Burns, Oregon	accumulated degree days period July through this month should be 5229; for March, pg. 73, 6042; for April, pg. 104, 6630; for May, pg. 164, 6972.
page 49:	Houston, Texas (U)	accumulated degree days period July through this month should be 736; for March, pg. 73, 854; for April, pg. 104, 891; for May, pg. 164, 892.
	Month:	April 1957
page 104:	Valentine, Neb.	heating degree days should be 670, 6923 and 6704.

RAWINSONDE DATA

Average monthly values

DELAYED DATA

1/ CAMAGUEY, CUBA (1000 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	19	122	23.5	95	64	2.5
1,000	19	124	23.4	95	65	2.9
950	19	585	22.1	79	83	9.1
900	19	1,041	19.4	75	109	8.5
850	19	1,532	16.6	68	119	7.2
800	19	2,046	13.5	65	120	5.8
750	19	2,599	10.3	59	127	6.0
700	19	3,158	7.1	53	112	7.2
650	19	3,778	3.4	53	123	7.8
600	19	4,410	- .2	50	141	7.4
550	19	5,109	- 4.4	49	144	7.4
500	19	5,845	- 9.0	43	144	7.8
450	19	6,668	-13.7		154	6.4
400	19	7,541	-19.4	48	138	3.7
350	19	8,521	-26.5		89	2.7
300	19	9,617	-34.6		45	4.5
250	18	10,866	-44.9		16	6.6
200	18	12,318	-57.2		7	9.9
175	16	13,158	-63.6		347	11.8
150	13	14,084	-70.3		335	13.2
125	8	15,149	-73.6			
100	6	16,447	-73.7			
80	5	17,765	-69.8			
60						
50						
40						
30						
20						
15						

1/ HAVANA, CUBA (1009 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	29	49	24.9	88	81	3.7
1,000	29	126	25.0	83	86	6.6
950	29	581	22.9	76	95	10.7
900	29	1,048	20.2	73	86	11.8
850	29	1,540	17.1	72	119	8.0
800	29	2,056	13.9	70	132	5.2
750	29	2,601	11.0	65	145	4.9
700	29	3,171	7.5	63	137	4.1
650	28	3,783	3.9	63	169	3.3
600	27	4,424	.4	61	198	4.5
550	26	5,117	- 3.6	61	208	4.9
500	26	5,865	- 7.8	56	215	5.9
450	26	6,683	-12.8	51	207	6.0
400	26	7,568	-18.6	50	210	7.2
350	26	8,550	-25.5	49	209	8.4
300	26	9,649	-34.0	46	220	8.4
250	26	10,899	-44.0		239	7.6
200	25	12,354	-56.6		266	9.3
175	25	13,187	-63.3		342	6.8
150	19	14,133	-69.4		270	3.3
125	[illegible]	15,225	-72.5			
100						
80						
60						
50						
40						
30						
20						
15						

1/ RAIZET, GUADALOUPE, F. W. I. (1014 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	25	8	24.0	92	125	0.4
1,000	25	126	25.1	82	102	2.1
950	25	585	22.7	86	93	13.8
900	25	1,048	19.6	82	98	14.6
850	25	1,539	15.4	78	98	13.4
800	25	2,055	14.4	70	92	13.8
750	25	2,599	11.8	63	92	15.3
700	25	3,175	9.0	55	90	14.4
650	25	3,788	5.9	43	84	12.0
600	25	4,437	1.8	45	85	10.5
550	25	5,132	- 2.7	43	90	9.3
500	25	5,883	- 7.1	36	93	8.9
450	25	6,704	-12.4		101	7.6
400	25	7,587	-18.7		126	4.5
350	25	8,567	-26.0		167	5.1
300	25	9,662	-34.8		210	6.2
250	25	10,908	-44.6		232	10.3
200	25	12,362	-56.1		245	16.5
175	25	13,198	-62.3		247	14.6
150	25	14,135	-68.2		248	12.0
125	24	15,219	-71.1		225	5.4
100	23	16,530	-73.7		125	6.6
80	21	17,839	-70.6		89	18.1
60	21	19,568	-64.4		93	28.6
50	21	20,689	-61.8		88	33.4
40	21	22,080	-58.1		91	39.4
30	19	23,905	-53.8		92	45.1
20	13	26,524	-49.2		89	45.3
15	5	28,410	-46.9			

2/ CAMAGUEY, CUBA (1000 MB)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	6	122	22.8			
1,000	6	122	19.5			
950	6	570	19.1			
900	6	1,030	16.5			
850	6	1,515	13.8			
800	6	2,024	11.0			
750	6	2,570	8.4			
700	6	3,127	5.1			
650	6	3,735	1.5			
600	6	4,369	- 1.6			
550	6	5,058	- 5.5			
500	6	5,799	-10.1			
450	6	6,608	-15.4			
400	6	7,484	-21.7			
350	6	8,455	-28.4			
300	6	9,542	-36.6			
250	6	10,777	-46.8			
200	6	12,218	-58.3			
175	5	13,043	-64.1			
150						
125						
100						
80						
60						
50						
40						
30						
20						
15						

2 GRAND CAYMAN, B. W. I. (1012 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	8	3	27.2			
1,000	8	109	26.9			
950	8	561	23.1			
900	8	1,031	20.0			
850	8	1,523	17.2			
800	8	2,039	14.1			
750	8	2,589	10.8			
700	8	3,155	7.5			
650	8	3,769	4.2			
600	8	4,409	.9			
550	8	5,103	- 3.1			
500	8	5,852	- 7.8			
450	8	6,676	-13.0			
400	8	7,552	-18.7			
350	8	8,534	-25.5			
300	8	9,633	-33.9			
250	8	10,883	-43.8			
200	8	12,344	-55.5			
175	8	13,183	-61.1			
150	7	14,129	-67.2			
125	7	15,211	-73.6			
100	7	16,503	-76.5			
80	6	17,798	-73.1			
60	6	19,521	-64.4			
50	5	20,636	-61.4			
40						
30						
20						
15						

2/ RAIZET, GUADALOUPE, F. W. I. (1013 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	29	8	23.5	93	109	0.8
1,000	29	120	24.9	85	103	2.1
950	29	574	23.0	86	104	9.7
900	29	1,042	20.1	84	104	10.7
850	29	1,534	17.3	80	101	9.9
800	29	2,051	14.5	74	100	9.5
750	29	2,600	11.8	63	90	8.7
700	29	3,171	8.9	55	90	7.4
650	29	3,787	5.3	52	95	6.2
600	29	4,432	1.8	49	100	5.2
550	28	5,128	- 2.1	45	105	6.0
500	27	5,880	- 6.7	47	94	6.4
450	27	6,701	-11.7	39	111	5.1
400	27	7,588	-17.9		114	2.9
350	27	8,571	-25.3		143	1.7
300	27	9,670	-34.1		215	1.6
250	27	10,918	-44.2		266	7.0
200	27	12,374	-56.1		269	16.9
175	26	13,211	-62.4		272	21.0
150	26	14,147	-68.6		282	19.6
125	26	15,224	-73.4		289	12.4
100	25	16,523	-74.9		319	1.2
80	25	17,821	-72.5		84	9.5
60	25	19,539	-64.9		93	19.6
50	25	20,661	-60.9		95	27.8
40	24	22,055	-57.8		95	34.8
30	22	23,881	-53.8		92	40.0
20	19	26,515	-48.5		92	33.8
15	10	28,405	-43.9			

2/ HAVANA, CUBA (1008 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	25	49	24.4	83	25	7.4
1,000	25	122	24.2	79	37	9.3
950	25	573	21.2	79	53	12.4
900	25	1,038	17.9	77	53	11.1
850	25	1,525	14.9	74	54	9.1
800	25	2,037	12.3	69	58	6.2
750	25	2,581	9.3	65	47	4.9
700	25	3,146	6.2	54	81	2.5
650	25	3,755	3.2	44	289	.2
600	25	4,395	- .3	41	264	2.3
550	25	5,088	- 4.3		258	3.9
500	25	5,832	- 9.0		267	6.2
450	25	6,648	-14.8		266	8.7
400	25	7,521	-21.0		275	11.5
350	25	8,493	-28.4		272	14.4
300	25	9,579	-36.8		275	20.4
250	25	10,816	-46.1		272	21.0
200	25	12,265	-56.8		265	25.1
175	23	13,102	-62.0		269	28.6
150	20	14,040	-67.0		278	24.5
125	14	15,126	-71.4		265	16.7
100	9	16,411	-74.7			
80	5	17,693				
60	5	19,416				
50	5	20,543	-61.0			
40	5	21,939	-57.3			
30						
20						
15						

2/ SABANA D.L.M., DOM. REP. (1013 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	11	23.8	94	165	1.0
1,000	30	125	24.1	87	115	3.7
950	30	577	21.9	83	104	9.7
900	30	1,043	19.2	80	111	12.0
850	30	1,534	16.5	76	97	9.1
800	30	2,048	13.7	71	105	8.4
750	30	2,591	10.6	66	105	7.2
700	30	3,162	7.5	61	103	8.4
650	30	3,772	3.8	56	99	8.0
600	30	4,415	.4	52	102	7.8
550	30	5,106	- 3.4	48	110	6.6
500	30	5,856	- 8.1	41	107	8.4
450	30	6,670	-13.3	38	103	6.6
400	30	7,552	-19.1		104	6.2
350	30	8,531	-26.6		117	4.5
300	30	9,625	-35.2		151	3.3
250	30	10,867	-45.3		213	2.3
200	29	12,316	-57.0		266	7.0
175	29	13,149	-63.2		267	10.1
150	29	14,083	-69.3		274	11.3
125	29	15,156	-74.1		278	8.4
100	29	16,450	-75.6		44	2.1
80	27	17,750	-72.5		82	10.3
60	25	19,472	-65.3		81	15.7
50	24	20,598	-61.4		88	23.5
40	20	21,995	-58.3		89	28.0
30	14	23,841	-54.8		92	34.2
20	13	26,459	-49.8		91	24.7
15	6	28,291	-48.0			

3/ CAMAGUEY, CUBA (1001 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	23	122	20.3	92	30	6.4
1,000	23	135	20.4	91	31	7.6
950	23	590	20.0	81	49	20.4
900	23	1,045	17.5	79	62	14.6
850	23	1,532	15.2	72	69	8.5
800	23	2,044	12.9	67	93	4.1
750	23	2,595	10.1	55	133	1.2
700	23	3,154	7.8	39	235	1.6
650	23	3,767	4.5	34	272	3.3
600	23	4,409	1.0		268	5.6
550	23	5,108	- 2.7		279	7.6
500	23	5,853	- 7.2		290	9.7
450	23	6,675	-12.5		266	14.4
400	22	7,557	-18.8		280	16.9
350	21	8,539	-25.9		282	22.7
300	21	9,636	-34.3		274	30.3
250	21	10,884	-44.4		262	37.9
200	21	12,339	-56.6		252	43.5
175	21	13,174	-62.7		256	40.2
150	17	14,109	-69.3		267	37.7
125	10	15,183	-73.5			
100	7	16,480	-75.7			
80	6	17,776	-74.7			
60	5	19,490	-66.4			
50						
40						
30						
20						
15						

3/ GRAND CAYMAN, B. W. I. (1014 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	3	26.8	76	38	9.1
1,000	30	128	25.3	70	38	12.6
950	30	579	21.7	77	43	17.1
900	30	1,044	18.5	74	47	15.9
850	30	1,533	15.7	69	53	10.9
800	30	2,046	12.9	64	51	8.2
750	30	2,590	10.9	54	47	4.9
700	30	3,160	8.2	49	21	3.1
650	29	3,771	5.1	38	350	2.7
600	29	4,418	2.0		354	3.5
550	29	5,115	- 2.1		5	4.1
500	29	5,865	- 6.4		2	3.9
450	29	6,683	-11.7		317	4.9
400	29	7,571	-18.3		320	7.0
350	28	8,553	-25.6		281	8.5
300	28	9,650	-34.2		271	14.4
250	28	10,898	-44.3		257	18.8
200	28	12,352	-56.5		243	26.0
175	27	13,186	-62.9		235	25.4
150	24	14,115	-69.4		247	23.9
125	18	15,185	-73.4		240	22.0
100	18	16,476	-76.8		266	8.9
80	14	17,759	-75.3		98	3.3
60	11	19,474	-64.6		104	10.7
50	7	20,621	-60.6			
40						
30						
20						
15						

3/ RAIZET, GUADALOUPE, F. W. I. (1012 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	8	23.8	93	116	1.0
1,000	30	113	25.2	84	96	1.9
950	30	567	22.5	82	84	9.9
900	30	1,034	19.4	80	92	10.7
850	30	1,525	16.4	78	95	8.5
800	30	2,040	13.7	71	100	6.8
750	30	2,589	11.5	60	97	5.8
700	30	3,158	8.9	48	120	3.3
650	30	3,776	6.0	39	85	.8
600	30	4,421	2.8	35	60	.6
550	30	5,123	- .9		51	.6
500	30	5,875	- 5.8		76	1.0
450	30	6,702	-11.0		322	1.4
400	30	7,587	-17.2		280	3.5
350	30	8,574	-24.5		278	5.6
300	30	9,677	-33.0		275	8.7
250	30	10,931	-43.2		285	13.8
200	30	12,395	-55.1		286	16.9
175	29	13,233	-61.9		280	18.5
150	28	14,172	-68.8		280	19.0
125	26	15,244	-74.6		283	15.3
100	22	16,527	-79.1		285	6.6
80	22	17,800	-76.0		95	6.4
60	21	19,504	-65.4		92	13.8
50	20	20,623	-61.3		90	18.5
40	19	22,014	-58.7		95	24.9
30	17	23,835	-54.5		87	25.8
20	10	26,456	-50.1		85	27.0
15	5	28,363	-44.6			

3/ HAVANA, CUBA (1011 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	29	49	22.1	74	32	6.4
1,000	29	147	21.9	73	38	8.0
950	29	589	19.0	78	51	12.6
900	29	1,055	15.6	80	51	13.8
850	29	1,538	12.6	75	43	12.0
800	28	2,047	10.9	47	40	8.7
750	28	2,588	9.6		23	6.0
700	28	3,154	7.2		357	2.9
650	28	3,766	4.0		318	4.1
600	28	4,407	.8		283	8.9
550	28	5,102	- 3.2		277	12.0
500	28	5,850	- 8.2		272	16.7
450	27	6,667	-13.6		275	19.4
400	27	7,548	-20.2		281	25.3
350	27	8,524	-27.3		275	30.9
300	27	9,615	-35.5		272	35.0
250	27	10,857	-45.5		267	41.2
200	26	12,309	-57.4		260	38.9
175	24	13,134	-64.0		263	35.7
150	18	14,071	-69.3		262	39.2
125	11	15,147	-73.2			
100						
80						
60						
50						
40						
30						
20						
15						

3/ MERIDA, MEXICO (1017 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	29	11	21.6	80	49	4.9
1,000	29	158	22.1	72	57	10.9
950	29	602	19.8	67	61	14.6
900	29	1,067	16.7	70	64	10.1
850	29	1,552	13.3	75	66	4.7
800	29	2,060	11.1	59	67	3.3
750	29	2,603	9.9	36	38	4.5
700	29	3,169	7.8	33	13	4.5
650	29	3,780	5.0		345	3.5
600	29	4,426	1.6		312	3.1
550	29	5,120	- 2.5		275	4.9
500	29	5,871	- 7.4		259	7.6
450	29	6,687	-13.1		270	11.5
400	29	7,571	-19.4		263	14.8
350	28	8,550	-26.7		253	14.0
300	28	9,643	-35.2		260	19.4
250	27	10,885	-45.3		252	21.8
200	27	12,335	-57.0		252	24.1
175	26	13,167	-63.3		248	26.2
150	24	14,098	-69.0		239	23.1
125	18	15,175	-72.7		247	17.3
100	13	16,463	-74.6			
80	11	17,760	-73.6			
60	[illegible]	19,480	-65.2			
50	7	20,603	-61.7			
40	7	21,994	-58.6			
30	7	23,819	-55.3			
20						
15						

3/ SABANA D.L.M., DOM. REP. (1013 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	11	23.0	92	174	2.1
1,000	30	121	24.2	81	112	3.5
950	30	573	21.6	80	85	7.6
900	30	1,038	18.6	78	80	6.4
850	30	1,527	15.6	75	82	4.9
800	30	2,040	12.7	73	54	2.5
750	30	2,587	10.4	63	191	1.0
700	30	3,153	8.2	48	351	.8
650	30	3,768	5.2	42	241	2.1
600	29	4,412	1.7	38	223	4.1
550	29	5,109	- 2.2		236	5.8
500	28	5,857	- 7.0		243	6.2
450	28	6,677	-12.0		263	8.9
400	28	7,562	-18.3		270	11.3
350	28	8,545	-25.3		274	15.0
300	28	9,645	-33.8		269	18.1
250	28	10,895	-44.0		274	21.2
200	27	12,353	-56.1		269	25.1
175	26	13,191	-62.7		267	29.9
150	24	14,126	-69.6		266	25.8
125	19	15,200	-74.5		267	21.6
100	18	16,485	-77.1		286	9.1
80	14	17,772	-75.1		108	6.8
60	13	19,486	-65.6		78	14.2
50	13	20,603	-61.4		91	18.5
40	11	21,995	-58.5		102	18.6
30	8	23,819	-54.2			
20						
15						

3/ ST. MARTINS, NETH. ANT. (1011 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	26	3	26.3	77	72	5.8
1,000	26	103	25.5	78	82	6.2
950	26	559	22.0	82	91	8.7
900	26	1,022	18.9	80	92	10.3
850	26	1,512	16.1	73	95	7.0
800	26	2,026	13.7	63	92	7.8
750	26	2,574	11.3	54	71	1.7
700	26	3,142	8.4	44	288	.6
650	25	3,757	5.5		146	1.4
600	24	4,403	2.5		149	1.9
550	24	5,096	- 1.6		108	.6
500	23	5,853	- 6.2		264	5.1
450	23	6,675	-11.3		270	4.7
400	22	7,565	-17.9		273	6.4
350	22	8,548	-25.3		314	6.8
300	22	9,648	-33.7		283	10.7
250	21	10,901	-43.7		282	16.5
200	19	12,364	-55.5		275	20.6
175	16	13,205	-62.1		281	17.5
150	12	14,136	-69.4		284	21.6
125	10	15,199	-75.5		292	14.8
100	9	16,480	-79.9		284	9.1
80	7	17,744	-75.7		60	7.6
60	6	19,452	-66.0		86	14.6
50	5	20,577	-61.2		87	25.1
40	5	21,968	-59.2		100	21.6
30						
20						
15						

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

RAWINSONDE DATA

Average monthly values

DELAYED DATA

4/ BARTER ISLAND, ALASKA *
(1015 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	23	15	-25.2	60	269	16.3
1,000	23	124	-24.1	63	272	19.8
950	23	502	-22.6	67	280	21.2
900	23	897	-21.7	69	280	20.8
850	23	1,318	-21.6	69	287	17.3
800	23	1,764	-22.7	65	288	13.4
750	23	2,243	-23.8	60	283	10.7
700	23	2,738	-25.6	55	279	11.5
650	23	3,281	-27.5	55	287	11.7
600	23	3,845	-30.4	54	291	11.7
550	22	4,460	-34.5	50	289	11.1
500	22	5,118	-38.8		277	10.7
450	21	5,849	-43.6		275	13.0
400	21	6,623	-48.6		283	12.2
350	21	7,490	-53.8		285	14.4
300	21	8,468	-57.9		280	15.0
250	21	9,614	-58.0		281	19.2
200	19	11,024	-56.4		287	22.7
175	19	11,870	-56.5		290	26.8
150	19	12,845	-57.2		282	24.3
125	17	13,996	-58.5		293	30.5
100	17	15,390	-60.3		291	31.5
80	12	16,756	-63.2		299	41.0
60	11	18,533	-64.7		299	44.1
50	10	19,584	-66.1			
40	7	21,029	-64.9			
30	5	22,837	-64.9			
20						

4/ CAMAGUEY, CUBA
(1003 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	13	122	19.7		42	5.4
1,000	13	119	19.9		42	8.0
950	13	601	19.4		63	23.1
900	13	1,057	17.0		80	21.8
850	13	1,543	14.6		91	14.2
800	13	2,054	12.4		93	12.0
750	13	2,598	10.0		84	9.7
700	13	3,163	7.4		82	7.8
650	13	3,781	4.1		92	8.2
600	13	4,416	.4		85	7.0
550	13	5,112	- 3.9		82	5.6
500	13	5,853	- 8.4		152	2.3
450	13	6,671	-14.0		247	3.3
400	13	7,546	-21.0		284	7.4
350	13	8,519	-28.0		273	10.9
300	13	9,608	-36.5		266	18.1
250	13	10,844	-46.7		263	27.0
200	13	12,290	-57.0		245	37.7
175	12	13,128	-61.7			
150	9	14,069	-66.4			
125	6	15,158	-71.3			
100	5	16,464	-75.0			

4/ FT. HUACHUCA, ARIZ.
(861 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	1,428	8.3	46	229	4.5
1,000	30	164				
950	30	605				
900	30	1,060				
850	30	1,530	9.6	38	214	2.7
800	30	2,031	6.6	39	135	2.9
750	30	2,562	3.5	40	161	1.4
700	30	3,113	.4	37	90	1.7
650	30	3,708	- 2.7		22	1.6
600	30	4,334	- 6.8		309	4.1
550	30	5,010	-11.0		297	5.6
500	29	5,733	-16.3		282	8.4
450	27	6,521	-22.1		272	16.1
400	25	7,375	-28.3		265	17.3
350	23	8,308	-35.8		262	23.9
300	21	9,349	-43.5		260	28.9
250	18	10.562	-50.7		265	43.7
200	11	12,001	-56.9		266	55.6
175	10	12,841	-57.7			
150	6	13,784	-59.4			

4/ GRAND CAYMAN, B. W. I.
(1017 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	3	24.6	81	49	9.1
1,000	31	149	24.3	78	54	12.0
950	31	598	20.8	82	61	17.5
900	31	1,064	17.9	77	73	17.5
850	31	1,551	15.2	69	82	15.2
800	30	2,062	12.5	63	84	13.4
750	30	2,605	10.0	48	89	11.8
700	30	3,173	7.7	35	91	12.2
650	30	3,786	4.4	29	89	11.5
600	30	4,428	1.2		94	8.9
550	30	5,122	- 3.0		88	7.6
500	29	5,869	- 7.6		79	5.2
450	29	6,685	-13.5		80	2.1
400	29	7,565	-20.0		265	1.7
350	29	8,538	-28.0		275	7.0
300	29	9,624	-36.7		252	11.8
250	28	10,859	-46.2		245	22.5
200	24	12,308	-55.9		243	22.7
175	22	13,149	-60.4		241	31.7
150	19	14,101	-64.8		244	30.5
125	16	15,197	-70.5		245	29.5
100	10	16,512	-77.1		241	11.3
80	9	17,797	-75.6			
60	8	19,487	-68.2			
50	6	20,593	-62.0			

4/ RAIZET, GUADALOUPE, F. W. I.
(1015 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	28	8	21.9	91	79	3.1
1,000	28	135	23.5	82	76	6.4
950	28	588	21.4	82	85	18.5
900	28	1,051	18.0	80	89	20.2
850	28	1,539	14.9	81	90	18.5
800	28	2,051	12.1	74	88	16.3
750	28	2,593	10.1	58	85	15.5
700	28	3,163	8.2	38	82	12.0
650	28	3,778	5.3		83	9.1
600	28	4,422	2.1		82	6.8
550	28	5,118	- 2.4		90	4.1
500	28	5,868	- 7.7		83	2.9
450	28	6,685	-13.2		349	1.4
400	28	7,567	-19.1		276	12.0
350	28	8,547	-25.8		274	22.5
300	28	9,647	-33.3		276	36.7
250	28	10,900	-43.1		272	46.2
200	28	12,365	-54.4		270	48.8
175	28	13,208	-60.6		272	43.9
150	28	14,152	-66.6		283	37.7
125	27	15,236	-72.0		290	25.1
100	23	16,531	-77.1		333	8.5
80	19	17,812	-76.7		73	9.7
60	16	19,499	-65.9		89	12.6
50	16	20,618	-61.4		94	12.4
40	16	22,013	-57.6		105	16.3
30	13	23,851	-52.7		88	16.3
20	5	26,498	-45.9			

4/ HAVANA, CUBA
(1014 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	49	21.8	80	48	4.7
1,000	31	167	21.8	75	57	7.8
950	31	609	18.9	76	70	11.8
900	31	1,075	15.8	76	82	12.0
850	31	1,559	13.7	67	93	7.0
800	31	2,068	11.3	54	107	4.5
750	31	2,606	9.5	36	117	3.7
700	31	3,176	7.0		160	2.1
650	31	3,782	3.5	32	225	2.1
600	31	4,427	.0		241	3.5
550	31	5,117	- 4.0		247	6.0
500	31	5,865	- 9.1		244	8.7
450	31	6,678	-15.0		256	9.3
400	30	7,553	-21.4		254	16.5
350	30	8,523	-29.1		254	17.5
300	30	9,605	-38.0		258	20.4
250	30	10,833	-48.1		257	28.6
200	28	12,270	-57.6		250	35.2
175	25	13,110	-61.0		254	32.2
150	23	14,059	-64.9		249	35.9
125	17	15,147	-70.1		246	29.1
100	8	16,461	-73.8			
80	5	17,735	-74.6			
60						
50						
40						
30						
20						
15						

4/ MERIDA, MEXICO
(1017 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	11	21.8	85	52	4.9
1,000	30	160	21.9	76	62	11.1
950	30	605	19.8	72	80	14.8
900	30	1,070	17.0	73	93	10.9
850	30	1,556	13.9	74	106	7.2
800	30	2,065	11.2	69	118	3.9
750	30	2,610	8.9	57	115	3.7
700	30	3,172	6.5	48	152	3.5
650	30	3,784	3.7	32	159	2.1
600	30	4,423	- .1		196	4.1
550	30	5,114	- 4.5		215	6.4
500	30	5,858	- 9.1		225	7.8
450	30	6,673	-14.6		234	10.3
400	30	7,548	-21.1		238	16.9
350	30	8,518	-29.0		234	16.9
300	30	9,599	-37.8		250	18.8
250	30	10,827	-47.8		249	21.8
200	30	12,265	-57.6		235	25.6
175	30	13,098	-61.5		235	28.2
150	30	14,045	-64.9		233	32.8
125	30	15,144	-69.2		239	31.5
100	30	16,460	-73.5		236	14.2
80	29	17,756	-74.5		198	4.7
60	27	19,455	-66.7		78	8.9
50	27	20,570	-61.7		81	12.2
40	26	21,967	-57.1		103	13.2
30	23	23,800	-54.4		114	9.9
20	14	26,440	-49.8		257	8.9
15	6	28,294	-46.4			

4/ SABANA D.L.M., DOM. REP.
(1017 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	11	22.9	90	62	3.5
1,000	31	158	23.2	82	74	7.8
950	31	604	20.6	82	66	17.5
900	31	1,071	17.7	81	69	16.1
850	31	1,559	14.7	80	69	14.8
800	31	2,070	11.9	78	75	14.4
750	31	2,609	9.5	63	78	14.4
700	31	3,179	6.6	48	82	13.0
650	30	3,786	3.7	35	83	12.0
600	30	4,430	.4	30	75	10.7
550	30	5,122	- 3.8		69	8.7
500	30	5,868	- 8.5		62	8.0
450	30	6,682	-14.2		60	7.0
400	30	7,559	-20.5		352	4.5
350	30	8,533	-27.8		303	9.9
300	30	9,622	-36.1		278	23.5
250	29	10,865	-44.6		268	36.7
200	28	12,325	-55.0		266	41.8
175	26	13,168	-60.8		267	39.0
150	26	14,114	-65.9		277	31.1
125	25	15,205	-71.6		290	21.2
100	21	16,502	-76.9		326	3.5
80	17	17,774	-76.8		99	7.2
60	[illegible]	19,481	-66.4			
50	[illegible]	20,598	-62.1			
40	5	21,990	-57.5			

4/ ST. MARTINS, NETH. ANT.
(1015 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	3	24.9	79	73	10.1
1,000	30	130	24.1	78	80	11.1
950	30	585	20.9	80	94	15.3
900	30	1,046	17.8	81	96	15.2
850	30	1,533	14.6	76	95	13.6
800	30	2,044	11.8	71	91	10.9
750	30	2,593	9.4	55	96	10.7
700	30	3,153	7.2	35	97	9.3
650	30	3,764	4.4		93	7.4
600	30	4,406	1.0		107	6.6
550	30	5,096	- 3.5		117	4.3
500	29	5,846	- 8.6		89	2.7
450	29	6,658	-14.5		72	4.5
400	29	7,537	-20.7		299	5.2
350	28	8,510	-27.6		301	14.2
300	28	9,601	-35.2		298	27.4
250	27	10,847	-44.2		296	42.9
200	23	12,302	-54.8		292	49.0
175	20	13,141	-60.9		291	48.6
150	18	14,085	-67.3		297	33.6
125	16	15,171	-72.9		304	16.1
100	10	16,456	-78.4		298	7.0
80	8	17,739	-77.7		31	2.9
60	7	19,430	-67.2		114	19.0
50	7	20,544	-61.5		[illegible]	13.4
40	6	21,945	-58.2		80	20.4
30	6	23,771	-54.1		108	22.9

4/ TACUBAYA, MEXICO
(775 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	2,306	14.7	53		
1,000	30	87				
950	30	547				
900	30	1,023				
850	30	1,512				
800	30	2,039				
750	30	2,586	13.4	51		
700	30	3,160	8.9	58		
650	30	3,776	3.9	67		
600	30	4,415	- .9	71		
550	30	5,110	- 5.0	55		
500	30	5,848	- 9.0	34		
450	28	6,669	-14.5			
400	28	7,540	-21.0			
350	28	8,512	-28.3			
300	26	9,595	-37.1			
250	19	10,840	-47.1			
200	16	12,293	-58.2			
175	13	13,121	-63.0			
150	6	14,084	-66.6			

4/ VERA CRUZ, MEXICO
(1016 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	29	13	23.0	79		
1,000	29	151	22.2	77		
950	29	596	19.6	75		
900	29	1,061	17.0	72		
850	29	1,547	14.3	70		
800	29	2,056	11.5	72		
750	29	2,603	8.8	69		
700	29	3,162	6.4	60		
650	29	3,777	3.1	54		
600	29	4,412	- .3	46		
550	29	5,107	- 4.2	35		
500	29	5,849	- 8.9			
450	29	6,675	-14.3			
400	29	7,541	-20.6			
350	29	8,514	-28.2			
300	29	9,600	-36.7			
250	29	10,834	-46.9			
200	28	12,275	-57.5			
175	27	13,108	-61.9			
150	22	14,052	-64.9			
125	19	15,154	-68.6			
100	13	16,469	-73.5			
80	9	17,761	-77.0			
60						

5/ CURACAO, N. W. I.
(1014 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	5	8	25.3			
1,000	5	129	24.9			
950	5	578	21.3			
900	5	1,046	18.4			
850	5	1,535	15.7			
800	5	2,048	12.9			
750	5	2,594	11.8			
700	5	3,165	9.8			
650	5	3,782	7.6			
600	5	4,432	3.7			
550	5	5,132	- 1.2			
500	5	5,885	- 6.3			
450	5	6,708	-11.3			
400	5	7,595	-16.8			
350	5	8,582	-24.5			
300	5	9,682	-34.2			
250	5	10,930	-44.0			
200	5	12,392	-54.7			
175	5	13,233	-61.4			
150	5	14,172	-68.5			
125	5	15,250	-73.8			
100	5	16,534	-79.3			
80	5	17,794	-79.3			

5/ CAMAGUEY, CUBA
(1005 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	15	122	20.3		48	7.4
1,000	15	167	20.2		54	10.3
950	15	613	18.1		70	24.7
900	15	1,072	16.3		84	21.6
850	15	1,557	14.1		[illegible]	15.7
800	15	2,066	11.1		121	8.5
750	15	2,613	9.2		108	10.3
700	15	3,172	6.5		110	10.3
650	15	3,787	2.8		120	9.9
600	15	4,420	- .1		114	6.8
550	14	5,116	- 4.1		145	3.1
500	14	5,854	- 8.8		172	1.6
450	14	6,673	-14.6		258	4.9
400	14	7,545	-21.8		260	8.2
350	14	8,514	-29.0		235	9.3
300	14	9,597	-37.7		265	17.7
250	14	10,827	-47.5		270	23.9
200	11	12,262	-57.4			
175	10	13,092	-61.5			
150	9	14,037	-65.4			
125	[illegible]	15,138	-70.2			
100	6	16,453	-74.6			

5/ EUREKA, N. W. T.
(1005 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	4	-40.5		102	3.9
1,000	31	41	-38.2		108	4.1
950	31	404	-33.9	59	99	2.1
900	31	781	-29.0	56	44	1.6
850	31	1,191	-27.0	55	40	3.3
800	31	1,628	-26.3	53	35	5.2
750	31	2,099	-27.1	51	28	6.6
700	31	2,589	-29.2	47	37	7.0
650	31	3,122	-31.8		52	5.8
600	31	3,677	-34.8		52	5.8
550	31	4,286	-38.6		73	4.9
500	31	4,928	-42.7		73	6.8
450	31	5,643	-47.1		70	6.2
400	31	6,404	-51.4		77	6.6
350	30	7,270	-55.9		74	3.9
300	30	8,240	-60.2		47	7.4
250	29	9,372	-63.3		41	9.1
200	29	10,738	-64.1		52	8.9
175	28	11,557	-65.1		51	12.4
150	27	12,502	-66.5		44	12.6
125	27	13,597	-68.6		33	12.0
100	22	14,947	-71.3		31	14.6
80	16	16,284	-72.9			
60	[illegible]	18,077	-74.4			

5/ FT. HUACHUCA, ARIZ.
(858 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	27	1,428	9.9	52	251	4.7
1,000	27	140				
950	27	575				
900	27	1,032				
850	27	1,510	10.1	47	252	4.7
800	27	2,011	6.7	46	251	6.8
750	27	2,542	3.2	44	256	11.7
700	27	3,094	.2	40	258	15.5
650	27	3,687	- 3.0	37	263	21.4
600	27	4,314	- 6.9		268	25.6
550	27	4,987	-11.0		265	29.1
500	26	5,711	-16.0	40	266	34.4
450	25	6,503	-21.7	47	268	37.5
400	24	7,358	-27.0	46	264	43.3
350	23	8,310	-33.9		267	49.5
300	21	9,367	-42.1		265	51.1
250	17	10,566	-51.7		267	64.3
200	12	11,973	-59.2		266	70.7

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

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* Obs. began Dec. 4, 1956

RAWINSONDE DATA

Average monthly values

DELAYED DATA

Standard pressure surface (mb)	5/ GRAND CAYMAN, B. W. I. (1019 MB.)						5/ RAIZET, GUADALOUPE, F. W. I. (1018 MB.)						5/ HAVANA, CUBA (1016 MB.)						5/ MERIDA, MEXICO (1018 MB.)						5/ RESOLUTE BAY, N. W. T. (997 MB.)					
					Wind						Wind						Wind						Wind						Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	3	23.8	82	54	13.4	31	6	21.4	87	75	2.9	25	49	21.8	82	57	5.4	31	11	23.1	79	59	5.6	31	62	-35.8	58	10	4.9
1,000--	31	165	23.6	79	64	13.8	31	160	22.8	80	74	6.6	25	185	21.4	79	70	9.5	31	167	22.2	77	71	11.7	31	39	-34.8		350	2.3
950----	31	610	20.5	80	72	19.4	31	607	20.3	81	79	19.6	25	627	18.7	80	79	13.2	31	613	20.2	69	92	18.3	31	406	-32.4	58	352	8.0
900----	31	1,078	17.9	73	82	19.2	31	1,072	16.8	82	84	20.0	25	1,092	16.0	75	85	11.7	31	1,077	17.2	71	109	14.8	31	785	-27.7	58	348	8.0
850----	31	1,565	15.1	64	88	16.9	31	1,558	13.7	78	87	19.2	25	1,576	14.0	61	92	8.7	31	1,563	13.8	74	122	12.6	31	1,196	-26.3	57	350	8.0
800----	31	2,077	12.7	52	94	14.6	31	2,067	11.1	71	85	18.5	25	2,087	12.0	44	99	6.2	31	2,072	11.3	60	118	11.5	31	1,634	-26.6	55	354	7.6
750----	31	2,618	10.4	39	94	16.7	31	2,607	9.8	47	83	17.9	25	2,627	10.6	27	116	6.8	31	2,615	9.7	39	115	11.1	31	2,101	-27.7	53	355	7.8
700----	31	3,188	7.8	31	96	15.9	31	3,177	8.2		80	17.1	25	3,197	7.4		111	6.6	31	3,180	7.4		115	10.5	31	2,593	-29.5	51	360	8.9
650----	31	3,801	4.7		95	15.0	31	3,790	5.3		82	14.6	25	3,805	4.0		114	4.7	31	3,791	4.2		121	10.3	31	3,125	-32.4	47	359	9.9
600----	31	4,443	1.2		93	12.8	31	4,434	1.9		78	13.2	24	4,449	- .1		112	1.7	31	4,433	.3		122	9.5	31	3,679	-33.7		360	12.4
550----	31	5,138	- 2.8		88	12.4	31	5,129	- 2.4		73	11.8	24	5,138	- 4.4		239	1.6	31	5,125	- 3.9		131	7.4	31	4,285	-38.8		8	13.0
500----	31	5,886	- 7.7		89	8.4	31	5,880	- 7.3		56	9.3	24	5,884	- 9.4		283	6.2	31	5,869	- 9.1		161	4.9	31	4,928	-42.8		4	12.0
450----	29	6,699	-13.7		102	4.9	31	6,695	-13.0		43	8.5	24	6,693	-15.4		273	9.5	31	6,683	-14.9		206	4.9	31	5,637	-47.2		4	11.7
400----	28	7,578	-20.4		5	.2	31	7,578	-19.7		26	7.4	24	7,570	-22.3		263	12.4	31	7,556	-21.8		236	8.2	31	6,403	-51.5		3	12.2
350----	28	8,551	-28.1		239	5.2	31	8,555	-27.0		337	11.3	24	8,535	-30.1		272	17.3	31	8,523	-29.7		245	10.5	29	7,275	-55.7		9	12.4
300----	28	9,637	-36.7		272	12.2	31	9,647	-34.8		294	19.0	24	9,614	-38.7		265	21.2	31	9,601	-38.4		238	13.8	27	8,256	-60.2		1	14.0
250----	27	10,871	-46.4		265	20.0	31	10,893	-44.2		275	36.5	24	10,841	-48.1		263	27.2	31	10,827	-47.4		246	20.2	25	9,388	-62.1		357	15.7
200----	17	12,322	-55.9		244	28.0	31	12,352	-55.0		275	36.5	24	12,280	-57.2		265	35.9	31	12,268	-57.0		242	24.3	24	10,762	-62.1		10	16.3
175----	14	13,161	-60.7		241	33.0	30	13,191	-60.4		278	33.2	20	13,116	-61.3		264	35.9	31	13,104	-61.2		239	25.8	22	11,594	-62.0		7	18.1
150----	7	14,114	-65.1				30	14,136	-66.2		284	27.0	17	14,057	-65.2		265	38.7	30	14,049	-65.1		246	26.0	21	12,532	-63.4		4	22.5
125----	[illegible]	15.210	-71.0				30	15,224	-71.8		296	18.1	8	15,167	-70.6				30	15,148	-69.5		245	26.2	20	13,635	-65.6		345	23.7
100----							29	16,520	-75.7		334	9.5							29	16,457	-74.5		246	14.0	17	14,985	-67.8			
80-----							28	17,803	-75.4		52	9.5							27	17,745	-75.6		259	3.7	13	16,339	-69.0			
60-----							28	19,497	-66.5		95	10.1							25	19,435	-67.6		73	5.8	7	18,207	-67.2			
50-----							27	20,609	-62.7		96	8.2							24	20,544	-63.0		78	8.2						
40-----							26	21,994	-59.0		100	8.5							23	21,924	-60.3		118	5.8						
30-----							21	23,807	-54.8		81	8.5							22	23,727	-56.6		171	5.4						
20-----							[illegible]	26,456	-46.8										16	26,337	-51.3		245	12.6						
15-----																			7	28,220	-45.6									

Standard pressure surface (mb)	5/ SABANA D.L.M., DOM. REP. (1019 MB.)						5/ ST. MARTINS, NETH. ANT. (1017 MB.)						5/ SAN ANDRES, COLUMBIA (1016 MB.)						5/ TACUBAYA, MEXICO (776 MB.)						5/ VERA CRUZ, MEXICO (1016 MB.)					
SURFACE	31	11	22.9	87	89	3.9	31	3	24.7	76	75	8.7	30	2	25.9	85	66	22.0	18	2,306	16.1	39			30	13	23.1	84		
1,000--	31	176	23.5	75	83	9.9	31	152	23.6	76	79	12.0	30	142	24.9	84	64	23.5	18	81					30	149	22.2	82		
950----	31	621	20.0	80	74	17.1	31	595	20.1	78	92	18.1	30	596	21.4	84	66	26.6	18	542					30	596	20.1	71		
900----	31	1,088	16.6	82	76	17.3	31	1,064	16.9	76	92	19.8	30	1,058	18.2	83	71	28.6	18	1,018					30	1,059	17.8	67		
850----	31	1,573	13.5	78	75	14.6	31	1,549	13.8	73	93	19.0	30	1,547	15.5	78	77	28.4	18	1,514					30	1,546	15.1	65		
800----	31	2,082	10.7	69	78	14.8	31	2,059	11.4	63	94	17.7	30	2,060	12.6	69	75	28.2	18	2,039					30	2,058	12.7	58		
750----	31	2,619	8.8	40	81	14.8	31	2,600	9.4	40	92	17.1	30	2,603	10.3	48	77	29.7	18	2,592	15.6	34			30	2,605	9.7	49		
700----	31	3,188	7.2		83	15.9	31	3,167	7.5		87	14.2	30	3,172	8.0	35	77	21.8	18	3,171	11.2	38			30	3,168	7.2	37		
650----	31	3,796	4.0		85	15.5	30	3,780	4.5		[illegible]	14.0	30	3,787	5.2		82	21.0	18	3,791	6.1	45			30	3,782	4.3			
600----	31	4,441	1.0		78	14.6	30	4,421	1.0		77	11.5	30	4,429	2.0		92	20.8	18	4,435	.6	53			30	4,422	.6			
550----	31	5,135	- 2.9		69	12.4	30	5,112	- 3.0		77	9.3	30	5,127	- 1.7		96	21.6	18	5,133	- 3.4				30	5,118	- 3.2			
500----	31	5,883	- 7.7		61	11.1	30	5,861	- 8.1		73	9.9	29	5,877	- 6.0		92	20.0	18	5,875	- 7.9				29	5,863	- 8.0			
450----	31	6,695	-13.8		44	8.2	30	6,676	-13.8		56	9.7	29	6,700	-11.4		86	12.8	17	6,693	-13.9				29	6,686	-14.0			
400----	31	7,577	-21.1		32	7.8	30	7,554	-20.5		37	9.7	29	7,585	-18.5		101	10.9	17	7,568	-20.9				29	7,558	-20.7			
350----	31	8,547	-28.7		336	7.2	30	8,526	-28.2		1	11.1	29	8,564	-26.7		110	4.9	16	8,539	-28.4				29	8,530	-28.4			
300----	31	9,631	-37.3		297	15.0	30	9,612	-36.8		318	15.2	29	9,656	-35.8		213	9.5	13	9,622	-37.0				27	9,616	-37.0			
250----	31	10,865	-46.1		285	25.6	30	10,849	-45.7		294	26.0	29	10,897	-45.2		209	22.0	11	10,857	-46.8				26	10,851	-46.8			
200----	31	12,317	-55.5		271	28.2	29	12,302	-55.8		281	29.9	27	12,346	-55.9		228	25.6	9	12,307	-56.8				24	12,296	-56.3			
175----	31	13,159	-60.3		275	31.9	29	13,142	-61.0		290	33.0	27	13,185	-61.3		233	21.0	6	13,145	-60.0				23	13,142	-60.8			
150----	29	14,109	-65.9		275	25.3	28	14,083	-66.6		294	24.1	26	14,128	-67.2		239	19.2	6	14,096	-65.3				21	14,088	-65.9			
125----	26	15,206	-71.1		293	20.4	25	15,174	-71.5		303	21.4	24	15,208	-73.4		213	9.9							16	15,187	-70.2			
100----	24	16,510	-75.9		328	10.3	25	16,474	-76.5		324	11.7	21	16,494	-79.6		85	7.6							11	16,495	-76.6			
80-----	23	17,793	-76.6		43	5.2	25	17,752	-77.4		34	9.5	16	17,755	-78.9		114	22.5							9	17,782	-78.7			
60-----	19	19,482	-67.2		80	10.7	23	19,433	-67.9		100	10.5	13	19,436	-68.4		95	17.7							6	19,426	-71.9			
50-----	18	20,598	-62.3		84	8.7	20	20,541	-63.4		102	9.1	13	20,542	-63.9		93	21.2							6	20,519	-64.7			
40-----	16	21,988	-59.3		114	7.6	20	21,925	-59.6		100	3.9	13	21,921	-60.0		[illegible]	27.4							6	21,892	-61.0			
30-----	15	23,811	-55.7		164	1.7	16	23,732	-55.8		116	2.1	12	23,725	-54.7		83	1.2							6	23,694	-57.1			
20-----	7	26,433	-47.9				[illegible]	26,377	-47.8																					

Standard pressure surface (mb)	5/ YUMA, ARIZ. (1004 MB.)						6/ FT. HUACHUCA, ARIZ. (857 MB.)						6/ GRAND CAYMAN, B. W. I. (1016 MB.)						6/ RAIZET, GUADALOUPE, F. W. I. (1016 MB.)						6/ HAVANA, CUBA (1011 MB.)					
SURFACE	27	105	15.1	46	342	1.4	[illegible]	1,428	14.5	42	272	3.5	27	3	23.9	83	95	5.6	25	6	21.5	88	86	4.9	28	49	22.0	79	87	3.9
1,000--	27	141	15.2	44	350	2.1	26	98					27	140	24.0	79	92	8.0	25	147	22.6	80	85	9.5	28	146	22.1	78	96	7.0
950----	27	575	12.7	48	337	1.4	26	547					27	590	20.9	81	97	10.5	25	597	19.8	84	91	18.8	28	592	19.3	78	101	12.4
900----	27	1,026	9.5	52	250	.8	26	1,010					27	1,054	18.2	71	104	10.7	25	1,058	16.5	82	94	19.8	28	1,055	16.8	70	109	8.5
850----	27	1,497	6.6	51	234	3.9	26	1,497	14.7	40	274	3.5	27	1,542	15.1	64	95	9.9	25	1,543	13.4	82	96	18.5	28	1,540	13.7	67	138	4.9
800----	27	1,992	3.9	[illegible]	245	6.2	26	2,007	11.3	42	267	3.5	27	2,053	12.2	58	92	9.5	25	2,052	11.4	67	95	16.7	28	2,049	10.7	65	164	3.5
750----	27	2,517	1.4	43	249	10.9	25	2,548	7.2	44	270	6.4	27	2,598	9.5	50	91	8.2	25	2,594	9.4	50	88	15.5	28	2,591	8.0	56	188	4.5
700----	27	3,067	- 1.6	40	257	16.1	25	3,106	3.5	40	268	9.9	27	3,161	6.9	41	79	4.7	25	3,159	6.7		84	13.8	28	3,152	5.3	50	208	3.5
650----	27	3,654	- 4.9	36	255	20.2	24	3,706	.1	36	281	14.0	27	3,772	3.9	36	101	4.1	25	3,770	3.9		77	11.3	28	3,759	2.0	41	240	5.1
600----	27	4,278	- 8.6	38	259	28.7	24	4,341	- 3.9		286	16.7	27	4,412	.2		191	1.2	25	4,411	.9		79	8.9	28	4,397	- 1.1		247	8.2
550----	27	4,949	-12.9	38	258	34.2	24	5,024	- 8.6		296	22.7	27	5,104	- 3.9		222	3.3	25	5,106	- 2.8		70	5.4	28	5,086	- 5.2		254	10.3
500----	27	5,668	-17.9	40	255	38.7	23	5,757	-13.6		293	26.2	27	5,849	- 9.0		253	5.8	25	5,853	- 7.5		315	2.9	28	5,828	-10.3		249	11.7
450----	26	6,455	-23.2	46	253	48.8	23	6,552	-19.4		295	30.1	26	6,663	-14.6		258	9.9	24	6,669	-13.3		274	10.5	28	6,641	-16.1	31	254	16.1
400----	26	7,305	-28.9	48	252	52.8	21	7,417	-25.5		293	36.7	26	7,536	-21.2		267	15.5	24	7,548	-19.6		278	19.4	28	7,509	-22.8		263	19.4
350----	24	8,234	-36.0		252	62.4	16	8,387	-32.7		294	39.8	26	8,506	-28.6		271	25.1	24	8,526	-26.1		278	36.3	28	8,473	-30.0		263	20.4
300----	21	9,264	-44.6		256	61.6	15	9,465	-40.8		296	43.7	25	9,593	-36.0		259	32.4	24	9,622	-34.0		277	52.1	28	9,552	-38.3		272	26.6
250----	20	10,463	-53.2		252	69.7	13	10,676	-49.9		290	40.6	22	10,833	-44.7		259	39.0	24	10,873	-43.3		270	58.5	28	10,782	-47.1		269	30.5
200----	19	11,886	-56.3		254	67.6	10	12,108	-57.4				20	12,292	-54.6		257	39.2	22	12,337	-54.4		269	61.8	26	12,231	-55.7		267	40.6
175----	16	12,735	-56.5		254	60.4	10	12,945	-60.8				18	13,133	-59.3		254	40.8	22	13,179	-60.4		271	55.9	23	13,071	-59.9		264	44.3
150----	14	13,698	-58.4		262	51.1	8	13,897	-64.2				17	14,086	-64.4		252	32.1	22	14,126	-65.9		277	36.7	14	14,012	-64.1		268	45.5
125----	13	14,827	-60.4		278	41.0							7	15,179	-68.6				21	15,217	-71.3		283	28.6	11	15,102	-69.0			
100----	10	16,187	-62.2										6	16,488	-73.7				19	16,520	-75.8		360	5.1						
80-----	9	17,559	-64.1										[illegible]	17,785	-75.9				18	17,798	-77.9		360	5.4						
60-----																			11	19,447	-70.9		77	20.4						
50-----																			11	20,537	-65.9		178	6.4						
40-----																			[illegible]	21,901	-64.2									
30-----																			7	23,684	-60.3									

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

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RAWINSONDE DATA

Average monthly values

DELAYED DATA

6/ KINGSTON, JAMAICA
(1012 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	24	7	25.2	82	81	4.9
1,000	24	116	24.6	70	82	5.1
950	24	569	21.5	71	101	7.6
900	24	1,032	18.5	70	92	11.3
850	24	1,520	15.3	69	91	14.6
800	24	2,031	12.0	70	96	14.8
750	24	2,578	9.7	54	97	11.5
700	24	3,141	7.5	38	101	3.4
650	24	3,756	4.5		102	7.2
600	24	4,395	1.0		104	5.2
550	24	5,090	- 3.4		53	3.3
500	24	5,834	- 8.5		344	2.1
450	24	6,651	-14.1		269	8.0
400	24	7,526	-20.6		272	15.3
350	23	8,501	-27.3		270	23.5
300	23	9,593	-35.5		259	32.8
250	23	10,836	-44.5		258	39.0
200	22	12,297	-55.0		257	39.4
175	22	13,138	-60.6		255	38.9
150	22	14,084	-66.0		255	34.8
125	20	15,171	-71.3		265	21.0
100	20	16,472	-76.1		259	9.9
80	18	17,757	-77.5		106	6.2
60	15	19,429	-70.8		88	16.7
50	12	20,517	-67.3		98	17.7
40	11	21,873	-64.7		109	16.7
30	8	23,635	-62.0			
20						

6/ MAZATLAN, MEXICO
(1009 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	27	14	21.7	76		
1,000	27	96	21.8	71		
950	27	550	23.7	42		
900	27	1,014	22.0	38		
850	27	1,508	19.0	35		
800	27	2,025	15.6	29		
750	27	2,577	11.9	30		
700	27	3,143	7.6	38		
650	27	3,755	3.4	39		
600	27	4,394	- .5			
550	27	5,089	- 4.8			
500	27	5,826	-10.0			
450	27	6,641	-16.2			
400	27	7,505	-23.0			
350	26	8,468	-30.3			
300	25	9,549	-38.1			
250	25	10,781	-46.6			
200	21	12,235	-55.1			
175	16	13,094	-57.6			
150	12	14,052	-62.7			
125	7	15,138	-68.5			
100	6	16,462	-73.0			
80						
60						
50						
40						
30						
20						

6/ MERIDA, MEXICO
(1014 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	28	11	23.2	82	54	6.0
1,000	28	136	22.5	77	63	10.5
950	28	581	20.9	69	82	14.0
900	28	1,049	18.0	70	97	10.1
850	28	1,536	14.5	72	126	7.6
800	28	2,046	11.2	67	136	4.1
750	28	2,585	8.8	52	179	1.4
700	28	3,151	5.9	43	166	1.2
650	28	3,756	2.5	42	220	2.3
600	28	4,397	- .8	32	239	3.5
550	28	5,086	- 4.4		253	6.8
500	28	5,831	- 9.3		270	10.5
450	28	6,643	-15.1		271	13.4
400	28	7,516	-22.4		284	17.9
350	28	8,480	-30.1		275	21.4
300	28	9,557	-38.2		260	22.9
250	28	10,787	-46.4		260	26.8
200	28	12,240	-54.7		267	28.6
175	28	13,085	-59.1		262	28.2
150	27	14,039	-64.1		264	26.2
125	27	15,140	-69.2		263	22.3
100	26	16,458	-72.8		251	14.0
80	26	17,758	-74.5		217	2.7
60	24	19,445	-68.9		114	8.0
50	24	20,542	-65.9		109	15.9
40	22	21,899	-64.8		108	12.4
30	18	23,652	-61.4		114	11.1
20	14	26,213	-54.3		83	4.1

6/ SABANA D.L.M., DOM. REP.
(1017 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	28	11	21.9	92	117	2.3
1,000	28	155	22.9	75	103	6.8
950	28	604	20.0	79	96	13.4
900	28	1,067	16.9	80	97	14.2
850	28	1,553	14.0	76	96	12.6
800	28	2,062	11.0	71	99	10.3
750	28	2,603	8.7	56	97	9.9
700	28	3,168	6.1	41	103	9.9
650	28	3,778	3.9		117	9.5
600	28	4,419	.3		108	7.4
550	28	5,109	- 4.5		110	3.3
500	28	5,854	- 9.5		154	1.2
450	28	6,662	-15.1		272	4.9
400	28	7,539	-21.6		279	10.1
350	28	8,510	-28.3		277	20.4
300	28	9,598	-35.9		274	36.7
250	28	10,840	-44.7		267	47.0
200	28	12,299	-55.0		268	50.5
175	28	13,141	-60.1		272	45.5
150	27	14,090	-65.4		266	36.5
125	24	15,186	-70.8		275	26.2
100	20	16,483	-75.9		285	11.5
80	15	17,762	-76.8		94	5.8
60	12	19,429	-70.5		86	19.6
50	10	20,517	-66.0			
40	8	21,871	-63.9			
30						
20						

6/ ST. MARTINS, NETH ANT.
(1015 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	27	3	24.0	78	100	13.0
1,000	27	136	22.9	73	99	14.0
950	27	587	19.6	76	109	17.1
900	27	1,046	16.6	74	110	18.1
850	27	1,531	13.7	70	108	18.5
800	27	2,041	11.2	57	104	15.2
750	27	2,591	8.9	43	96	12.8
700	27	3,146	6.9		98	9.9
650	27	3,760	3.9		82	9.7
600	27	4,397	.4		81	7.8
550	27	5,093	- 4.0		38	5.8
500	27	5,834	- 8.7		341	5.4
450	27	6,651	-14.4		300	6.4
400	27	7,522	-20.8		291	12.6
350	27	8,495	-27.4		292	25.4
300	26	9,586	-35.0		292	39.2
250	26	10,831	-44.0		284	52.1
200	26	12,293	-54.7		286	43.9
175	26	13,135	-60.4		286	41.6
150	26	14,082	-65.8		295	38.3
125	25	15,173	-71.1		296	21.2
100	25	16,474	-76.2		308	14.2
80	23	17,749	-77.9		31	3.1
60	20	19,409	-71.9		90	10.5
50	20	20,496	-67.6		91	21.2
40	19	21,853	-64.6		106	15.7
30	15	23,636	-60.9		98	21.4
20	5	26,190	-54.6			

6/ SAN ANDRES, COLUMBIA
(1015 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	21	2	25.5	87	65	19.6
1,000	21	132	24.5	85	65	19.6
950	21	589	21.1	84	71	22.5
900	21	1,049	18.1	82	75	24.7
850	21	1,537	15.1	73	78	23.1
800	21	2,049	12.4	67	71	22.0
750	21	2,595	10.9	44	68	19.0
700	21	3,164	9.2		62	15.5
650	21	3,784	5.8		54	9.7
600	21	4,423	1.5		54	4.5
550	21	5,119	- 2.9		54	2.5
500	20	5,865	- 6.8		311	2.1
450	20	6,685	-12.1		285	13.6
400	20	7,570	-18.7		281	17.7
350	20	8,551	-26.2		256	27.8
300	20	9,647	-34.5		245	39.6
250	19	10,895	-44.0		244	45.6
200	19	12,356	-55.0		251	51.1
175	19	13,203	-60.9		260	43.9
150	16	14,140	-67.0		256	37.9
125	15	15,227	-73.1		267	34.4
100	13	16,512	-78.3		225	9.9
80	10	17,776	-78.0		114	21.0
60	10	19,435	-71.9		109	32.6
50	9	20,526	-66.6			
40	8	21,873	-64.2			
30	6	23,659	-59.8			
20	5	26,211	-55.3			

6/ SWAN ISLAND, W. I.
(1014 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	28	10	24.9	79	89	7.4
1,000	28	132	24.0	80	84	9.5
950	28	584	20.4	84	91	13.6
900	28	1,046	17.7	78	99	15.0
850	28	1,533	15.0	69	99	14.2
800	28	2,044	12.3	65	92	11.3
750	28	2,591	9.7	54	88	9.9
700	28	3,154	6.9	43	83	7.2
650	28	3,769	3.8	39	88	4.5
600	28	4,406	.7	27	98	2.9
550	28	5,100	- 3.3		184	.6
500	28	5,846	- 8.3		244	3.1
450	28	6,664	-14.1		268	9.5
400	28	7,539	-20.9		268	15.0
350	28	8,510	-28.3		267	20.4
300	28	9,596	-36.1		254	28.7
250	28	10,837	-45.1		248	36.5
200	28	12,294	-54.6		247	38.7
175	28	13,138	-59.7		252	34.6
150	27	14,087	-65.4		252	32.1
125	25	15,178	-71.0		259	28.0
100	21	16,483	-75.7		252	14.0
80	18	17,765	-76.9		111	7.0
60	16	19,437	-71.4		98	19.6
50	16	20,527	-66.9		96	21.6
40	13	21,891	-64.8		93	24.3
30	7	23,668	-61.7			
20						

6/ TACUBAYA, MEXICO
(773 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	21	2,306	16.5	40		
1,000	21	54				
950	21	513				
900	21	986				
850	21	1,488				
800	21	2,016				
750	21	2,568	14.7	42		
700	21	3,145	9.8	49		
650	20	3,763	4.6	56		
600	20	4,404	- .6			
550	20	5,095	- 5.0			
500	16	5,842	- 9.6			
450	13	6,650	-15.2			
400	10	7,535	-21.6			
350	7	8,503	-29.7			
300	6	9,583	-38.4			
250						
200						
175						
150						
125						
100						
80						
60						
50						
40						
30						
20						

6/ TATOOSH ISLAND, WASH.
(1010 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	28	31	4.9	78	121	7.4
1,000	28	114	4.3	71	115	6.4
950	28	533	2.5	69	137	8.4
900	28	966	.2	67	175	4.5
850	28	1,423	- 1.4	59	227	4.3
800	28	1,904	- 3.4	57	260	6.0
750	28	2,414	- 5.7	53	266	9.5
700	28	2,950	- 8.5	53	271	13.2
650	28	3,525	-11.6	52	275	18.6
600	28	4,130	-15.3	52	281	21.0
550	28	4,781	-19.5	50	289	24.5
500	27	5,483	-24.4	48	282	29.1
450	26	6,248	-30.2	44	279	30.7
400	26	7,076	-36.2		282	34.6
350	26	7,989	-43.0		284	35.2
300	26	9,010	-50.6		286	35.9
250	26	10,180	-56.8		281	40.6
200	26	11,582	-57.8		285	35.9
175	25	12,435	-55.6		281	45.3
150	25	13,416	-55.7		284	46.2
125	24	14,571	-58.2		283	45.1
100	24	15,966	-60.8		283	44.7
80	23	17,358	-62.3		279	42.9
60	18	19,167	-63.5		289	25.3
50	16	20,329	-62.7		300	17.5
40	14	21,705	-63.6		317	15.7
30	8	23,534	-60.9			
20						

6/ VERA CRUZ, MEXICO
(1012 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	28	13	24.7	83		
1,000	28	119	23.8	82		
950	28	569	21.1	75		
900	28	1,034	18.8	68		
850	28	1,523	16.0	65		
800	28	2,035	12.9	63		
750	28	2,586	9.7	59		
700	28	3,145	6.7	52		
650	28	3,760	3.6	47		
600	28	4,397	- .3	38		
550	28	5,090	- 4.4			
500	28	5,833	- 8.7			
450	28	6,655	-14.4			
400	28	7,524	-21.2			
350	28	8,494	-28.9			
300	28	9,576	-37.4			
250	27	10,809	-46.3			
200	26	12,269	-54.4			
175	26	13,115	-59.0			
150	24	14,071	-64.1			
125	22	15,170	-69.5			
100	14	16,473	-75.6			
80	11	17,759	-76.9			
60	8	19,404	-74.1			
50	8	20,479	-69.6			
40	8	21,818	-66.8			
30	8	23,573	-62.3			
20						

6/ YUMA, ARIZ.
(1002 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	26	105	20.7	43	330	1.2
1,000	26	121			354	2.9
950	26	562	18.4	38	326	4.5
900	26	1,023	15.1	39	348	3.1
850	26	1,508	11.9	39	303	3.3
800	26	2,008	8.8	37	296	4.9
750	26	2,542	5.8	37	286	9.1
700	26	3,101	2.6	34	263	12.8
650	26	3,698	- 2.3	31	263	13.4
600	26	4,331	- 4.6		268	16.7
550	26	5,010	- 9.2		269	23.3
500	26	5,741	-14.1		265	27.2
450	25	6,538	-20.0		264	32.4
400	23	7,396	-25.8		261	35.4
350	21	8,349	-33.2		270	43.1
300	19	9,410	-41.1		267	55.0
250	18	10,621	-49.1			
200	17	12,063	-55.7			
175	16	12,907	-59.4			
150	14	13,868	-62.4			
125	7	14,961	-64.8			
100						
80						
60						
50						
40						
30						
20						

7/ FT. HUACHUCA, ARIZ.
(854 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	29	1,428	13.6	32	284	5.6
1,000	29	79				
950	29	528				
900	29	992				
850	29	1,472	13.4	30	275	7.4
800	29	1,977	8.7	38	257	8.7
750	29	2,508	3.8	45	256	11.5
700	29	3,060	- .9	47	262	9.9
650	28	3,650	- 4.7	41	264	12.4
600	28	4,274	- 8.5	31	274	14.2
550	27	4,948	-12.7		279	19.4
500	26	5,668	-17.7		291	22.5
450	25	6,454	-23.2		289	34.0
400	24	7,302	-30.0		287	39.0
350	23	8,240	-37.8		282	49.0
300	20	9,298	-45.4		289	55.0
250	15	10,489	-53.9		276	65.9
200	12	11,906	-58.8			
175	6	12,729	-59.6			
150						
125						
100						
80						
60						
50						
40						
30						
20						

7/ GRAND CAYMAN, B. W. I.
(1014 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	3	24.2	80	123	5.2
1,000	31	126	24.0	77	117	6.4
950	31	576	20.7	81	119	8.7
900	31	1,040	18.1	72	133	8.0
850	31	1,528	16.1	56	144	6.0
800	31	2,042	13.7	45	81	1.6
750	31	2,591	11.0	42	155	.6
700	31	3,156	8.4	33	199	1.7
650	30	3,772	5.5		261	3.1
600	29	4,416	1.8		259	9.1
550	29	5,114	- 2.6		267	12.0
500	29	5,861	- 7.9		266	17.9
450	29	6,678	-13.4		268	23.3
400	29	7,557	-20.3		264	26.6
350	29	8,530	-27.8		267	29.7
300	29	9,617	-36.1		267	34.2
250	29	10,856	-45.4		266	42.9
200	28	12,309	-55.3		260	57.1
175	27	13,149	-60.6		259	54.4
150	26	14,095	-65.6		261	44.5
125	21	15,188	-69.8		265	35.0
100	17	16,496	-74.7		265	26.0
80	15	17,781	-76.2		263	9.1
60	12	19,458	-69.9		100	11.3
50	11	20,558	-64.4			
40	9	21,928	-60.9			
30	7	23,732	-57.0			
20						

7/ RAIZET, GUADALOUPE, F. W. I.
(1016 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	8	20.9	90	107	2.3
1,000	31	143	22.9	79	99	5.8
950	31	595	20.2	81	106	11.7
900	31	1,055	16.9	81	107	11.3
850	31	1,541	13.9	76	101	10.1
800	31	2,052	12.3	58	92	7.4
750	31	2,598	11.4	29	90	5.4
700	31	3,166	9.3		97	4.9
650	31	3,784	6.7		90	1.4
600	31	4,429	3.0		252	.4
550	31	5,127	- 1.6		297	3.9
500	31	5,878	- 6.9		292	5.1
450	31	6,701	-12.3		294	8.2
400	31	7,581	-18.6		299	15.0
350	31	8,561	-25.8		286	21.4
300	30	9,660	-33.5		275	30.7
250	30	10,913	-43.0		271	37.7
200	29	12,376	-54.5		267	39.0
175	29	13,217	-60.9		271	41.4
150	28	14,159	-67.4		273	31.5
125	27	15,238	-72.4		278	22.5
100	26	16,532	-77.1		271	7.2
80	25	17,802	-78.4		101	2.7
60	25	19,467	-70.1		80	7.4
50	24	20,563	-64.4		98	15.0
40	24	21,937	-60.8		106	11.8
30	21	23,744	-56.7		75	8.9
20	11	26,351	-46.6			

7/ KINGSTON, JAMAICA
(1012 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	27	7	25.6	83	95	4.3
1,000	27	112	25.0	73	107	5.2
950	27	566	21.8	76	117	7.8
900	27	1,029	18.8	75	110	8.4
850	27	1,519	15.8	70	104	7.4
800	27	2,032	13.2	64	93	7.4
750	27	2,583	11.1	50	83	5.8
700	27	3,147	9.1	32	93	3.9
650	27	3,761	6.1		126	2.5
600	27	4,408	2.5		218	2.3
550	27	5,108	- 1.9		254	7.2
500	27	5,856	- 7.0		258	9.3
450	27	6,674	-12.7		258	15.0
400	27	7,556	-19.3		259	20.0
350	27	8,533	-26.8		261	24.3
300	27	9,626	-34.9		264	29.7
250	27	10,872	-44.3		257	40.8
200	27	12,330	-55.2		248	47.0
175	27	13,171	-60.9		251	47.0
150	28	14,113	-66.4		255	39.8
125	26	15,202	-71.5		257	31.1
100	23	16,505	-76.9		264	21.8
80	18	17,781	-77.9		212	2.1
60	15	19,453	-70.6		81	3.1
50	13	20,540	-64.8		105	4.7
40	13	21,912	-61.9		133	7.2
30	11	23,700	-57.9			
20	6	26,297	-48.3			

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

RAWINSONDE DATA

Average monthly values

DELAYED DATA

7/ MAZATLAN, MEXICO (1011 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	14	21.3	74		
1,000	31	105	20.8	72		
950	31	555	19.6	60		
900	31	1,013	18.5	47		
850	31	1,501	15.8	40		
800	31	2,013	12.9	32		
750	31	2,565	9.9			
700	31	3,122	6.5			
650	30	3,734	2.9			
600	30	4,369	- 1.6			
550	30	5,058	- 6.3			
500	29	5,793	-11.6			
450	29	6,598	-17.6			
400	29	7,463	-24.1			
350	29	8,422	-31.3			
300	29	9,496	-39.4			
250	25	10,720	-48.6			
200	16	12,160	-56.3			
175	13	12,986	-57.5			
150	11	13,930	-61.0			
125	7	15,043	-65.6			
100						
80						
60						
50						
40						
30						
20						

7/ MERIDA, MEXICO (1012 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	11	23.2	75	46	5.2
1,000	31	114	22.9	72	62	8.4
950	31	559	21.8	63	94	13.6
900	31	1,029	18.9	63	115	9.7
850	31	1,517	15.9	65	158	7.2
800	31	2,030	13.0	58	205	7.8
750	31	2,575	10.9	46	232	8.0
700	31	3,143	7.8	41	251	11.8
650	31	3,754	4.2	34	259	14.8
600	30	4,398	.5		264	20.0
550	30	5,090	- 4.1	28	268	23.3
500	30	5,835	- 9.5		266	26.8
450	30	6,645	-15.5	35	267	31.9
400	30	7,518	-22.1	34	265	35.2
350	30	8,485	-29.4		268	39.8
300	30	9,565	-37.9		265	45.1
250	30	10,794	-46.9		268	49.5
200	30	12,240	-56.3		262	52.4
175	30	13,078	-60.7		263	51.1
150	30	14,026	-65.0		265	48.8
125	29	15,126	-68.6		263	42.0
100	28	16,445	-73.4		261	27.6
80	18	17,736	-76.0		255	17.1
60	13	19,406	-68.9			
50	13	20,507	-65.0			
40	13	21,878	-61.6			
30	11	23,680	-57.1			
20	6	26,268	-49.4			

7/ SABANA D.L.M., DOM. REP (1015 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	11	22.4	87	150	1.7
1,000	31	145	23.1	72	153	3.7
950	31	594	20.3	73	141	7.8
900	31	1,057	17.4	71	127	7.8
850	31	1,544	14.7	69	112	5.2
800	31	2,056	12.9	58	92	3.3
750	31	2,600	10.0	55	76	1.9
700	31	3,167	7.8	39	20	.6
650	31	3,782	5.5		241	.6
600	31	4,425	1.7		266	3.7
550	31	5,119	- 2.5		264	7.6
500	31	5,870	- 7.4		261	9.3
450	31	6,685	-13.3		268	15.9
400	31	7,567	-20.2		277	22.5
350	31	8,541	-27.8		274	27.2
300	31	9,630	-35.9		271	33.6
250	31	10,871	-45.0		272	46.8
200	31	12,327	-55.5		271	53.2
175	31	13,166	-61.3		272	49.9
150	31	14,108	-67.0		271	38.5
125	28	15,192	-72.0		267	26.6
100	24	16,490	-77.0		276	12.2
80	19	17,772	-78.4		268	5.2
60	12	19,432	-70.4		73	11.7
50	9	20,518	-64.9			
40	6	21,914	-61.0			
30						
20						

7/ ST. MARTINS, NETH. ANT. (1014 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	3	24.1	79	107	8.0
1,000	31	129	23.1	75	103	8.5
950	31	583	19.8	77	112	10.3
900	31	1,040	16.7	74	110	8.9
850	31	1,525	13.8	69	117	7.2
800	31	2,035	12.0	52	96	5.8
750	31	2,589	10.2	39	92	4.9
700	31	3,146	8.8		84	2.7
650	31	3,764	6.0		49	1.2
600	31	4,406	2.5		297	3.5
550	31	5,103	- 2.2		310	7.8
500	31	5,851	- 7.4		299	11.3
450	31	6,672	-13.3		299	14.8
400	31	7,547	-19.6		299	17.9
350	31	8,525	-25.2		289	24.5
300	31	9,618	-34.8		287	29.5
250	30	10,868	-43.9		286	37.1
200	30	12,329	-55.2		289	38.3
175	30	13,169	-61.4		293	26.0
150	29	14,109	-67.8		287	23.7
125	28	15,190	-72.9		281	15.5
100	27	16,481	-77.6		292	2.1
80	25	17,746	-79.2		93	3.5
60	23	19,410	-70.2		115	9.5
50	22	20,507	-64.7		126	6.2
40	20	21,883	-61.1		166	2.1
30	19	23,676	-56.5		88	11.1
20	7	26,307	-46.4			

7/ TACUBAYA, MEXICO (773 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	9	2,306	17.6			
1,000	9	32				
950	9	493				
900	9	970				
850	9	1,474				
800	9	2,002				
750	9	2,560	15.8			
700	9	3,139	10.4			
650	9	3,757	5.2			
600	9	4,398	- .2			
550	8	5,091	- 6.0			
500	7	5,828	-11.1			
450	6	6,635	-15.7			
400	5	7,516	-21.9			
350						
300						
250						
200						
175						
150						
125						
100						
80						
60						
50						
40						
30						
20						

7/ VERA CRUZ, MEXICO (1010 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	29	13	24.7	81		
1,000	29	98	24.0	80		
950	29	546	21.9	72		
900	29	1,015	19.8	67		
850	29	1,506	17.0	63		
800	29	2,021	15.0	55		
750	29	2,575	12.2	49		
700	29	3,141	9.1	43		
650	29	3,756	5.0	45		
600	29	4,399	.4	46		
550	28	5,091	- 4.3	44		
500	27	5,834	- 9.4	36		
450	27	6,653	-15.3			
400	27	7,519	-21.6			
350	27	8,489	-28.6			
300	25	9,578	-36.9			
250	22	10,806	-46.3			
200	20	12,251	-56.9			
175	17	13,091	-61.8			
150	13	14,040	-66.0			
125	12	15,133	-70.4			
100	5	16,463	-75.4			
80						
60						
50						
40						
30						
20						

8/ BARTER ISLAND, ALASKA (1018 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	15	-11.0	75	96	4.9
1,000	30	149	-10.0	75	93	6.0
950	30	551	- 7.9	67	90	6.0
900	30	967	- 7.8	56	92	5.6
850	30	1,409	- 9.3	51	90	4.5
800	30	1,876	-11.1	46	80	2.7
750	30	2,374	-13.3	41	98	1.2
700	30	2,892	-16.0	38	295	1.2
650	30	3,451	-19.1	36	281	2.5
600	30	4,038	-22.4	35	287	4.9
550	30	4,673	-26.2		288	7.0
500	30	5,355	-30.8		290	7.8
450	30	6,100	-36.0		295	8.9
400	30	6,904	-41.6		290	10.5
350	30	7,795	-48.1		297	10.7
300	30	8,794	-54.0		302	11.1
250	30	9,954	-56.0		297	10.5
200	30	11,379	-52.6		284	10.7
175	30	12,242	-51.3		278	9.9
150	30	13,243	-50.8		278	8.7
125	29	14,428	-51.2		283	8.2
100	28	15,879	-51.9		276	9.5
80	27	17,318	-52.5		300	7.6
60	27	19,171	-53.2		305	4.7
50	27	20,341	-53.8		334	5.2
40	25	21,769	-54.0		337	4.5
30	25	23,609	-54.5		353	1.9
20	11	26,194	-54.1			

8/ FT. HUACHUCA, ARIZ. (855 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	25	1,428	16.9	20	275	7.4
1,000	25	58				
950	25	513				
900	25	986				
850	25	1,475	16.8	21	275	8.9
800	25	1,986	12.1	27	275	11.5
750	25	2,524	7.3	32	270	14.0
700	25	3,084	2.5	36	261	13.2
650	25	3,684	- 1.5	31	260	12.2
600	25	4,311	- 5.9		261	15.5
550	24	4,989	-10.8		263	18.3
500	21	5,711	-16.3		263	28.6
450	21	6,498	-22.0		265	30.3
400	18	7,347	-28.4		264	31.5
350	16	8,281	-36.2		292	43.7
300	15	9,330	-44.6		296	47.0
250	14	10,518	-53.2		295	60.6
200	10	11,937	-59.6			
175	7	12,794	-59.7			
150	7	13,757	-60.2			
125	5	14,867	-61.8			
100						
80						
60						
50						
40						
30						
20						

8/ GRAND CAYMAN, B. W. I. (1015 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	3	24.7	84	98	6.2
1,000	30	137	25.1	80	98	8.5
950	30	588	22.0	81	102	13.0
900	30	1,055	19.1	76	108	14.4
850	30	1,545	16.2	67	102	15.5
800	30	2,059	13.4	60	100	14.8
750	30	2,601	10.7	53	102	13.2
700	30	3,172	7.7	46	100	11.7
650	30	3,784	4.7	37	101	8.7
600	30	4,428	1.0	37	95	4.7
550	30	5,123	- 2.9	29	230	.8
500	29	5,869	- 7.6		244	5.4
450	29	6,687	-13.3		262	10.5
400	29	7,567	-19.7		265	16.3
350	29	8,543	-27.4		268	21.0
300	29	9,632	-35.8		274	28.9
250	29	10,873	-45.2		268	38.3
200	29	12,329	-55.2		272	45.6
175	29	13,170	-60.4		271	48.6
150	29	14,118	-65.2		269	40.6
125	29	15,216	-69.4		274	33.6
100	28	16,530	-73.8		285	15.0
80	27	17,823	-75.7		347	2.7
60	25	19,511	-68.1		96	13.0
50	24	20,619	-63.2		103	10.3
40	18	22,011	-59.4		90	8.9
30	16	23,834	-53.2		83	13.6
20	5	26,488	-45.0			

8/ RAIZET, GUADALOUPE, F. W. I. (1016 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	27	8	22.1	87	87	3.5
1,000	27	148	23.3	79	85	8.4
950	27	598	20.7	82	92	16.5
900	27	1,062	17.4	81	96	17.5
850	27	1,549	14.2	77	92	16.7
800	27	2,059	11.5	72	93	14.2
750	27	2,603	9.9	52	87	11.1
700	27	3,172	9.0		75	6.4
650	26	3,788	5.8		48	3.7
600	26	4,432	2.3		78	2.7
550	26	5,131	- 1.8		328	1.6
500	26	5,881	- 6.2		272	5.2
450	26	6,702	-12.2		283	9.3
400	26	7,586	-18.6		283	16.9
350	26	8,566	-25.7		275	25.6
300	26	9,663	-34.1		273	35.0
250	26	10,912	-43.7		274	42.0
200	26	12,374	-54.8		273	49.0
175	25	13,212	-61.2		271	49.3
150	24	14,155	-67.4		278	50.7
125	20	15,240	-71.3		284	41.2
100	17	16,546	-74.4		287	19.0
80	15	17,834	-75.1		311	8.2
60	15	19,530	-66.0		88	10.5
50	15	20,646	-62.3		105	15.0
40	15	22,029	-59.7		99	15.5
30	14	23,857	-52.4		77	13.8
20						

8/ HAVANA, CUBA (1011 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	49	23.7	85	68	5.1
1,000	30	147	23.5	81	82	7.2
950	30	600	20.9	78	100	14.2
900	30	1,061	18.4	72	109	13.4
850	30	1,549	15.5	69	119	11.5
800	30	2,061	12.3	71	126	9.3
750	30	2,603	9.4	63	131	8.0
700	30	3,170	6.5	51	137	5.4
650	29	3,782	3.5	43	140	3.7
600	29	4,422	- .3	39	211	2.5
550	29	5,115	- 4.5	39	250	4.7
500	29	5,857	- 9.5	40	267	9.7
450	29	6,668	-14.9	35	261	16.1
400	29	7,546	-21.3		266	21.2
350	29	8,516	-28.8		269	25.4
300	29	9,602	-37.2		267	30.7
250	28	10,831	-47.2		265	36.3
200	26	12,276	-56.9		272	48.2
175	24	13,111	-61.4		267	47.4
150	21	14,055	-64.0		267	44.7
125	17	15,156	-67.5		273	38.7
100	11	16,481	-71.8			
80						
60						
50						
40						
30						
20						

8/ KINGSTON, JAMAICA (1013 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	22	7	26.3	79	121	11.5
1,000	22	118	25.7	70	112	6.4
950	22	571	22.5	72	99	13.2
900	22	1,037	19.3	72	99	17.9
850	22	1,526	16.2	68	95	18.5
800	22	2,040	13.5	61	88	20.0
750	22	2,587	10.6	58	77	17.1
700	22	3,153	8.0		88	13.0
650	22	3,769	5.4		92	10.3
600	22	4,412	2.1		98	8.4
550	22	5,109	- 2.0		94	3.7
500	22	5,858	- 6.8		333	2.5
450	22	6,678	-12.1		276	6.4
400	22	7,561	-18.6		277	13.0
350	22	8,542	-26.0		275	19.0
300	22	9,638	-34.4		271	27.8
250	22	10,886	-43.9		269	36.9
200	22	12,345	-55.4		266	45.3
175	22	13,184	-61.5		270	44.9
150	22	14,125	-67.4		271	43.7
125	21	15,213	-71.1		278	30.5
100	20	16,517	-75.8		304	17.3
80	15	17,797	-76.3		36	7.6
60	13	19,472	-69.1		87	11.3
50	13	20,577	-63.8		108	13.4
40	13	21,955	-60.1		98	14.2
30	11	23,767	-54.8		89	14.4
20						

8/ MAZATLAN, MEXICO (1009 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	14	22.3	77		
1,000	30	94	21.8	69		
950	30	548	22.8	43		
900	30	1,010	22.2	29		
850	30	1,504	19.5	29		
800	30	2,022	16.0	28		
750	30	2,577	12.5			
700	30	3,141	8.8			
650	30	3,758	4.7			
600	30	4,397	.3			
550	30	5,090	- 4.4			
500	30	5,831	- 9.6			
450	30	6,645	-15.4			
400	28	7,516	-21.9			
350	28	8,484	-29.4			
300	23	9,576	-37.7			
250	21	10,806	-47.1			
200	13	12,272	-57.4			
175						
150						
125						
100						
80						
60						
50						
40						
30						
20						

8/ MERIDA, MEXICO (1012 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	11	26.3	73	82	6.8
1,000	30	114	25.8	71	87	11.5
950	30	568	23.4	70	108	20.0
900	30	1,037	20.6	72	117	17.3
850	30	1,529	17.6	71	123	12.6
800	30	2,045	14.4	70	129	7.0
750	30	2,590	11.6	56	125	5.2
700	30	3,163	8.5	45	104	3.3
650	30	3,773	4.9	41	66	1.4
600	30	4,421	1.0	34	285	2.1
550	30	5,114	- 3.5		277	7.2
500	30	5,861	- 8.5		275	12.8
450	30	6,675	-14.0		272	15.5
400	30	7,554	-20.6		280	20.2
350	30	8,526	-28.2		274	26.0
300	30	9,613	-36.5		268	32.4
250	30	10,849	-46.0		267	39.6
200	30	12,298	-56.3		269	51.3
175	30	13,136	-60.9		270	52.3
150	28	14,083	-65.2		271	44.5
125	28	15,182	-68.9		268	31.5
100	26	16,499	-73.9		260	15.7
80	25	17,792	-75.5		205	3.9
60	21	19,471	-68.4		112	9.7
50	20	20,576	-62.8		108	10.5
40	18	21,956	-59.3		96	12.2
30	17	23,775	-53.6		85	15.0
20	6	26,401	-46.3			

8/ SABANA D.L.M., DOM. REP. (1017 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	11	24.1	85	70	2.7
1,000	30	157	24.1	73	108	7.2
950	30	605	20.7	78	104	13.8
900	30	1,070	17.3	81	109	13.2
850	30	1,557	14.5	77	105	10.9
800	30	2,068	11.6	73	99	8.9
750	30	2,611	9.5	57	98	8.0
700	30	3,178	7.7		111	7.4
650	30	3,790	4.6		97	6.2
600	30	4,433	.9		89	7.2
550	30	5,125	- 3.2		59	1.9
500	30	5,874	- 8.0		4	4.5
450	30	6,686	-13.2		308	9.7
400	30	7,572	-19.6		307	14.2
350	30	8,548	-27.1		294	21.8
300	30	9,640	-35.3		301	32.4
250	30	10,884	-44.8		291	43.5
200	30	12,340	-55.7		288	51.9
175	29	13,178	-61.2		287	54.6
150	28	14,121	-66.5		287	51.3
125	27	15,212	-70.4		298	36.5
100	24	16,521	-75.1		322	22.2
80	22	17,812	-75.1		330	9.1
60	20	19,503	-68.1		93	12.8
50	16	20,615	-62.7		113	11.1
40	14	22,002	-59.6		119	7.0
30	12	23,822	-54.8		102	14.0
20						

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

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RAWINSONDE DATA

Average monthly values

DELAYED DATA

8/ ST. MARTINS, NETH. ANT. (1015 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	29	3	25.1	76	92	9.5
1,000	29	137	24.0	74	97	11.7
950	29	588	20.5	78	102	15.0
900	29	1,050	17.2	77	102	16.3
850	29	1,536	14.2	75	104	14.6
800	29	2,046	11.3	70	105	12.2
750	29	2,592	9.3	46	101	10.9
700	29	3,153	7.7		90	7.2
650	29	3,769	4.9		83	5.2
600	29	4,408	1.3		82	2.3
550	29	5,104	- 2.8		318	1.4
500	29	5,849	- 7.4		299	7.0
450	29	6,674	-13.2		292	9.9
400	29	7,546	-19.7		288	17.1
350	28	8,521	-27.0		289	25.4
300	28	9,613	-34.9		288	33.6
250	28	10,859	-44.4		288	42.3
200	28	12,318	-55.0		294	44.1
175	27	13,159	-60.9		295	49.1
150	26	14,103	-66.7		297	44.9
125	25	15,190	-71.3		299	30.5
100	21	16,495	-74.5		312	20.4
80	21	17,788	-75.2		331	6.8
60	18	19,482	-67.3		87	4.5
50	17	20,597	-63.1		119	5.1
40	17	21,981	-59.6		105	8.4
30	15	23,799	-54.8		100	13.4
20	10	26,456	-45.4			

8/ SWAN ISLAND, W. I. (1014 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	10	26.1	78	103	11.1
1,000	30	129	25.1	78	96	12.6
950	30	580	21.3	83	103	16.1
900	30	1,045	18.4	74	111	16.5
850	30	1,534	16.0	64	114	15.0
800	30	2,047	13.4	55	109	14.0
750	30	2,590	10.6	48	105	12.8
700	30	3,160	8.1	40	102	11.3
650	30	3,775	5.2	33	95	9.1
600	30	4,417	1.7	30	84	5.6
550	30	5,112	- 2.6		79	1.2
500	29	5,864	- 7.0		265	3.9
450	29	6,684	-12.7		273	7.8
400	29	7,565	-19.3		267	12.2
350	29	8,542	-26.7		264	18.1
300	29	9,634	-35.1		260	25.8
250	28	10,879	-44.5		264	36.1
200	28	12,336	-55.5		268	41.6
175	28	13,174	-61.6		265	42.0
150	28	14,114	-67.3		266	37.7
125	28	15,202	-71.3		264	25.8
100	25	16,500	-75.8		278	8.5
80	21	17,781	-77.2		77	8.2
60	18	19,461	-68.9		95	15.0
50	17	20,563	-63.8		94	15.5
40	17	21,940	-60.4		87	14.0
30	15	23,749	-54.5		86	16.1
20						

8/ TACUBAYA, MEXICO (772 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	2,306	17.6	46		
1,000	30	26				
950	30	486				
900	30	965				
850	30	1,471				
800	30	2,002				
750	30	2,557	16.2	43		
700	30	3,140	12.6	41		
650	30	3,765	7.4	48		
600	30	4,411	2.5	58		
550	30	5,106	- 3.0	67		
500	30	5,857	- 8.2	64		
450	30	6,676	-13.7	55		
400	30	7,553	-19.5	49		
350	27	8,529	-26.9			
300	22	9,626	-35.3			
250	14	10,873	-45.3			
200	7	12,306	-56.8			
175	7	13,145	-60.5			
150						
125						
100						
80						
60						
50						
40						
30						
20						

8/ VERA CRUZ, MEXICO (1008 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	13	26.2	84		
1,000	30	85	25.6	84		
950	30	533	24.3	72		
900	30	1,010	22.6	61		
850	30	1,506	20.1	57		
800	30	2,026	17.0	52		
750	30	2,584	13.8	46		
700	30	3,153	10.5	35		
650	30	3,771	6.5	34		
600	29	4,419	1.7	36		
550	29	5,113	- 3.3	36		
500	28	5,862	- 8.2	30		
450	26	6,687	-13.8			
400	26	7,557	-20.2	35		
350	26	8,533	-27.0	41		
300	22	9,621	-35.3			
250	21	10,862	-45.2			
200	21	12,312	-56.5			
175	20	13,149	-61.3			
150	19	14,090	-66.4			
125	16	15,185	-70.8			
100	15	16,492	-74.9			
80	12	17,775	-77.8			
60	9	19,453	-69.9			
50	8	20,559	-64.9			
40	8	21,933	-59.9			
30	7	23,752	-55.0			
20	5	26,375	-47.3			

9/ BETHEL, ALASKA (1011 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	4	10.4	58	233	1.4
1,000	31	91	9.3	59	229	2.5
950	31	516	5.7	62	123	1.9
900	31	953	2.2	66	109	4.9
850	31	1,412	- .6	65	135	5.4
800	31	1,894	- 3.0	61	147	6.4
750	31	2,408	- 5.7	57	139	6.8
700	31	2,941	- 8.9	55	135	7.8
650	31	3,517	-12.1	51	146	9.9
600	31	4,120	-15.3	47	141	9.7
550	31	4,775	-19.3	43	141	9.9
500	31	5,474	-23.9	42	134	10.7
450	31	6,241	-29.3	42	130	11.9
400	31	7,065	-35.1	44	131	14.4
350	31	7,983	-41.6		129	12.0
300	31	9,011	-48.5		149	8.5
250	31	10,194	-52.8		119	7.2
200	31	11,637	-51.0		100	4.9
175	31	12,507	-49.3		147	5.4
150	31	13,518	-48.7		152	3.9
125	31	14,716	-48.6		175	3.3
100	30	16,185	-49.0		141	6.4
80	30	17,647	-49.5		149	4.7
60	29	19,531	-49.3		153	5.8
50	27	20,719	-49.7		137	7.4
40	27	22,178	-49.7		120	7.0
30	17	24,050	-49.0		99	8.0
20						

9/ MERIDA, MEXICO (1010 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	11	27.1	74	75	6.6
1,000	31	99	26.6	73	71	9.9
950	31	552	24.6	71	99	19.4
900	31	1,026	21.8	70	106	14.2
850	31	1,521	18.9	71	115	9.9
800	31	2,039	15.5	69	134	5.6
750	31	2,586	12.1	64	159	2.9
700	31	3,159	8.9	48	205	1.2
650	31	3,771	5.1	40	243	2.1
600	31	4,417	1.3	38	272	4.9
550	31	5,112	- 2.3	32	276	9.9
500	31	5,863	- 7.2		277	13.6
450	31	6,682	-12.6		285	16.5
400	31	7,564	-19.2		285	21.4
350	31	8,544	-26.2		292	24.7
300	31	9,640	-34.1		295	29.0
250	31	10,889	-43.9		286	33.6
200	31	12,353	-54.0		276	29.7
175	31	13,198	-59.4		284	31.7
150	31	14,149	-64.8		293	24.3
125	31	15,247	-70.0		290	15.3
100	29	16,556	-74.2		264	5.8
80	24	17,850	-75.0		112	8.5
60	23	19,549	-66.4		88	15.0
50	23	20,665	-61.5		84	20.8
40	22	22,063	-58.2		88	19.6
30	21	23,894	-52.4		84	25.1
20	9	26,548	-43.9			

9/ SABANA D.L.M., DOM. REP. (1016 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	11	24.6	89	117	2.1
1,000	31	148	24.8	76	112	6.4
950	31	599	21.7	80	107	13.4
900	31	1,065	18.6	81	106	13.8
850	31	1,555	16.4	73	101	9.7
800	31	2,070	13.9	68	94	7.6
750	31	2,615	11.4	57	90	7.8
700	31	3,187	8.7	44	93	7.6
650	31	3,801	5.4	38	97	6.6
600	31	4,446	1.7	36	104	4.9
550	31	5,141	- 2.3	37	99	3.3
500	31	5,894	- 6.4	31	246	1.2
450	31	6,715	-11.7	35	242	5.1
400	31	7,602	-18.1	36	259	7.2
350	31	8,585	-25.3	38	266	15.0
300	31	9,685	-33.6	36	274	19.4
250	31	10,936	-43.8		272	30.1
200	31	12,395	-55.5		269	38.3
175	30	13,234	-61.4		267	39.1
150	30	14,176	-66.9		279	33.2
125	29	15,265	-70.7		290	24.3
100	27	16,573	-74.6		330	13.2
80	21	17,866	-74.4		44	8.2
60	16	19,574	-65.5		77	15.5
50	14	20,697	-61.2		85	18.3
40	13	22,091	-58.7		84	24.1
30	10	23,919	-52.4			
20						

9/ ST. MARTINS, NETH ANT. (1015 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	29	3	25.6	77	102	11.3
1,000	29	133	24.5	76	105	12.4
950	29	586	21.2	78	109	14.0
900	29	1,048	18.1	75	110	13.6
850	29	1,536	15.8	67	102	11.9
800	29	2,049	13.3	61	105	10.1
750	29	2,598	11.1	51	94	9.3
700	29	3,164	8.6	45	87	8.9
650	29	3,783	5.5	35	82	7.4
600	29	4,423	1.7	33	73	6.6
550	29	5,121	- 1.8	27	58	3.9
500	29	5,870	- 6.4	28	15	3.9
450	29	6,695	-11.7		332	7.2
400	29	7,576	-18.3		310	9.1
350	29	8,558	-25.4		305	15.0
300	29	9,657	-33.8		297	21.2
250	29	10,908	-43.7		297	29.5
200	29	12,368	-55.4		296	37.7
175	29	13,207	-61.7		296	41.0
150	29	14,147	-67.8		302	34.2
125	29	15,230	-72.0		303	23.3
100	28	16,535	-74.3		322	13.4
80	25	17,832	-74.2		51	8.0
60	22	19,538	-66.3		91	11.9
50	22	20,655	-61.7		93	18.1
40	22	22,055	-57.6		91	22.0
30	19	23,884	-52.0		90	22.0
20	5	26,566	-46.4		104	32.8

9/ TACUBAYA, MEXICO (772 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	2,306	19.6	43		
1,000	31	8				
950	31	474				
900	31	954				
850	31	1,460				
800	31	1,994				
750	31	2,554	18.0	42		
700	31	3,138	13.6	45		
650	31	3,765	8.6	53		
600	31	4,414	3.1	62		
550	31	5,112	- 2.6	67		
500	31	5,862	- 7.8	63		
450	30	6,683	-12.5	47		
400	29	7,566	-18.2			
350	28	8,550	-25.3			
300	22	9,649	-33.8			
250	16	10,905	-43.6			
200	6	12,385	-52.8			
175						
150						
125						
100						
80						
60						
50						
40						
30						
20						

VERA CRUZ, MEXICO (1007 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	13	27.6	84		
1,000	31	77	27.1	83		
950	31	528	26.0	71		
900	31	1,007	23.5	67		
850	31	1,505	20.4	63		
800	31	2,026	17.2	58		
750	31	2,585	14.1	53		
700	31	3,154	10.8	44		
650	31	3,774	6.6	45		
600	31	4,420	1.8	53		
550	30	5,118	- 2.5	56		
500	29	5,866	- 7.0	49		
450	28	6,693	-12.3	42		
400	26	7,571	-18.3	44		
350	26	8,554	-25.2	43		
300	26	9,654	-33.5			
250	26	10,908	-43.1			
200	25	12,375	-53.9			
175	23	13,220	-59.0			
150	19	14,173	-65.1			
125	14	15,286	-71.3			
100	13	16,577	-77.3			
80	10	17,850	-77.7			
60	9	19,527	-68.2			
50	9	20,636	-62.3			
40	8	22,010	-60.0			
30						
20						

9/ WAKE ISLAND (1014 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	5	28.3	72	98	8.7
1,000	31	128	25.3	72	96	10.9
950	31	577	21.5	79	100	12.6
900	31	1,045	18.5	80	102	12.6
850	31	1,534	15.8	76	109	11.7
800	31	2,048	13.4	69	112	8.9
750	31	2,597	11.4	58	109	8.0
700	31	3,165	9.1	41	118	5.2
650	31	3,781	5.9		130	4.3
600	31	4,426	2.4		125	4.5
550	31	5,122	- 1.5		180	2.1
500	31	5,877	- 6.2		203	1.9
450	30	6,703	-11.2		266	3.7
400	30	7,591	-17.2		273	8.7
350	30	8,579	-23.8		273	15.2
300	30	9,686	-31.9		271	22.5
250	30	10,948	-41.5		279	28.0
200	30	12,424	-53.3		279	34.0
175	30	13,270	-59.8		279	35.2
150	30	14,216	-66.5		279	33.0
125	30	15,302	-72.3		280	25.1
100	30	16,598	-75.8		293	10.3
80	30	17,881	-75.6		40	5.8
60	30	19,579	-66.0		81	12.0
50	30	20,697	-61.2		88	16.1
40	30	22,091	-57.4		98	20.0
30	30	23,928	-51.8		100	22.2
20	29	26,589	-45.1		99	17.7
15	16	28,504	-41.4		90	18.8
10	6	31,223	-37.9			

1/ September 1956
2/ October 1956
3/ November 1956
4/ December 1956
5/ January 1957
6/ February 1957
7/ March 1957
8/ April 1957
9/ May 1957

Also see footnotes with current data.

SOLAR RADIATION DATA

Solar radiation intensities, tabulated in langleys per minute on a surface normal to the direction of the sun.

DELAYED DATA

Date	Sun's zenith distance								
	A.M.				0.0°	P.M.			
	78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°
TUCSON, ARIZ.									
	Air mass								
	4.56	3.65	2.74	1.83	0.91	1.83	2.74	3.65	4.56
May 1957									
1------	0.56	0.69	0.80	1.04	----	----	----	----	----
2------	.64	.78	.92	1.13	1.36	1.08	0.86	0.72	0.60
3------	.70	.82	.99	1.20	1.42	1.20	1.03	.86	.75
13-----	----	----	----	----	1.46	1.22	----	----	----
14-----	.89	.99	1.10	1.27	1 46	----	1.06	.94	.85
16-----	.86	.96	1.08	1.23	1.40	----	----	----	----
20-----	.79	.91	1.05	1.18	----	----	----	----	----
24-----	----	----	----	----	1.45	1.23	1.06	.92	.79
25-----	.83	.94	1.07	1.23	1.46	1.17	1.04	.92	.81
26-----	----	----	----	----	1.44	1.19	1.00	.90	.80
27-----	----	----	----	----	1.44	----	----	----	----
28-----	----	----	----	----	----	----	1.12	1.01	.92
29-----	.42	.53	.72	.99	1.49	1.25	1.11	.97	.87
30-----	.72	.86	1.00	1.20	1.46	1.20	1.03	.93	.87
31-----	.71	.84	.99	1.16	1.37	1.15	.95	.83	.71
Averages	.72	.83	.97	1.16	1.31	1.18	1.03	.90	.80
WASHINGTON, D. C. (WBCO)									
	Air mass								
	4.96	3.97	2.98	1.99	Noon	1.99	2.98	3.97	4.96
July 1956									
11----	----	----	----	----	SK1.24	----	----	----	----
30----	----	----	----	----	S1.29	----	----	----	----

Date	Sun's zenith distance								
	A.M.				0.0°	P.M.			
	78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°
MADISON, WIS.									
	Air mass								
	5.0	4.0	3.0	2.0	1.0	2.0	3.0	4.0	5.0
Aug. 1956									
14----	M0.76	S0.86	S0.98	S1.18	Ci	----	----	----	----
15----	----	----	----	----	----	S1 08	S0.86	S0.75	S0.64
19----	S.80	S.90	S1.25	M1.20	----	----	----	----	----
20----	M 78	S.90	S1.04	S1.18	----	----	----	----	----
21----	S.74	S.84	S1.04	S1.19	----	----	----	----	----
24----	S.84	S.94	S1.08	S1.24	----	----	----	----	----
25----	S.74	S.84	S.96	Ci	----	----	----	----	----
27----	----	----	----	----	----	----	M.76	Ci	----
Averages	.78	.88	1.06	1.20	----	1.08	.81	.75	.64
MADISON, WIS.									
	Air mass								
	5.0	4.0	3.0	2.0	*1.0	2.0	3.0	4.0	5.0
July 1956									
10----	----	----	M0.96	M1.12	----	----	----	----	----
23----	M0.46	M0.62	M.78	----	K1.21	----	----	----	----
25----	----	----	M.82	S1.08	----	----	----	----	----
27----	M.64	----	----	S1.05	----	----	----	----	----
Averages	.55	.62	.85	1.08	1.21	----	----	----	----

* Extrapolated
M moderate haze - indeterminable
K smoke
S slight haze - indeterminable
SK slight smoke

Also see footnotes with current data

CLEMSON

SOLAR RADIATION DATA

Daily totals and weekly averages of solar radiation (direct and diffuse) received on a horizontal surface, tabulated in langleys.

DELAYED DATA

	Stillwater, Okla.		Columbus, Ohio	Stillwater, Okla.	Tallahassee, Fla.		Columbus, Ohio	Stillwater, Okla.	Tallahassee, Fla.		Columbus, Ohio	* Ithaca, N. Y.	Stillwater, Okla.	Tallahassee, Fla.
1956		Sep.				Oct.				Nov.				
Aug. 6------	653	3	159	614	---	1	107	311	---	5	51	276	197	426
Aug. 7------	620	4	136	---	---	2	89	518	357	6	112	288	146	396
Aug. 8------	542	5	137	---	540	3	80	519	165	7	87	121	321	393
Aug. 9------	425	6	80	598	555	4	48	516	---	8	27	149	420	198
Aug. 10------	521	7	124	617	513	5	101	510	---	9	98	103	413	452
Aug. 11------	556	8	130	644	527	6	98	494	---	10	112	139	388	435
Aug. 12------	651	9	131	651	604	7	118	529	---	11	100	90	389	---
Average-------	567		128	625	548		92	485	---		84	167	325	383
Aug. 13------	647	10	59	646	---	8	105	---	---	12	73	105	384	---
Aug. 14------	581	11	95	631	---	9	107	---	---	13	78	140	367	406
Aug. 15------	636	12	118	560	---	10	101	---	---	14	47	208	332	414
Aug. 16------	664	13	123	---	---	11	85	431	---	15	28	223	355	378
Aug. 17------	614	14	57	581	---	12	83	455	---	16	72	61	391	---
Aug. 18------	644	15	87	---	---	13	85	---	508	17	62	208	375	---
Aug. 19------	147	16	126	---	---	14	87	---	513	18	57	64	368	---
Average-------	562		95	604	---		93	---	---		59	144	367	---
Aug. 20------	705	17	134	---	---	15	75	354	460	19	60	255	335	---
Aug. 21------	701	18	133	---	---	16	79	363	224	20	9	52	87	278
Aug. 22------	694	19	91	614	---	17	78	427	462	21	10	33	332	---
Aug. 23------	637	20	132	585	---	18	96	287	476	22	44	89	352	---
Aug. 24------	640	21	115	560	514	19	55	274	231	23	68	169	327	---
Aug. 25------	527	22	74	523	467	20	115	308	45	24	57	219	344	---
Aug. 26------	650	23	54	508	156	21	104	464	306	25	10	108	327	---
Average-------	650		105	558	---		86	354	315		37	132	301	---
Aug. 27------	643	24	106	585	32	22	40	454	366	26	7	84	344	---
Aug. 28------	584	25	97	580	226	23	43	456	449	27	57	75	350	---
Aug. 29------	610	26	99	569	570	24	17	457	453	28	50	178	270	---
Aug. 30------	651	27	116	570	560	25	111	429	---	29	35	71	344	---
Aug. 31------	669	28	103	540	---	26	34	446	---	30	37	164	334	---
Sep. 1------	694	29	110	527	---	27	89	453	---	Dec.1	36	122	329	---
Sep. 2------	587	30	108	515	---	28	77	262	---	2	38	92	330	---
Average-------	634		106	555	347		59	422	---		37	113	329	---
						29	84	---	---					
						30	52	145	---					
						31	39	449	378					
						Nov.1	58	423	427					
						2	119	349	430					
						3	59	239	426					
						4	124	50	132					
						Avg.	76	276	359					

		Columbus, Ohio	Ithaca, N. Y.	Stillwater, Okla.		Aklavik, MacKenzie	Apalachicola, Fla.	Davis, Calif.	Fairbanks, Alaska	Inyokern, Calif.	Ithaca, N. Y.	Stillwater, Okla.
1956	Dec.				1957 Jan.							
Aug. 6------	3	44	31	322	1	---	(358)	195	---	219	152	---
Aug. 7------	4	48	42	262	2	---	396	168	4	325	182	226
Aug. 8------	5	19	124	296	3	---	372	221	4	307	189	265
Aug. 9------	6	45	149	60	4	---	(332)	118	2	165	29	---
Aug. 10------	7	7	10	75	5	---	291	87	3	193	175	121
Aug. 11------	8	73	26	80	6	---	345	233	9	302	158	155
Aug. 12------	9	82	32	296	7	---	337	163	20	87	74	264
Average-------		45	59	199		---	(348)	169	7	228	137	206
Aug. 13------	10	88	153	165	8	---	(382)	202	9	362	195	150
Aug. 14------	11	29	30	181	9	---	355	258	5	350	57	59
Aug. 15------	12	76	130	200	10	---	207	243	17	301	64	213
Aug. 16------	13	23	20	107	11	---	350	70	6	242	194	316
Aug. 17------	14	40	9	143	12	---	292	33	5	43	69	272
Aug. 18------	15	25	34	279	13	0.1	104	155	36	289	162	219
Aug. 19------	16	19	4	312	14	---	252	240	7	361	244	102
Average-------		43	54	198		---	(277)	172	12	278	141	190
Aug. 20------	17	80	29	207	15	0.3	307	227	19	370	239	---
Aug. 21------	18	93	88	169	16	---	200	236	23	367	123	---
Aug. 22------	19	45	157	48	17	2	---	262	10	382	186	318
Aug. 23------	20	10	33	92	18	1	385	---	16	385	229	352
Aug. 24------	21	19	135	244	19	0.4	(420)	54	6	373	236	67
Aug. 25------	22	60	14	59	20	1	262	228	10	121	91	---
Aug. 26------	23	25	50	162	21	3	140	288	10	391	142	213
Average-------		47	72	140		1	(286)	216	13	341	178	237
Aug. 27------	24	18	28	226	22	7	231	178	40	---	113	119
Aug. 28------	25	26	19	331	23	7	268	195	59	263	91	158
Aug. 29------	26	48	96	313	24	3	(398)	164	19	395	264	246
Aug. 30------	27	27	58	333	25	3	313	167	27	322	105	113
Aug. 31------	28	16	70	298	26	0.1	238	310	11	333	188	69
Sep. 1------	29	66	17	322	27	3	330	311	12	223	242	59
Sep. 2------	30	55	167	333	28	4	206	212	11	304	75	112
	31	42	88	265								
Average-------						4	(284)	220	26	307	154	125
	Avg.	37	68	303								
					29	9	291	301	14	180	27	182
					30	14	411	318	---	418	275	100
					31	8	387	298	---	419	66	105
					Feb.1	5	379	240	15	434	91	200
					2	12	328	325	18	453	311	239
					3	8	410	336	24	462	77	165
					4	8	---	326	22	461	62	108
					Avg.	9	368	306	18	404	130	157

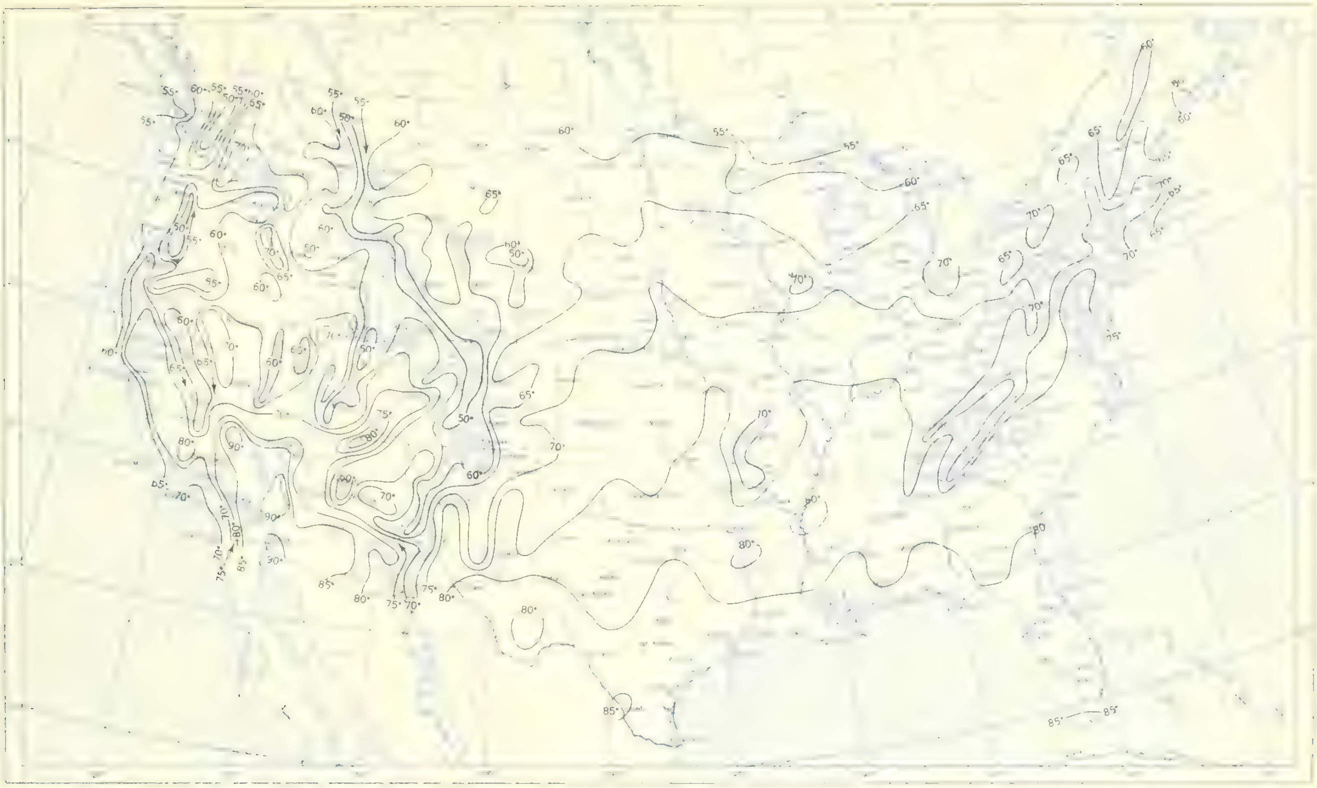
		Gainesville, Fla.	Inyokern, Calif.	Lemont, Ill.	Stillwater, Okla.		Inyokern, Calif.	Stillwater, Okla.		Aklavik, MacKenzie		Davis, Calif.	Inyokern, Calif.
1956	Feb.					Mar.			Apr.		May		
Aug. 6------	5	258	452	243	113	5	509	---	2	264	7	322	738
Aug. 7------	6	339	411	67	132	6	562	146	3	292	8	676	772
Aug. 8------	7	316	237	70	68	7	586	393	4	255	9	178	779
Aug. 9------	8	335	207	58	191	8	465	485	5	373	10	628	664
Aug. 10------	9	374	389	69	229	9	505	508	6	399	11	545	578
Aug. 11------	10	230	254	124	---	10	580	273	7	401	12	464	842
Aug. 12------	11	129	370	264	208	11	612	509	8	410	13	439	813
Average-------		283	332	128	157		545	386		342		465	741
Aug. 13------	12	374	318	219	---	12	630	513	9	419	14	592	845
Aug. 14------	13	441	430	219	418	13	628	566	10	384	15	707	832
Aug. 15------	14	452	419	375	---	14	647	543	11	430	16	711	831
Aug. 16------	15	435	383	102	252	15	656	564	12	351	17	346	807
Aug. 17------	16	430	446	381	---	16	---	336	13	392	18	166	482
Aug. 18------	17	483	443	405	437	17	---	133	14	198	19	585	846
Aug. 19------	18	483	433	413	95	18	680	568	15	416	20	147	825
Average-------		443	410	302	301		648	460		370		465	781
Aug. 20------	19	380	517	430	148	19	404	471	16	458	21	765	785
Aug. 21------	20	60	274	422	201	20	652	138	17	454	22	564	798
Aug. 22------	21	129	454	304	---	21	644	---	18	442	23	758	517
Aug. 23------	22	270	431	175	50	22	703	---	19	500	24	758	807
Aug. 24------	23	424	496	64	121	23	711	---	20	464	25	634	850
Aug. 25------	24	261	410	193	118	24	690	---	21	533	26	722	854
Aug. 26------	25	223	531	138	272	25	618	---	22	510	27	747	853
Average-------		250	445	247	152		632	---		480		707	781
Aug. 27------	26	390	426	81	458	26	619	645	23	529	28	607	599
Aug. 28------	27	253	486	417	531	27	617	291	24	561	29	743	894
Aug. 29------	28	322	91	425	376	28	460	619	25	518	30	756	863
Aug. 30------	Mar 1	---	400	436	519	29	543	603	26	472	31	782	860
Aug. 31------	2	---	536	425	---	30	711	349	27	375	Jun.1	765	866
Sep. 1------	3	---	561	481	243	31	636	367	28	461	2	778	910
Sep. 2------	4	---	590	440	77	Apr.1	671	195	29	503	3	788	836
Average-------		---	441	386	367		608	438		48[illegible]		746	833
									30	503			
									May 1	475			
									2	495			
									3	515			
									4	372			
									5	413			
									6	594			
									Avg.	481			

Note.--Langley is the unit used to denote one gram calorie per square centimeter.
Values in parentheses are interpolated.

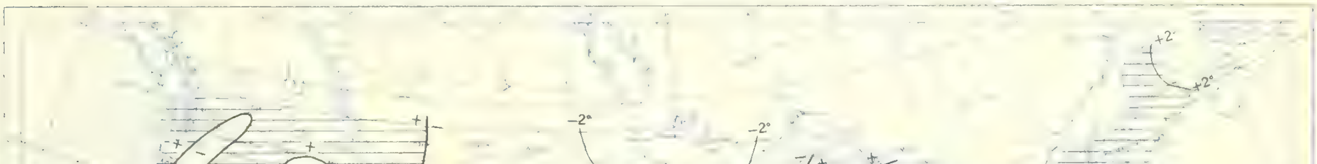
* Corrected Data

NWRC, Asheville, N. C. --- 9/19/57 --- 1900

Chart I. A. Average Temperature (°F.) at Surface, June 1957.



B. Departure of Average Temperature from Normal (°F.), June 1957.

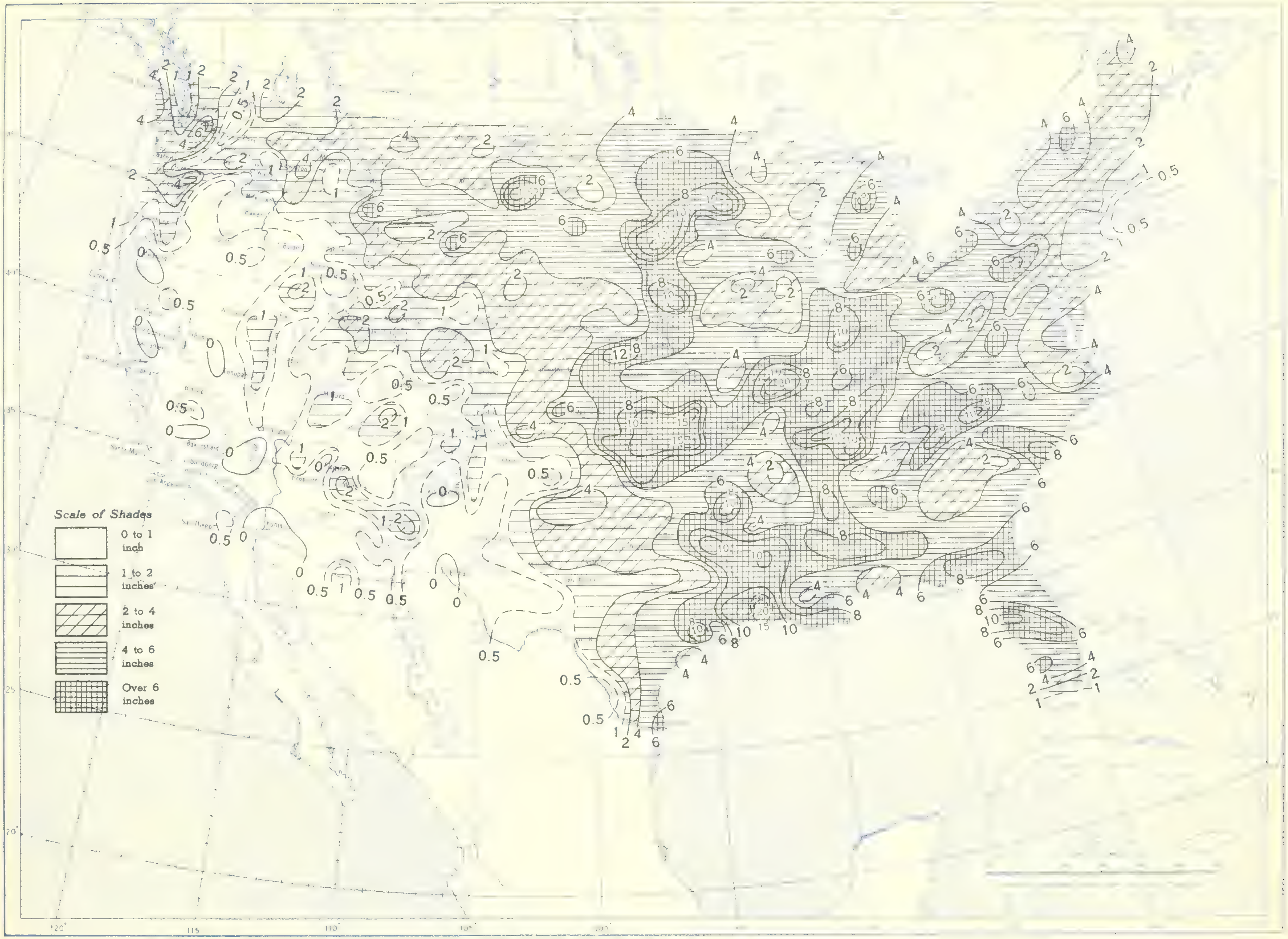


A. Based on reports from over 900 Weather Bureau and cooperative stations. The monthly average is half the sum of the monthly average maximum and monthly average minimum, which are the average of the daily maxima and daily minima, respectively.

B. Departures from normal are based on the 30-yr. normals (1921-50) for Weather Bureau stations and on means of 25 years or more (mostly 1931-55) for cooperative stations.

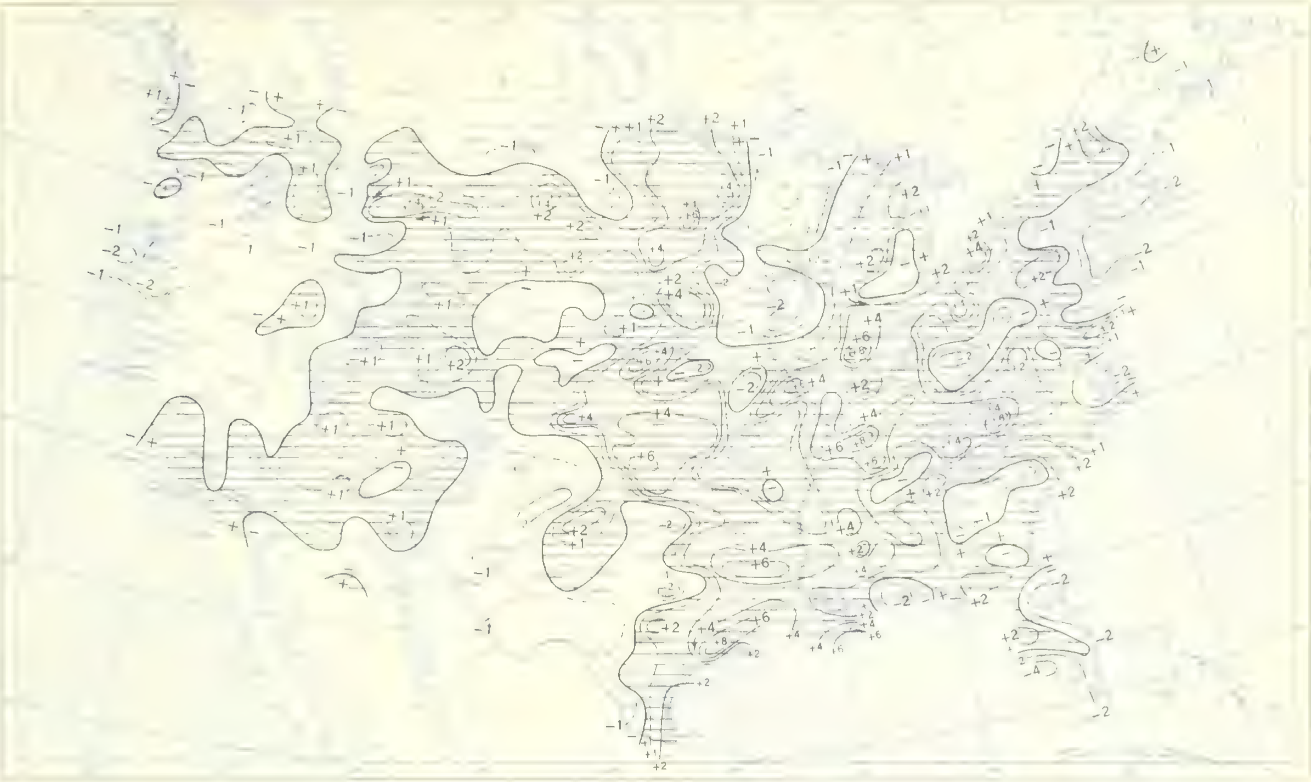
CLEMSON COLLEGE LIBRARY

Chart II. Total Precipitation (Inches), June 1957.

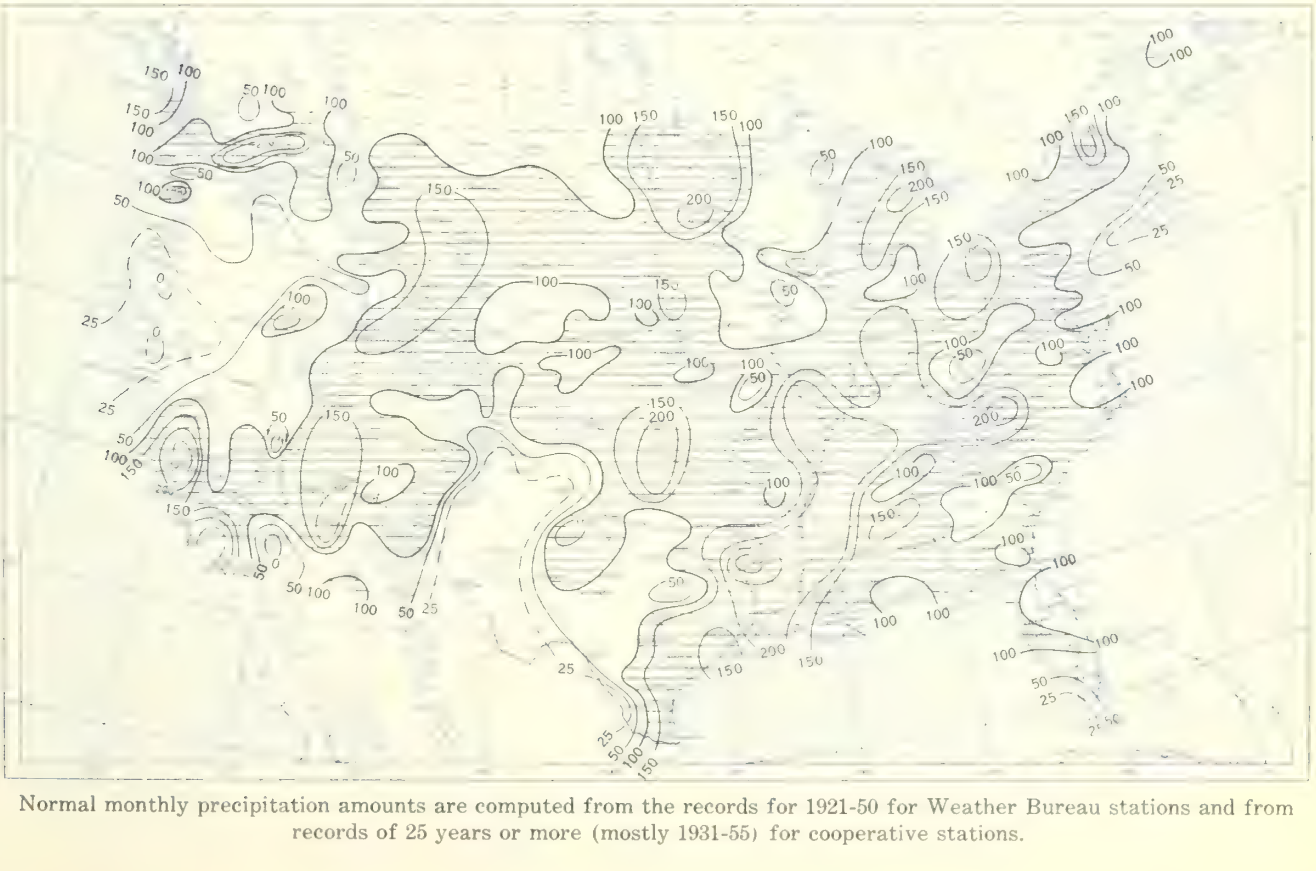


Based on daily precipitation records at about 800 Weather Bureau and cooperative stations.

Chart III. A. Departure of Precipitation from Normal (Inches), June 1957.



B. Percentage of Normal Precipitation, June 1957.



Normal monthly precipitation amounts are computed from the records for 1921-50 for Weather Bureau stations and from records of 25 years or more (mostly 1931-55) for cooperative stations.

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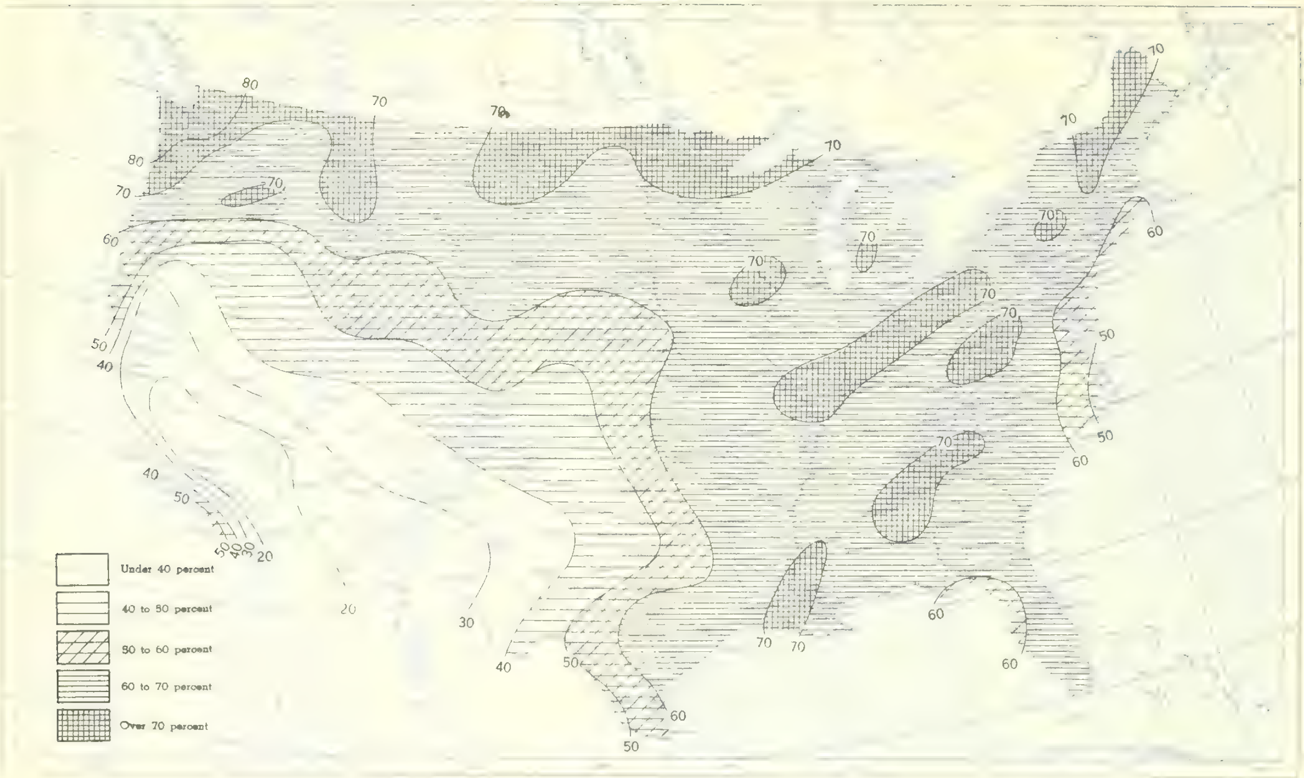
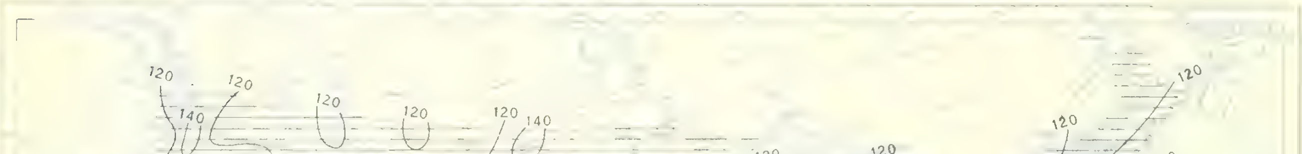
Chart VI. A. Percentage of Sky Cover Between Sunrise and Sunset, June 1957.

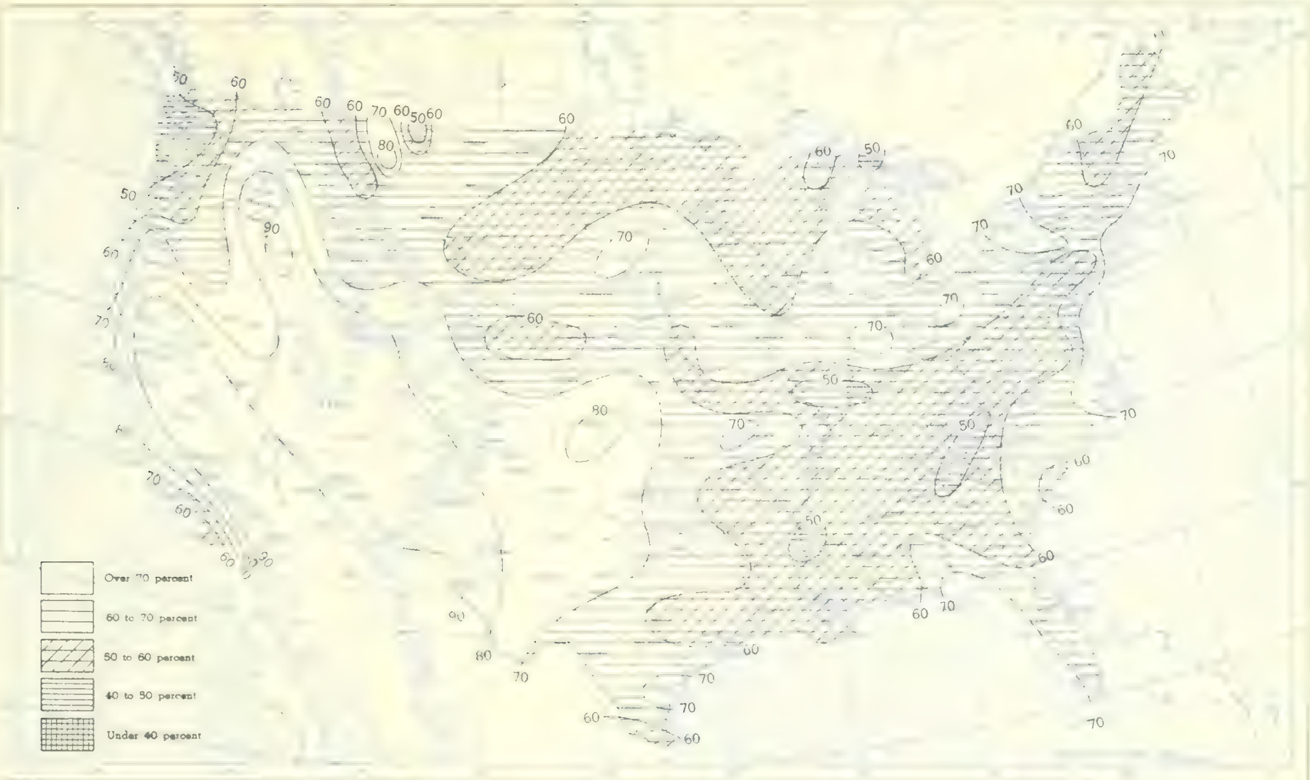


B. Percentage of Normal Sky Cover Between Sunrise and Sunset, June 1957.

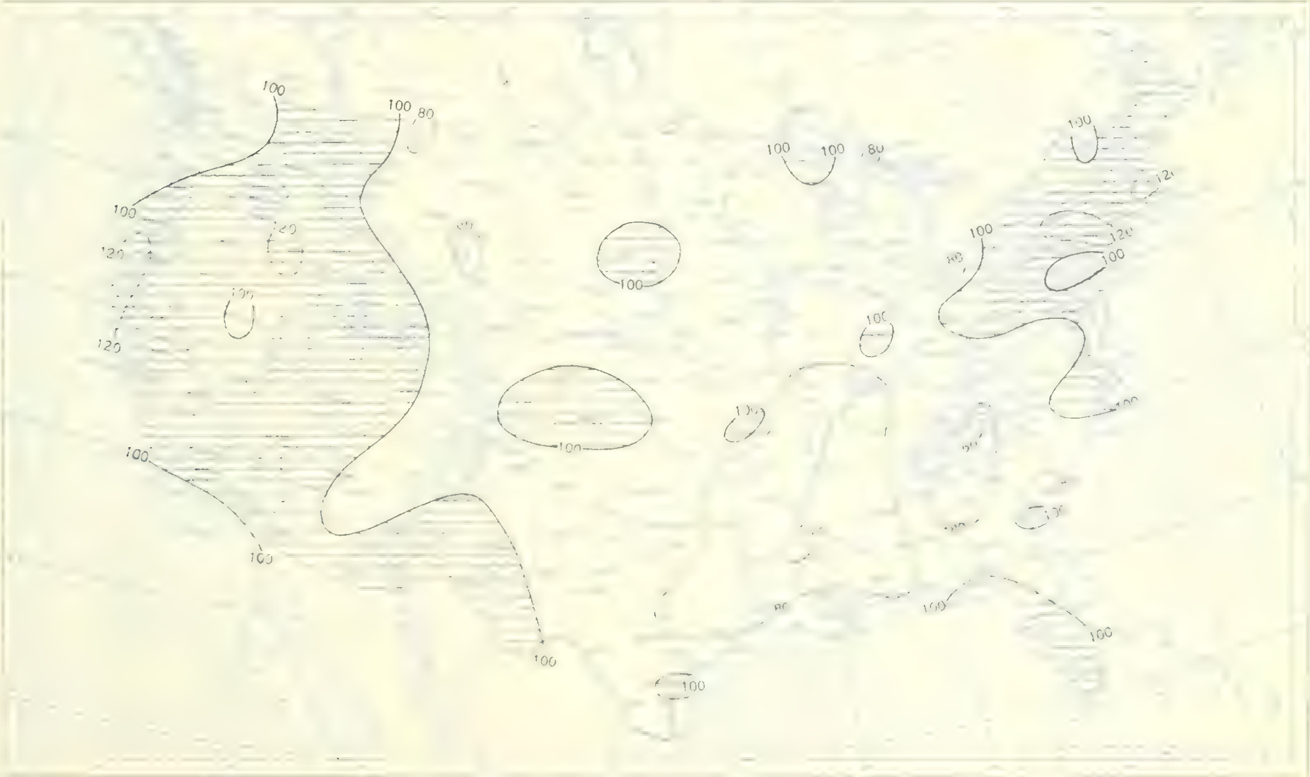


A. In addition to cloudiness, sky cover includes obscuration of the sky by fog, smoke, snow, etc. Chart based on visual observations made hourly at Weather Bureau stations and averaged over the month. B. Computations of normal amount of sky cover are made for stations having at least 10 years of record.

Chart VII. A. Percentage of Possible Sunshine, June 1957.



B. Percentage of Normal Sunshine, June 1957.



A. Computed from total number of hours of observed sunshine in relation to total number of possible hours of sunshine during month. B. Normals are computed for stations having at least 10 years of record.

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Chart VIII. Average Daily Values of Solar Radiation, Direct + Diffuse, June 1957. Inset: Percentage of Mean Daily Solar Radiation, June 1957. (Mean based on period 1951-55.)

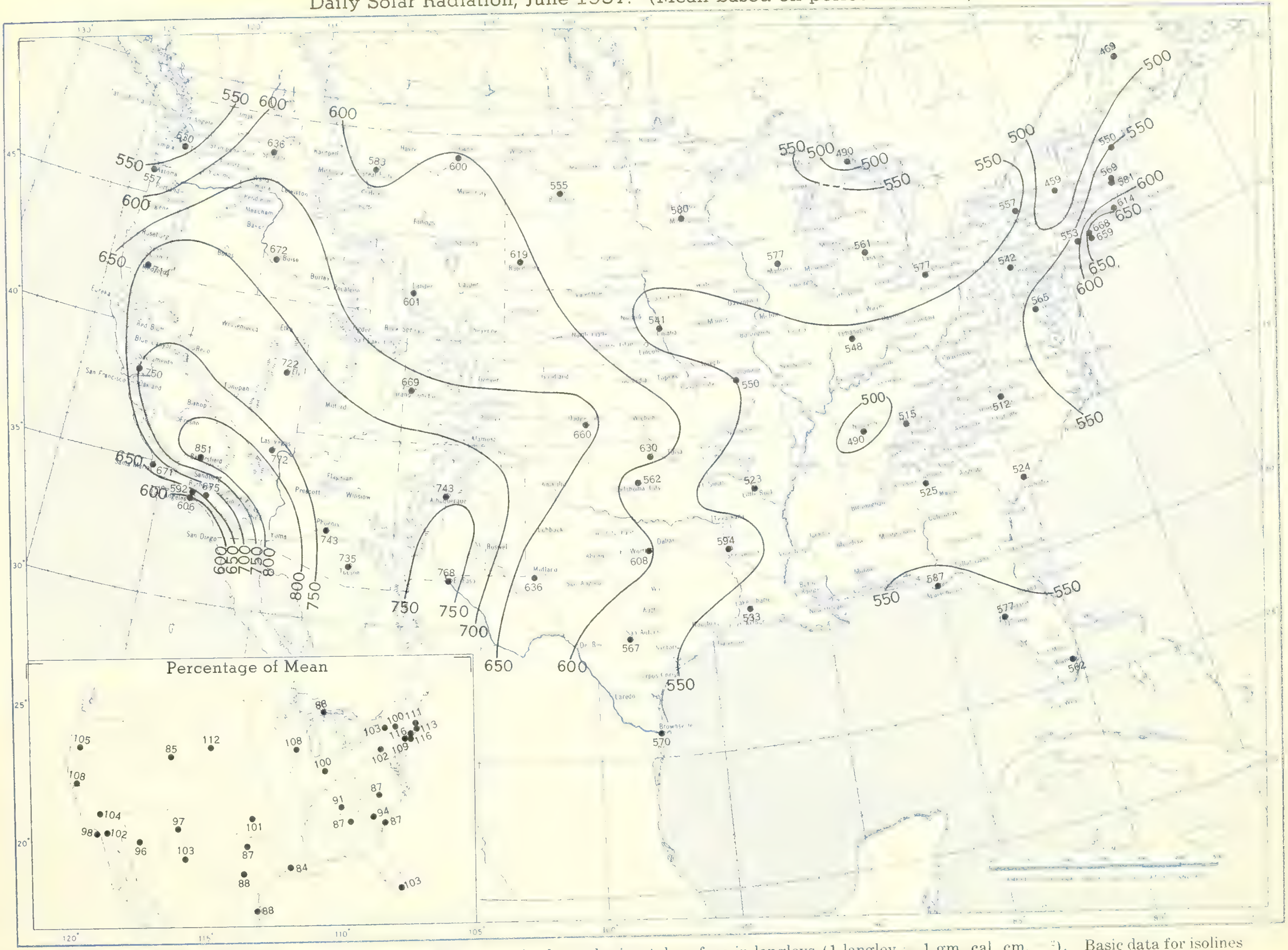
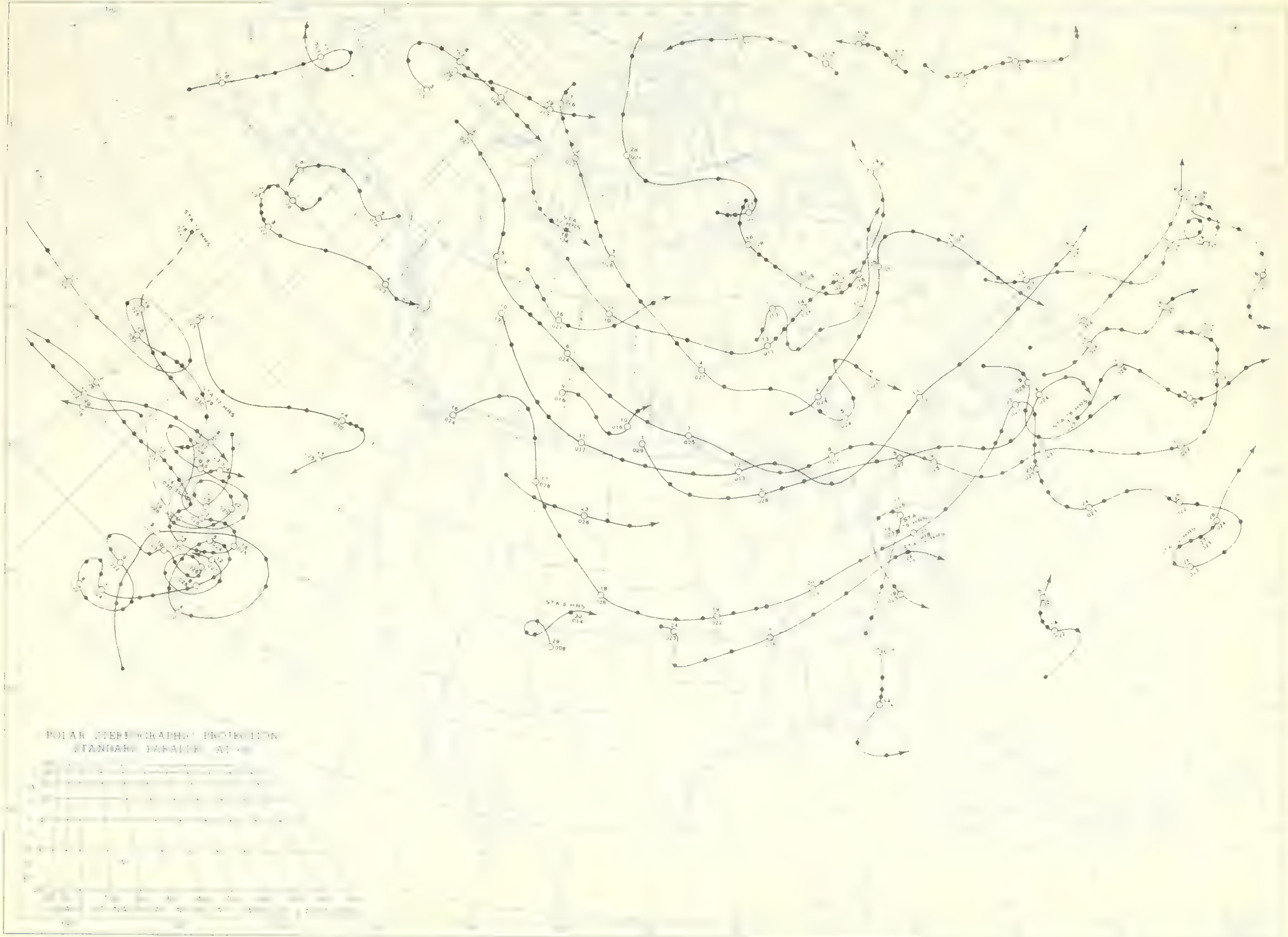


Chart shows mean daily solar radiation, direct + diffuse, received on a horizontal surface in langleys (1 langley = 1 gm. cal. cm.$^{-2}$). Basic data for isolines are shown on chart. Further estimates are obtained from supplementary data for which limits of accuracy are wider than for those data shown. The inset shows the percentage of the mean based on the period 1951-55.

Chart IX. Tracks of Centers of Anticyclones at Sea Level, June 1957.



Circle indicates position of center at 7:00 a. m. E. S. T. Figure above circle indicates date, figure below, pressure to nearest millibar. Dots indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.

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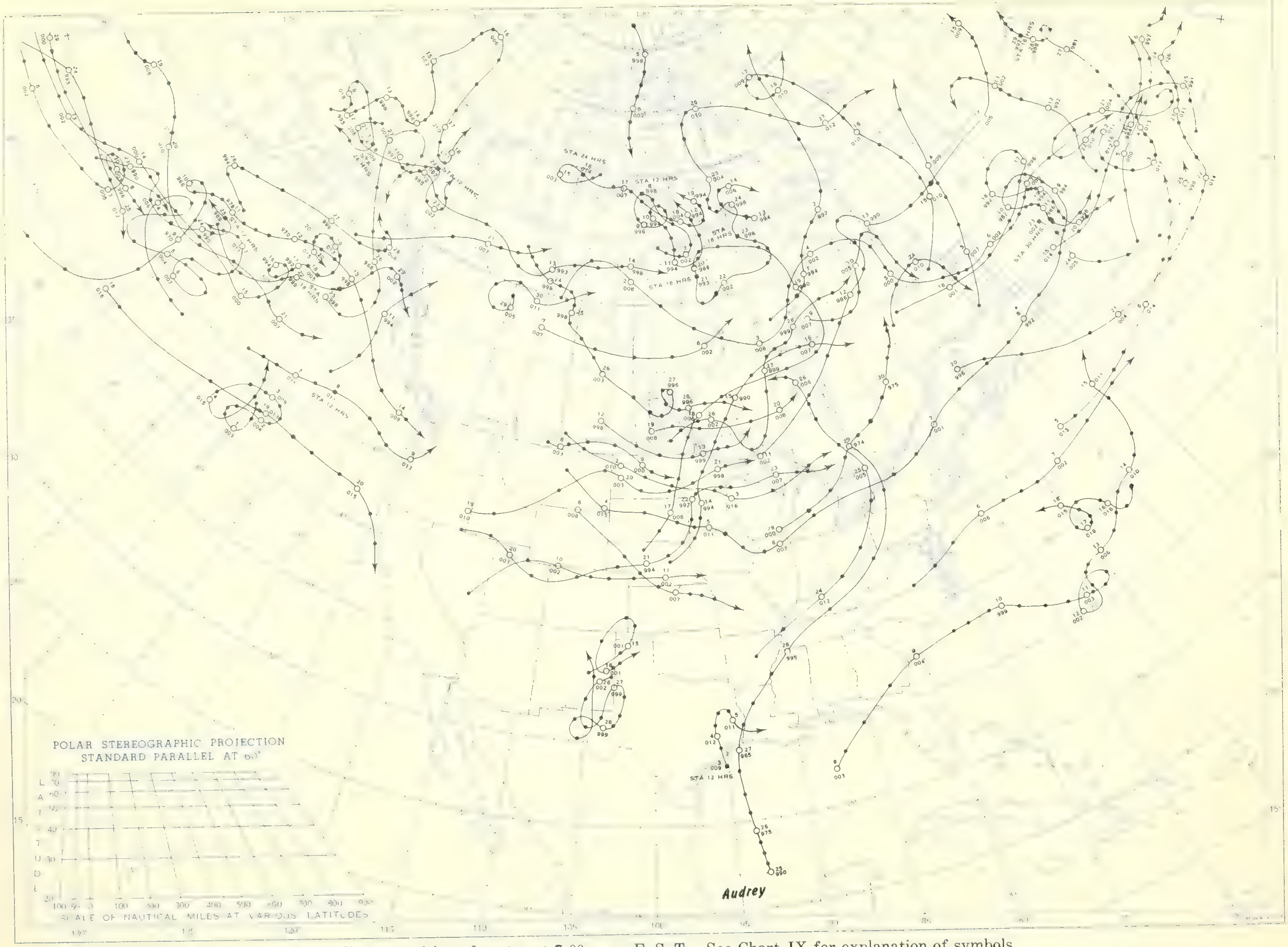
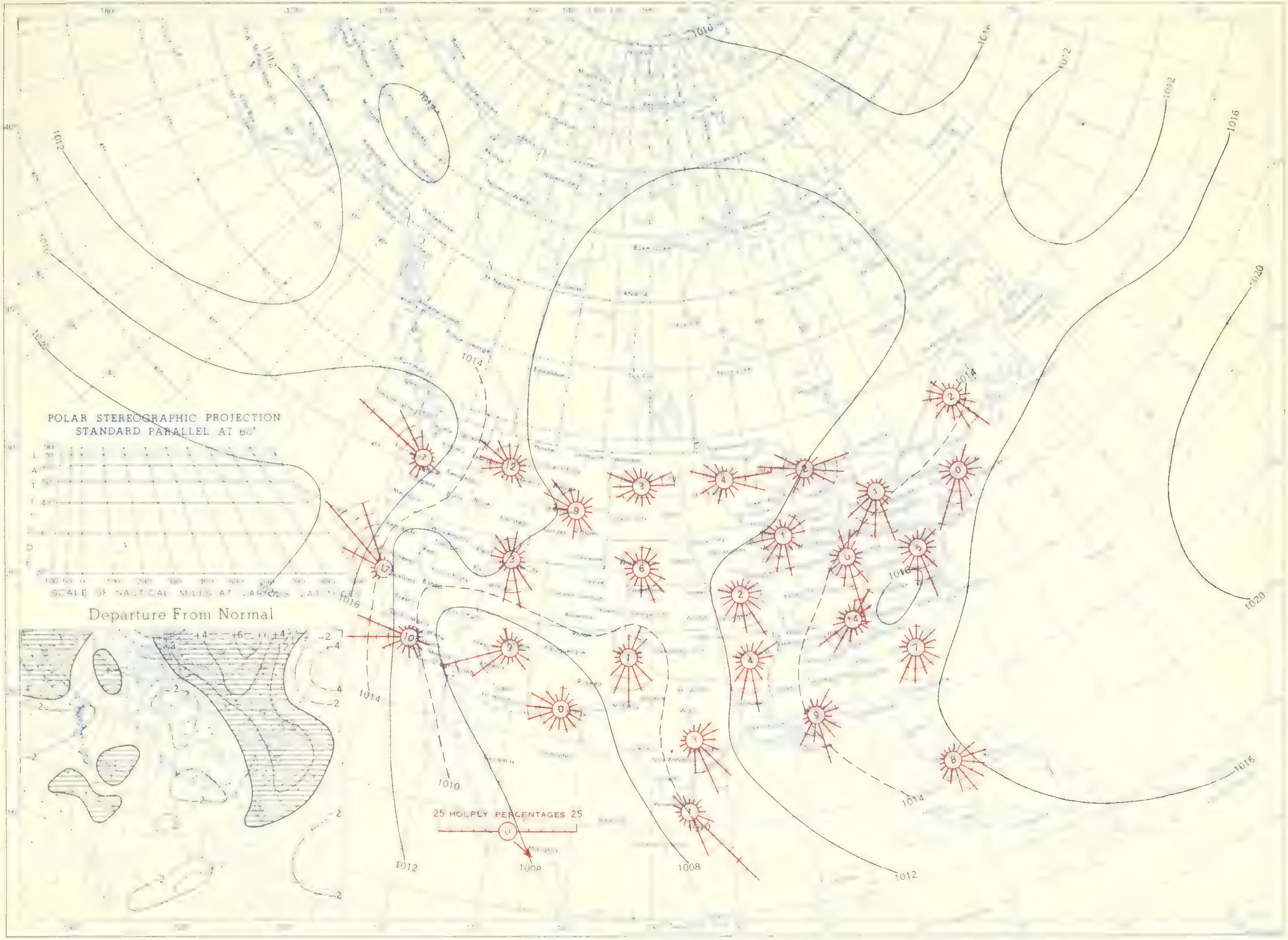
Chart X. Tracks of Centers of Cyclones at Sea Level, June 1957.



Circle indicates position of center at 7:00 a. m. E. S. T. See Chart IX for explanation of symbols.

Chart XI. Average Sea Level Pressure (mb.) and Surface Windroses, June 1957. Inset: Departure of Average Pressure (mb.) from Normal, June 1957.



Average sea level pressures are obtained from the averages of the 7:00 a. m. and 7:00 p. m. E. S. T. readings. Windroses show percentage of time wind blew from 16 compass points or was calm during the month. Pressure normals are computed for stations having at least 10 years of record and for 10° intersections in a diamond grid based on readings from the Historical Weather Maps (1899-1939) for the 20 years of most complete data coverage prior to 1940.

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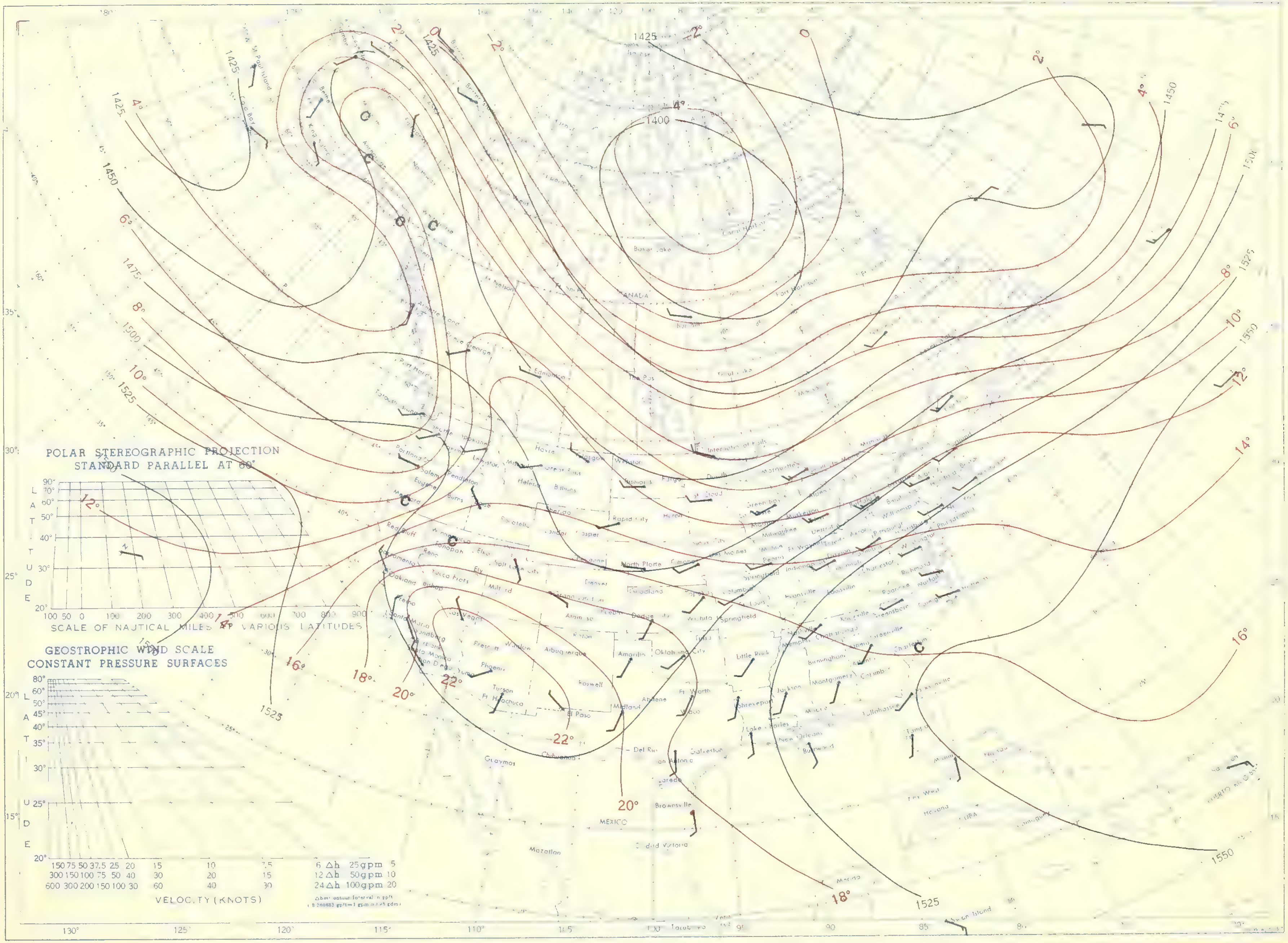
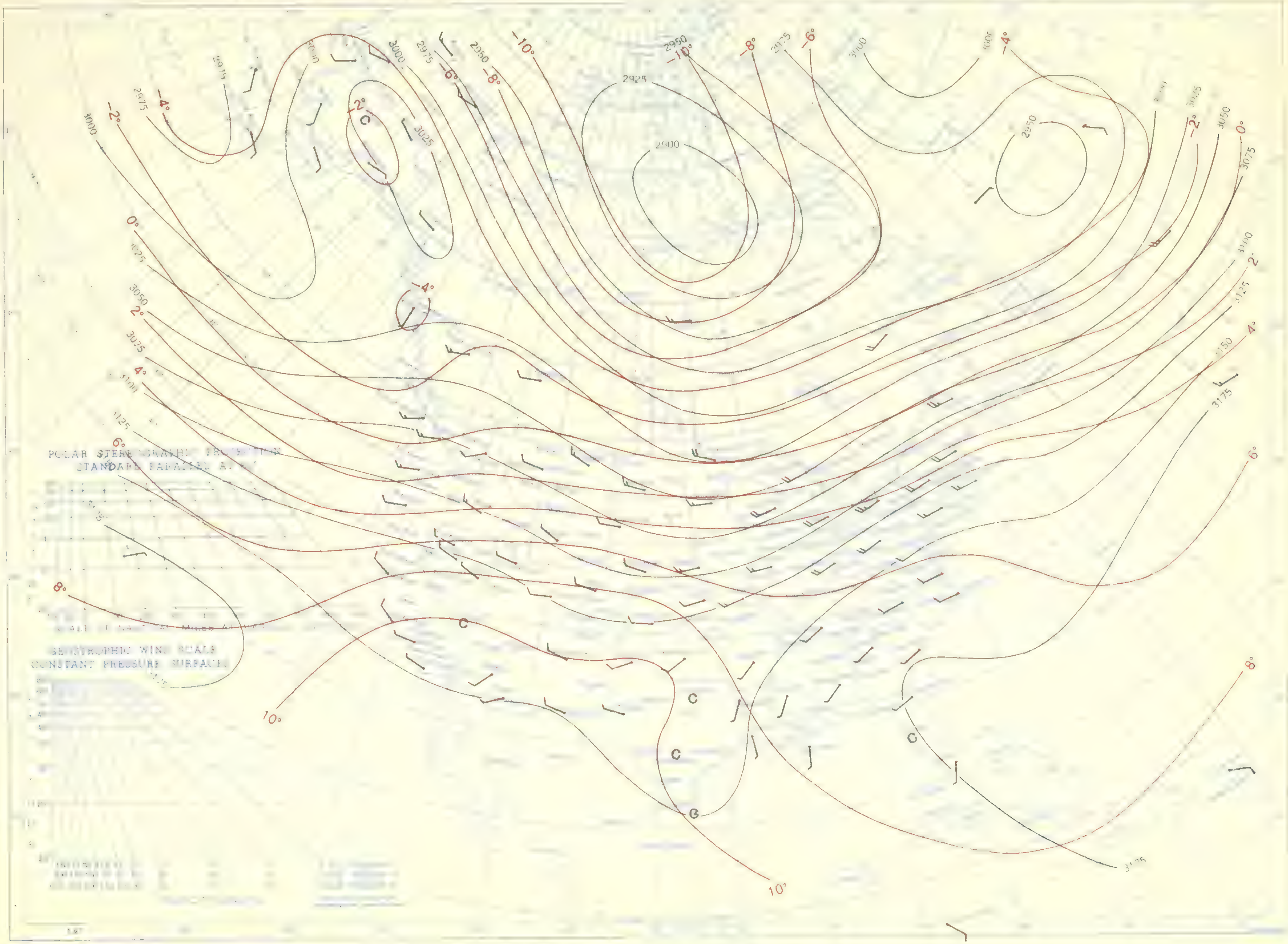
Chart XII. 850-mb. Surface, 1200 GMT, June 1957. Average Height and Temperature, and Resultant Winds.



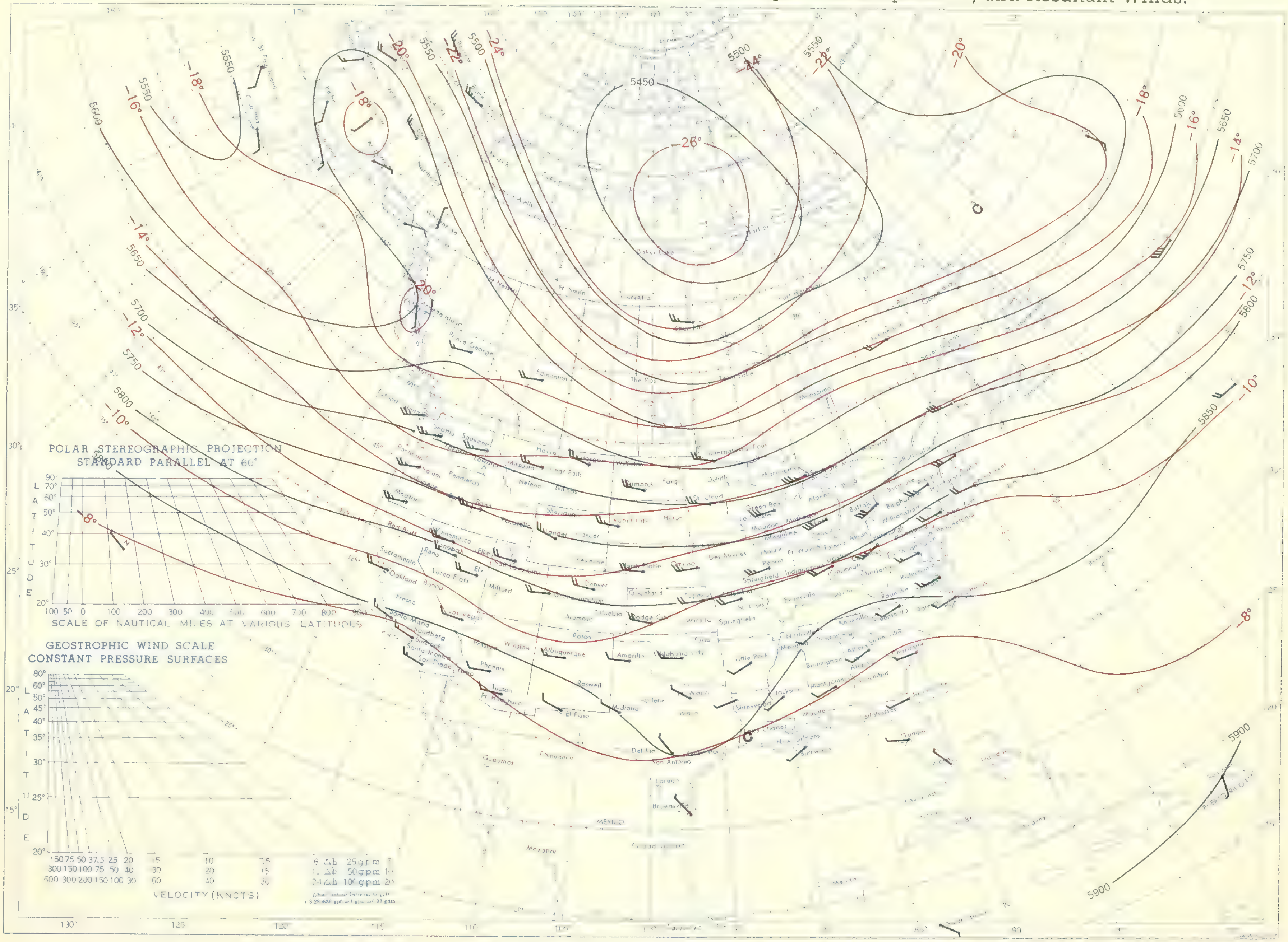
Height in geopotential meters (1 g.p.m. = 0.98 dynamic meters). Temperature in °C. Wind speed in knots; flag represents 50 knots, full feather 10 knots, and half feather 5 knots. All wind data are based on rawin observations.

Chart XIII. 700-mb. Surface, 1200 GMT, June 1957. Average Height and Temperature, and Resultant Winds.



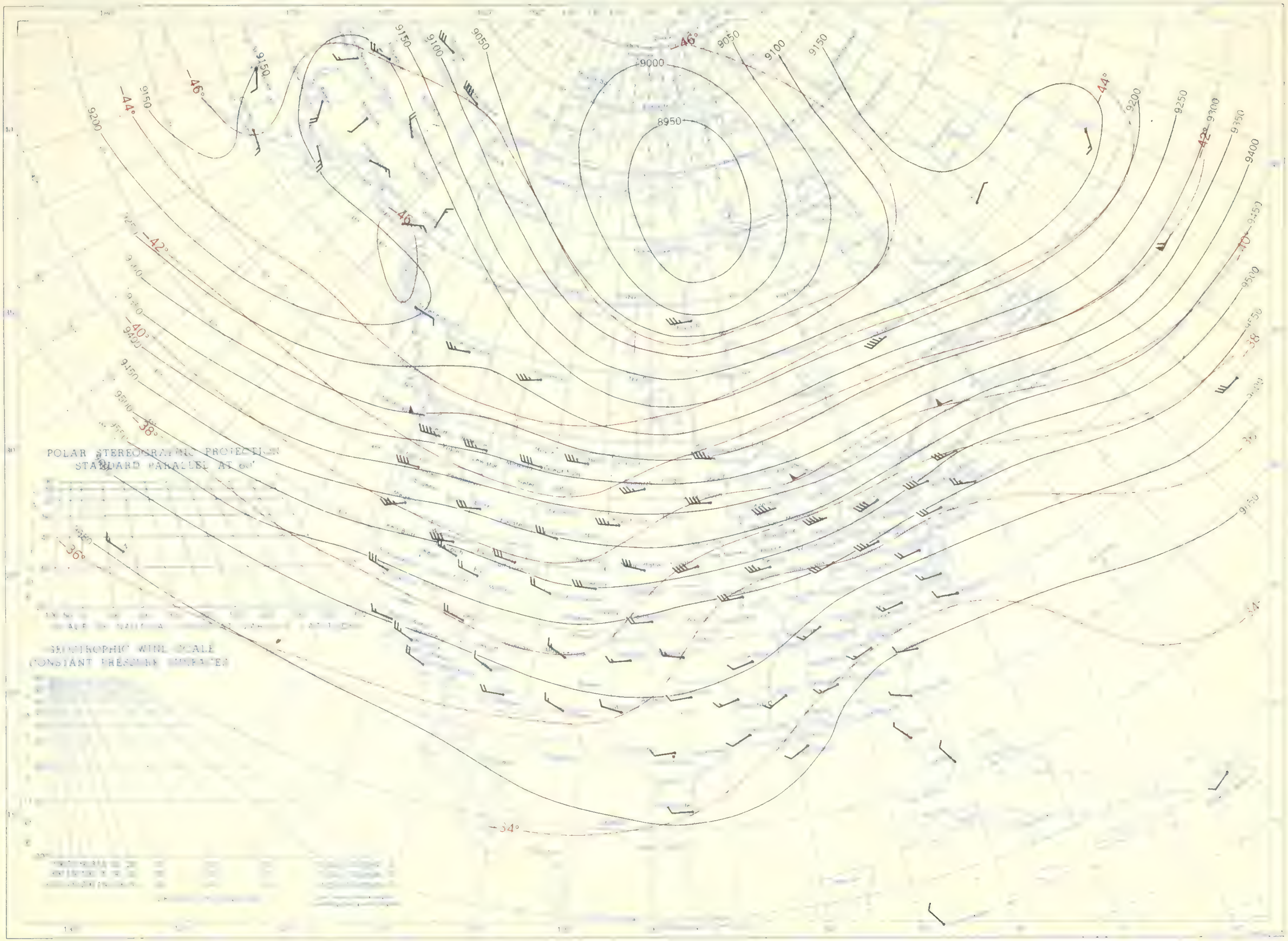
See Chart XII for explanation of map.

Chart XIV. 500-mb. Surface, 1200 GMT, June 1957. Average Height and Temperature, and Resultant Winds.



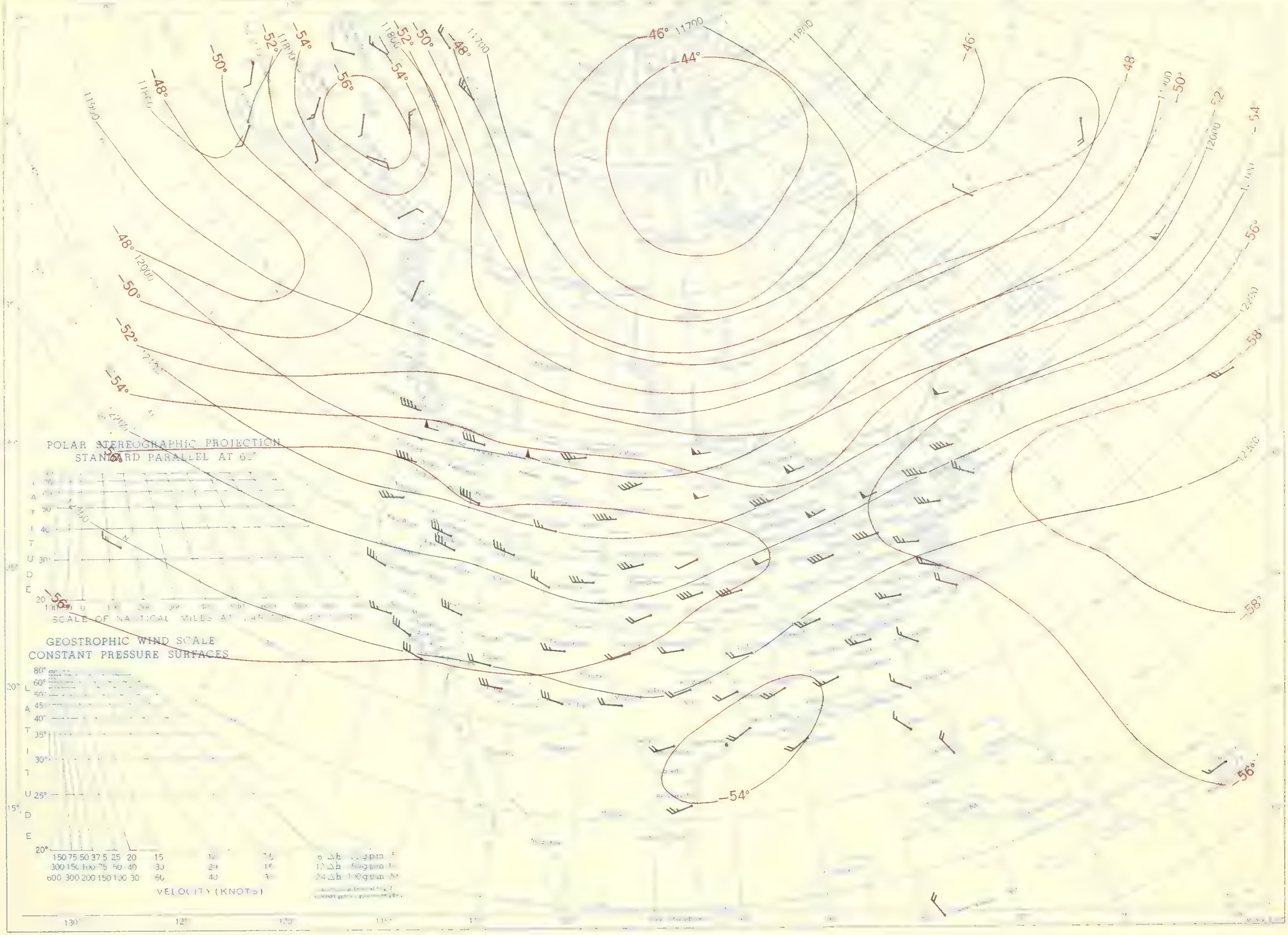
See Chart XII for explanation of map.

Chart XV. 300-mb. Surface, 1200 GMT, June 1957. Average Height and Temperature, and Resultant Winds.



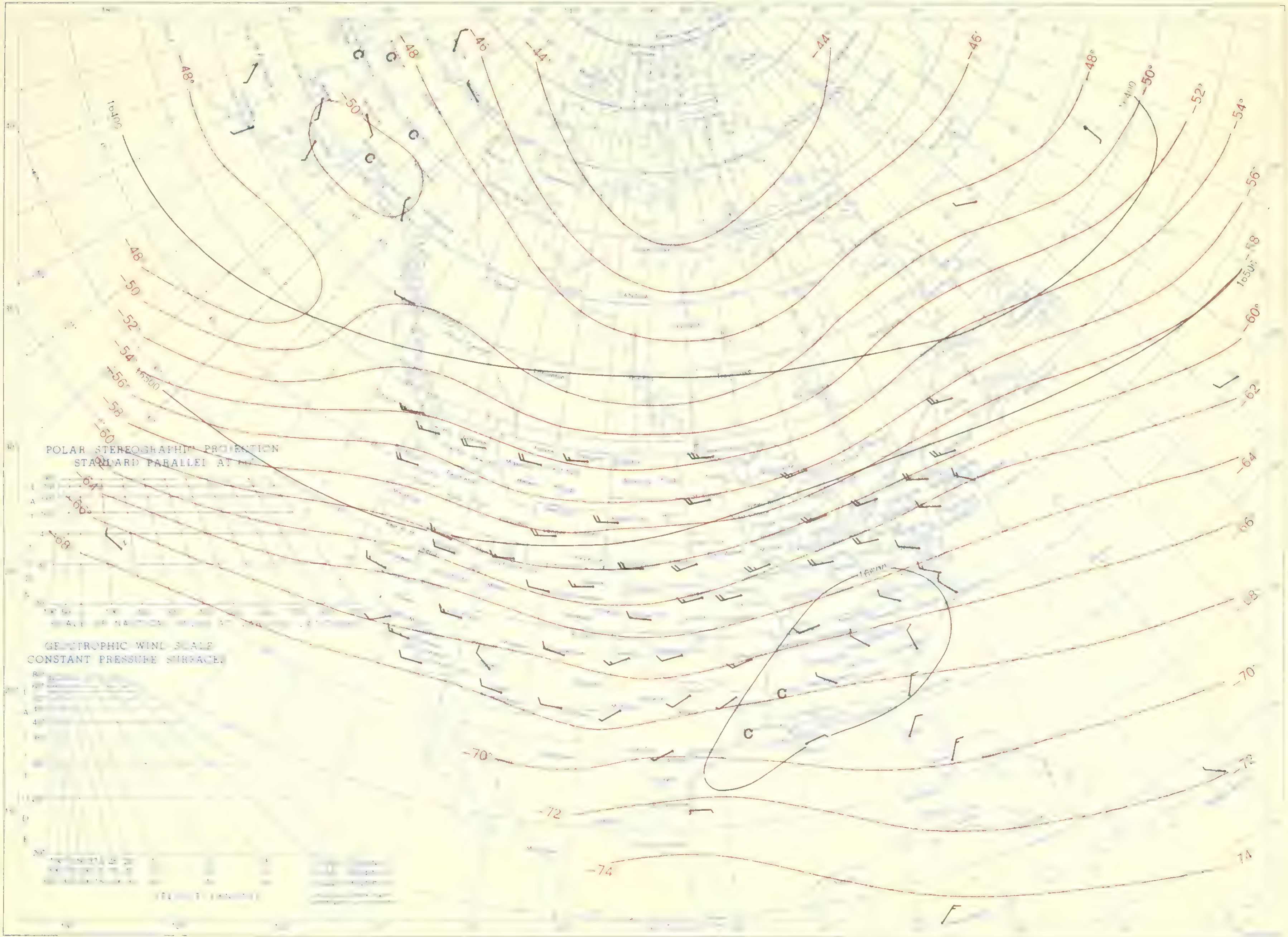
See Chart XII for explanation of map.

Chart XVI. 200-mb. Surface, 1200 GMT, June 1957. Average Height and Temperature, and Resultant Winds.



See Chart XII for explanation of map.

Chart XVII. 100-mb. Surface, 1200 GMT, June 1957. Average Height and Temperature, and Resultant Winds.



See Chart XII for explanation of map.

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JULY 1957
Volume 8 No. 7

ASHEVILLE: 1957

CONTENTS

SURFACE DATA

Page

General Summary of Weather Conditions---------------------- 323

Condensed Climatological Data - States--------------------- 324

Climatological Data - Stations----------------------------- 325

Heating Degree Days-- 329

Storm Data and Unusual Weather Phenomena------------------ 330

General Summary of River and Flood Conditions------------- 357

Flood Stage Data--- 359

UPPER AIR DATA

Rawinsonde Data-- 360

SOLAR RADIATION DATA

Solar Radiation Intensities-------------------------------- 366

Blue Hill Data--- 367

Net Radiation-- 367

Daily Totals and Average Daily Totals by Weeks------------ 368

CHARTS I-XVII

NOTE.--This publication contains all of the climatic data formerly printed in the MONTHLY WEATHER REVIEW.

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CLIMATOLOGICAL DATA

NATIONAL SUMMARY

Volume 8 No. 7 JULY 1957

GENERAL SUMMARY OF WEATHER CONDITIONS

Continued dry weather and drought along the Atlantic coast from Virginia to southern New England was the outstanding weather event of the month. In the upper Mississippi Valley heavy local rains again caused numerous flash floods, the most notable occurring in the Chicago area. In the western States the weather was drier than usual except in the lower Rocky Mountain region where more than the usual amount of July rain fell after the beginning of the thunderstorm season the second week. Crops did well, however, owing to good soil moisture reserves built up by spring and early summer rains and adequate irrigation water in most sections. The month was extremely dry in Texas and Oklahoma, in sharp contrast to heavy rains of the three previous months.

Temperaturewise the month was unusually warm in the Far Southwest and lower Great Plains, and on the cool side in the Pacific Northwest. In most of the country the range of temperature fluctuations was less than usual.

TEMPERATURE.--Temperatures averaged slightly above normal between the Rocky Mountains and the Mississippi River, along the California and Gulf coasts, and along the middle Atlantic coast, and slightly below elsewhere. Extreme temperatures for the month ranged from 122° at Cow Creek, Calif., on the 5th, to 21° at Wayan, Idaho, on the 21st.

Above normal temperatures were most persistent along the lower California coast, and both San Diego and Los Angeles reported an unusually hot month, with temperatures in the latter city above normal every day. In the far southwestern interior temperatures were at unusually high levels early in the month. In New Mexico, Albuquerque recorded an all-time high of 104° on the 3d. At Yuma, Ariz., the temperature for the month averaged 96.3° and maximum temperatures averaged 110.8°, both new records; also, the maximum reached 110° or higher on 21 days.

Above normal temperatures also persisted in the Great Plains until the last week when they dropped below normal in some sections for a few days. In the northern Plains the daily maximum reached or exceeded 100° at many stations on several days during the second decade. In Oklahoma and Texas the month was among the hottest of record, although daily extremes were not unusual. In the latter State daily maxima equaled or exceeded 90° at virtually all stations on 20 days or more during the month.

In the coastal areas from Virginia to southern New England temperatures for the month averaged only slightly above normal, but some unusually hot days occurred during the latter part of the month. The hottest period in most of this area occurred on the 20th, 21st, and 22d. In the Nation's Capital maximum temperatures on these days were 95°, 101°, and 101° downtown. Trenton, N. J., registered 100° on the 21st and 22d, the first such consecutive occurrence since 1936.

On a normal basis the Pacific Northwest was the coolest part of the Nation. The monthly maximum for the State of Washington was 102°, the lowest on record. However, the relatively cool weather in this area had no adverse effects upon crops.

PRECIPITATION.--Precipitation generally was very light and below normal west of the Continental Divide, and in Montana and northern Wyoming, Texas and Oklahoma, and the lower Appalachian region, and along the middle Atlantic coast. Elsewhere monthly amounts ranged from about normal to much above. The heaviest amounts generally were recorded in the Mississippi Basin, the Great Lakes region, and Florida. Extreme monthly totals for the month ranged from 16.52 inches at Daytona Beach, Fla., to none at all at over 300 stations in the Far West.

The month's worst dry area extended from eastern North Carolina to southern New England, where rainfall deficits for the year ranged up to 10 inches. Severe drought gripped Rhode Island, southeastern Massachusetts, and parts of Connecticut, New Jersey, extreme southeastern Pennsylvania, Delaware, central and eastern Maryland, and much of eastern Virginia. In this area periods of high temperatures and less than 50 percent of normal precipitation greatly reduced some crop prospects, particularly corn and tobacco.

In the southern Appalachian region rainfall for July was also less than 50 percent of normal and signs of developing drought were showing up in some sections by the end of the month. Conditions, however, were not yet critical in this area due to soil moisture reserves built up by good rains in previous months.

In Texas and Oklahoma, an extremely dry month with less than an inch of rain in many sections and persistent high temperatures depleted topsoil moisture and rain generally was needed by the end of the month. Subsoil moisture, however, enabled crops generally to make good growth.

In the Mississippi Valley and Great Lakes region monthly rainfall totaled 10 inches or more at several stations and over 2 inches at most stations. Numerous local heavy rains were responsible for prolonged flooding in the Indiana-Illinois area and a number of flash floods in this and surrounding areas. Many of these flash floods occurred during the second week from Kansas to Michigan, the most damaging, perhaps, occurring in the Chicago area where 6 to 10 inches of rain fell on the 12th and 13th. On the 12th 5.50 inches fell at Chicago in a 6-hour period and 6.24 inches in a period of 12-1/2 hours, both new records. Damage from resulting floods was estimated in the millions of dollars.

SEVERE STORMS.--Damaging storms were not nearly so numerous in July as in the 2 previous months, and damage was less than usual except in north central areas where frequent thunderstorms occurred. A high fire hazard existed in the Far West and fires started by lightning caused hundreds of thousands of dollars damage in the Tonto National Forest in Arizona on the 6th and 7th.

CONDENSED CLIMATOLOGICAL SUMMARY

JULY 1957

Section	Temperature						Precipitation			
	Monthly extremes						Monthly extremes			
	Station	Highest	Date	Station	Lowest	Date	Station	Greatest	Station	Least
		°F			°F			In.		In.
Alabama	2 Stations	101	9+	Russellville 2	51	7	Chatom	7.26	Mertz Pondville Tower	0.53
Arizona	do	119	15+	Fort Valley	35	1	Chiricahua Nat. Mon.	5.99	5 Stations	T
Arkansas	Ozark	105	29	Batesville Livestock	52	6	Searcy	9.98	El Dorado CAA AP	.67
California	Cow Creek	122	5	Boca	28	31	Klamath	1.58	317 Stations	.00
Colorado	Holly	110	7	3 Stations	27	5+	Lake Moraine	7.86	Fort Collins	.43
Connecticut	Bridgeport WB AP	103	22	Coventry	34	3	Woodbury 3W	5.23	Putnam	.61
Delaware	Middletown 2S	104	22	2 Stations	49	3	Middletown 2S	2.23	Georgetown 5SW	.37
Florida	4 Stations	100	9+	do	62	3+	Daytona Beach	16.52	Marathon Vaca Key	1.36
Georgia	3 Stations	102	10+	Blairsville Exp Sta	50	6+	Savannah USDA Pl Gard	15.20	Hiawassee	.18
Idaho	Swan Falls PH	109	5	Wayan 1N	21	4	Wallace	2.04	18 Stations	.00
Illinois	Quincy	104	13	2 Stations	50	23+	Vandalia CAA AP	10.77	Havana	.36
Indiana	Edwardsport Pwr Plt	99	21	Warsaw	47	10	Fowler	9.25	Tell City	.63
Iowa	3 Stations	104	12+	2 Stations	49	24	Marshalltown	8.28	Bedford	.51
Kansas	Syracuse 2WNW	109	7	Atwood	49	5	Tescott	7.20	Hugoton	.10
Kentucky	Ashland Dam 29	99	20+	2 Stations	49	11+	Benton 2	9.66	Middlesboro	.70
Louisiana	Donaldsonville	101	13	Arcadia	58	7	New Orleans Jourdan	11.31	Robson	.50
Maine	Portland	95	20	Cupsuptic Storehouse	36	3	Caribou WB AP	6.83	Portland	1.27
Maryland	2 Stations	105	21+	2 Stations	40	2	Frostburg	4.44	Waldorf Police Brks	.28
Massachusetts	West Medway	101	20	West Cummington	34	3	Adams	4.78	West Medway	.11
Michigan	6 Stations	96	18+	Kenton U. S. Forest	33	15	Harrison	10.46	Huron Mountain	.73
Minnesota	Madison	102	18	Itasca State Pk Sch	44	9	Spring Grove 1NW	11.30	Milan	73
Mississippi	Picayune 4S	102	10	Pontotoc Exp Sta	54	6	Grenada	9.42	Prentiss 2NNE	.84
Missouri	Brookfield	105	13	2 Stations	49	25	Edina	8.39	Conception	.32
Montana	Miles City	106	10	3 Stations	26	4+	Circle 7N	3.98	Fairfield	.00
Nebraska	Ashland 3NE	109	11	Mullen 21NW	41	5	Sidney	7.94	Rosemont 2S	.21
Nevada	2 Stations	115	5+	Mountain City RS	27	21	North Las Vegas Dox	1.05	11 Stations	.00
New Hampshire	Windham	97	20	Fabyan	31	3	Mt. Washington	10.70	Nashua 3N	1.51
New Jersey	Runyon	106	22	Layton 3NW	36	3	High Point Park	4.89	Atlantic City WB	.31
New Mexico	Aleman Ranch	111	4	Tererro	30	1	Kelly Ranch	7.70	Carlsbad	.26
New York	Hampstead Malverne	102	22	Old Forge 2SW	35	2	Hooker	8.61	Churchville	1.01
North Carolina	Jackson	103	14	Bluff	40	2+	Moncure 3SE	7.36	Andrews Dam	.27
North Dakota	Maddock Agr. School	104	10	Willow City	42	5	Warwick	8.40	2 Stations	.66
Ohio	2 Stations	101	20+	2 Stations	41	2+	Urbana Grimes Field	5.19	Summerfield 3NE	1.02
Oklahoma	do	110	29	do	54	5+	Ardmore	6.32	2 Stations	.04
Oregon	Ontario KSRV	104	5	Fremont	18	17	Astoria	1.92	10 Stations	.00
Pennsylvania	Phoenixville 1E	105	21	Kane 1NNE	32	2	Pleasant Mount 1W	6.27	Philadelphia WB AP	.64
Rhode Island	Greenville	99	20+	Kingston	40	3	Block Island WB AP	1.84	Greenville	28
South Carolina	6 Stations	102	9+	3 Stations	55	21+	Edisto Island 6SW	14.90	Pelion	.21
South Dakota	3 Stations	107	17	Deerfield 5NW	31	5	Forestburg 3NE	6.20	Watertown CAA AP	.46
Tennessee	Jackson CAA AP	99	17	Mountain City 2	44	11	Johnsonville Stm Pl	7.15	Sewanee	.12
Texas	Presidio	115	1	Mount Locke	56	23+	Port Arthur WB AP	6.00	Several Stations	.00
Utah	St. George	108	5	Hardware Ranch	28	5	Bryce Canyon NP	2.90	3 Stations	.00
Vermont	Vernon	97	21	Mount Mansfield	26	10	Canaan	7.03	Vernon	1.32
Virginia	Back Bay Wildlife Rfg.	103	23	Burkes Garden	42	11	Hillsville 1NW	6.43	Partlow	.38
Washington	5 Stations	102	5+	Glacier RS	26	2	Quinault RS	6.43	6 Stations	.00
West Virginia	2 Stations	102	21	Canaan Valley	37	3	Flat Top	5.79	Omps	1.00
Wisconsin	5 Stations	97	7+	Laona 4SSW	39	24	Darlington	7.54	Fort Atkinson 2SSE	1.12
Wyoming	Arvada 3N	104	6	Bondurant	22	4	Albin	5.51	2 Stations	.00
Puerto Rico	3 Stations	98	15+	Garzas Dam	60	1+	Mayaguez Airport	10.17	Culebra Island	.23
Hawaii	Puunene CAA AP	98	14	Mauna Loa Slope Obs.	32	18	Pepeekeo AF	29.40	4 Stations	.00

+ And also on a later date or dates.

Note: Dates in Table 1 apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for times of observations).

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure		Temperature												Precipitation							Wind					No. of days (sunrise to sunset)				
		Ø										No of days							No of days		Snow, Sleet				Fastest mile							
		Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F or above	Min 32° F or below	Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy	Sky cover tenths, sunrise to sunset	[illegible]
	Ft	Mb	Mb	°F	°F	°F	°F	°F		°F				°F	%	In	In	In			In	In	M p. h.		M p. h.			0–3	4–7	8–10	0–10	
ALABAMA																																
Birmingham	610	990.8	1015.8	90	70	79.9	0.3	96	9	61	6+	16	0	68	70	2.62	-1.49	0.76	5	6	0.0	0	6.5	ENE	25	NE	19	5	10	[illegible]	6.1	[illegible]
Mobile	211	1007.4	1015.5	92	73	82.6	1.9	97	5+	68	12	25	0	72	75	4.32	-4.65	2.34	11	14	.0	0	7.9	NE	--	---	--	6	14	[illegible]	5.9	-
Montgomery	198	1007.8	1015.3	92	72	81.6	.4	97	8+	67	11	21	0	71	74	3.24	-2.52	1.12	10	8	.0	0	5.7	NE	32	SE	16	10	11	10	5.6	[illegible]
ARIZONA																																
Flagstaff	6993	------	------	80	49	64.8	-.4	88	3+	43	12	0	0	--	--	1.57	-.92	.89	10	18	0	0	--	---	--	-	-	4	19	8	[illegible]	[illegible]
Phoenix	1114	971.2	1008.7	103	80	91.4	1.3	112	31	71	17	30	0	60	39	.72	.02	.58	3	9	0	0	5.9	SE	*37	SE	31	11	13	[illegible]	[illegible]	[illegible]
Prescott	5014	849.3	1012.2	90	62	75.8	-.2	100	4	55	12	16	0	50	--	2.05	-.66	.56	12	17	0	0	7.8	SSW	31	S	5	1	20	[illegible]	[illegible]	[illegible]
Tucson	2558	923.5	1009.2	101	76	88.1	1.9	109	30	69	10	30	0	57	40	1.25	-.55	.42	13	17	0	0	7.7	SE	42	SE	[illegible]	7	16	8	[illegible]	[illegible]
Winslow	4880	852.7	1010.3	91	63	77.1	-.1	100	2+	57	1+	24	0	50	45	2.26	1.02	1.09	11	14	0	0	7.2	SE	*33	WNW	7	8	11	12	[illegible]	[illegible]
Yuma	199	1002.4	1007.6	111	82	96.3	1.7	119	31	75	24	31	0	53	27	T	-.23	T	0	0	0	0	9.5	SE	36	S	31	23	8	[illegible]	[illegible]	[illegible]
ARKANSAS																																
Fort Smith	458	998.0	1014.2	96	73	84.8	2.5	104	29	65	6	29	0	72	70	.80	-1.76	.48	4	9	0	0	7.0	ENE	27	NW	1	17	11	[illegible]	[illegible]	[illegible]
Little Rock	257	1002.0	1015.0	93	73	82.7	.8	100	15	67	6+	26	0	70	69	2.80	-.30	1.74	8	9	0	0	7.6	SSW	47	NE	29	10	12	9	[illegible]	[illegible]
Texarkana	361	------	------	93	73	83.3	.4	99	29	68	6	28	0	--	--	1.95	-1.99	1.01	9	7	0	0	5.9	SSW	--	---	--	--	--	--	-	-
CALIFORNIA																																
Bakersfield	489	993.6	1011.3	99	68	83.4	-.8	104	5+	62	23	31	0	50	34	T	-.01	T	0	0	0	0	6.1	NW	*20	NW	17	29	2	0	[illegible]	
Bishop	4108	873.4	1011.2	97	53	74.9	-.6	103	5	45	27	31	0	--	--	01	-.09	.01	1	4	0	0	---	---	--	---	--	25	6	[illegible]	1.5	
Blue Canyon	5280	840.8	1012.2	76	57	66.4	-1.4	82	4	51	14	0	0	--	-	T	-.03	T	0	1	0	0	---	---	-	---	-	28	2	1	1.1	-
Burbank	699	986.5	1012.5	90	63	76.4	3.2	105	3	57	1+	16	0	58	59	T	.00	T	0	0	0	0	5.0	S	*16	ESE	2	25	6	0	1.8	
Eureka (U)	43	1015.2	1017.6	61	52	56.7	.3	73	13	48	27	0	0	--	--	.34	.25	.27	5	0	0	0	6.8	---	29	NW	16	7	12	12	5.8	[illegible]
Fresno	331	999.0	1010.7	97	64	80.2	-1.9	103	5	58	22	30	0	49	38	T	-.01	T	0	0	0	0	6.6	NW	21	N	6	28	3	0	.7	[illegible]
Los Angeles (U)	312	------	------	87	65	76.0	3.5	102	4	61	1+	9	0	60	64	T	.00	T	0	0	0	0	5.6	---	19	S	2	23	8	0	2.1	[illegible]
Los Angeles	99	1008.8	1012.5	80	65	72.3	4.7	93	4	62	1+	1	0	61	72	.03	.03	.03	1	1	0	0	7.8	WSW	*22	W	19	16	14	1	3.0	
Mt. Shasta (R)	3544	892.3	1014.6	82	48	65.0	-2.2	90	4+	43	19+	2	0	--	--	.01	-.18	.01	1	1	0	0	---	---	--	---	--	26	3	2	1.6	--
Oakland	3	1013.9	1014.1	75	57	66.0	3.3	90	4	54	3+	1	0	54	72	T	-.01	T	0	0	0	0	8.7	WNW	*22	WNW	14	22	9	0	[illegible]	
Red Bluff	341	999.0	1011.3	97	66	81.6	-1.6	105	4	60	19+	30	0	44	29	T	-.02	T	0	0	0	0	8.5	SSE	27	SE	13	28	1	2	[illegible]	[illegible]
Sacramento	17	1010.5	1011.4	93	59	75.7	1.1	102	4+	53	2	22	0	54	53	T	.00	T	0	0	0	0	11.3	SSW	29	S	18	28	3	0	[illegible]	[illegible]
Sandberg (R)	4517	863.5	1011.9	85	63	74.0	.1	93	30	54	21	6	0	--	--	T	-.02	T	0	0	0	0	13.5	--	*30	NNW	[illegible]	[illegible]	4	[illegible]	[illegible]	--
San Diego	19	1008.8	1012.0	78	65	71.3	2.0	89	4	62	23	0	0	62	75	T	-.01	T	0	1	0	0	7.2	SSW	16	SW	2+	18	10	[illegible]	[illegible]	[illegible]
San Francisco (U)	52	------	------	66	54	59.6	.7	76	15	51	5+	0	0	-	--	01	00	.01	1	0	0	0	10.5	---	26	W	4+	18	12	1	[illegible]	[illegible]
San Francisco	8	1013.5	1014.2	75	54	64.2	3.8	86	6	50	31	0	0	52	69	T	-.01	T	0	0	0	0	8.7	NW	35	WNW	9+	26	5	[illegible]	[illegible]	-
Santa Maria	238	1005.1	1013.8	74	53	63.5	1.3	98	6	48	8	1	0	54	75	.02	-.01	.02	1	2	0	0	6.8	WNW	*21	WNW	7	20	10	1	[illegible]	--
COLORADO																																
Alamosa	7536	777.2	1018.0	80	51	65.1	1.0	90	2+	45	2	2	0	--	--	2.45	1.58	.85	17	18	0	0	---	---	--	---	--	5	16	10	6.0	--
Colorado Springs	6173	814.8	1014.3	85	58	71.5	.3	98	3	52	1+	9	0	50	56	3.65	.93	1.02	15	19	.0	0	8.0	NNW	*26	NNE	7	10	16	5	5.0	-
Denver	5292	840.8	1013.5	87	61	73.5	.7	97	2	57	5+	12	0	49	49	1.29	-.07	.44	9	10	0	0	10.5	SSW	29	NE	20	9	13	9	5.3	69
Grand Junction	4849	860.8	1013.3	89	63	76.1	-2.1	97	2	53	24	17	0	46	40	57	-.22	.46	4	7	0	0	10.1	ESE	42	SW	6	11	15	5	4.6	77
Pueblo	4639	859.1	1013.9	91	62	76.5	1.6	100	2+	57	1+	18	0	53	52	2.29	.48	.92	12	14	0	0	7.0	W	38	SW	16	7	17	7	5.2	76
CONNECTICUT																																
Bridgeport	7	1013.4	------	84	64	74.3	1.5	103	22	56	3	6	0	--	--	2.84	-1.13	1.54	9	6	0	0	---	---	--	---	--	11	12	8	5.2	-
Hartford	169	1007.5	1013.4	84	60	72.0	-1.8	96	20+	48	3	7	0	60	69	2.65	-.91	.98	11	7	0	0	10.3	S	31	W	5	6	17	8	5.8	63
Middletown (U)	133	1008.3	------	84	60	71.9	----	98	22	48	3	5	0	--	--	2.69	----	1.36	12	8	.0	0	7.5	---	%43	WNW	22	--	--	--	---	--
New Haven	6	1012.9	1013.5	82	63	72.3	1.1	100	22	55	2	2	0	--	--	1.35	-2.31	.81	8	7	.0	0	6.5	---	21	NW	22	10	13	8	5.2	73
DELAWARE																																
Wilmington	78	1011.2	1014.7	88	64	75.9	.0	102	21	53	2	12	0	61	62	1.33	-3.16	.64	6	1	0	0	9.8	W	--	---	--	5	19	7	5.8	--
DIST. OF COLUMBIA																																
Washington (U)	72	------	------	89	69	78.8	1.0	101	22	58	3	13	0	--	--	1.00	-3.11	.44	8	4	.0	0	5.5	---	29	SE	30+	--	--	--	---	--
Wash. Nat'l. AP	14	1010.5	1015.2	90	69	79.2	1.9	101	21+	59	3	16	0	61	57	1.05	-3.21	.70	6	4	.0	0	9.5	SSW	35	NW	31	7	17	7	5.5	71
FLORIDA																																
Apalachicola (U)	13	1013.0	1014.3	88	77	82.5	1.2	94	2	74	25+	12	0	--	--	6.62	-.94	1.31	13	13	0	0	5.9	---	32	NW	2	7	10	14	6.1	[illegible]
Daytona Beach	31	1013.8	1016.1	90	72	80.8	.0	95	1+	69	13	17	0	73	84	10.53	3.42	2.56	18	16	.0	0	7.9	S	*33	SSW	5	3	13	15	[illegible]	--
Fort Myers	15	1015.4	------	91	73	82.2	.2	94	17	68	8	25	0	--	--	12.52	3.80	2.80	19	23	0	0	6.9	---	*37	NNE	8	1	18	12	7.0	-
Jacksonville	24	1014.3	1015.5	92	74	83.1	1.0	98	10+	70	12	25	0	72	77	12.54	4.70	2.14	16	13	0	0	8.1	WSW	28	S	18	1	13	17	7.2	[illegible]
Key West (U)	[illegible]	1015.4	------	93	79	86.1	2.4	95	2+	76	11+	31	0	--	--	3.86	-.38	1.11	12	13	0	0	5.2	---	18	S	17	0	28	3	[illegible]	70
Lakeland (U)	214	------	------	90	74	81.9	.7	96	23	70	10+	20	0	--	--	5.94	-2.22	1.80	20	22	0	0	5.7	---	--	---	--	1	18	12	6.7	49
Miami (U)	7	------	------	88	77	82.3	.7	94	3	68	12	6	0	--	--	8.38	[illegible]	2.83	15	15	0	0	8.6	---	42	SW	12	4	22	5	5.6	63
Miami	8	1015.2	1016.4	89	74	81.7	-.9	93	31	71	13+	12	0	73	81	9.54	2.81	3.70	16	20	0	0	6.5	SW	*29	SW	4	0	22	9	6.7	-
Miami Beach	9	------	------	89	80	84.3	1.8	94	2	71	14	8	0	--	--	5.07	1.24	1.80	16	[illegible]	0	0	---	---	--	---	--	13	8	10	-	-
Orlando	106	1011.3	1015.7	92	73	82.6	.5	97	10	70	13+	24	0	73	79	4.35	3.35	1.76	14	18	.0	0	7.2	SW	*30	SW	30	3	16	12	6.3	-
Pensacola (U)	13	1012.6	------	91	77	83.8	2.8	98	10	73	27	21	0	--	-	4.40	-3.19	1.49	[illegible]	9	.0	0	7.2	---	21	W	3+	--	--	--	---	-
Tallahassee	64	1012.2	1015.0	90	73	81.4	.4	95	10	70	12+	19	0	72	80	8.89	1.02	2.92	13	13	.0	0	4.9	ENE	--	---	--	0	20	11	6.9	-
Tampa	19	1014.5	1016.1	89	75	81.8	.1	92	8+	70	13+	15	0	74	[illegible]	10.61	2.50	6.14	15	22	.0	0	8.3	W	18	W	3	1	17	13	6.9	71
West Palm Beach	15	1015.1	1016.2	92	74	82.9	.9	95	2	69	29	28	0	74	[illegible]	[illegible]	.30	[illegible]	[illegible]	19	0	0	7.7	S	*35	SSW	3+	0	17	14	[illegible]	-
GEORGIA																																
Athens	798	987.1	1015.9	90	68	79.1	-1.7	98	13	62	26	17	0	67	70	1.36	-3.45	.36	12	6	.0	0	8.1	ENE	*23	NW	24	10	13	8	[illegible]	-
Atlanta	975	975.6	1016.5	89	70	79.0	-.5	94	9+	64	6+	14	0	67	[illegible]	[illegible]	-1.25	[illegible]	8	4	.0	0	8.6	ENE	36	NW	5	10	11	10	5.5	[illegible]
Augusta	143	1008.5	1015.1	91	68	79.4	-1.6	100	23	63	7	20	0	69	[illegible]	[illegible]	-3.33	.60	8	7	0	0	5.7	NE	*22	ESE	19	11	9	11	5.7	
Columbus	385	1001.3	1015.2	91	70	80.5	-.4	97	14	65	30	20	0	--	--	1.74	[illegible]	.72	10	6	0	0	---	---	--	---	--	6	13	12	[illegible]	-
Macon	356	1001.[illegible]	1015.1	91	71	81.2	-1.2	100	14	67	20+	22	0	69	72	3.86	[illegible]	1.86	9	9	.0	0	8.0	NNE	26	NW	14+	10	11	10	5.4	[illegible]
Rome	637	992.9	------	92	66	79.1	-.9	98	31	58	7	24	0	--	--	1.72	-2.99	.64	7	5	.0	0	---	---	--	---	--	11	11	9	5.1	-
Savannah	48	1012.6	1015.2	89	70	79.3	-1.9	97	10	67	7+	13	0	71	80	13.93	6.84	6.36	18	13	.0	0	7.2	NE	40	N	6	8	9	14	6.3	[illegible]
Thomasville (U)	283	------	------	92	72	81.9	1.3	98	10	68	12	23	0	--	--	3.84	-3.18	.95	15	10	.0	0	--	---	--	---	--	--	--	--	---	-
IDAHO																																
Boise	2842	918.1	1011.[illegible]	89	57	73.2	-1.6	100	25	44	17	13	0	44	37	T	[illegible]	T	0	2	.0	0	9.2	NW	39	S	28	21	8	2	2.7	93
Idaho Falls 46W (R)	4933	849.6	1014.2	87	49	68.0	-1.2	93	9+	35	4	9	0	--	--	47	.03	.20	6	4	0	0	9.5	---	a33	WSW	3	-	--	--	---	--
Idaho Falls 42NW (R)	4790	------	------	90	47	68.3	.2	96	10+	39	5	16	0	--	--	14	-.37	.09	5	--	---	--	10.0	---	a32	SSW	3	-	--	-		--
Lewiston	1413	962.8	1013.4	87	56	71.5	-3.7	98	5	46	18	10	0	--	--	11	-.31	.08	2	3	.0	0	---	---	--	---	--	16	10	5	3.5	-
Pocatello	4444	863.2	1012.5	89	54	71.4	-1.3	95	13	44	4	16	0	43	40	44	-.32	.19	7	12	0	0	10.4	SW	42	S	25	16	13	2	3.5	84
ILLINOIS																																
Cairo (U)	314	1002.4	------	89	72	80.1	-1.1	97	17	64	11	15	0	--	--	5.28	2.68	1.59	12	8	0	0	6.3	---	28	N	4	7	13	11	5.8	75
Chicago	610	992.6	1015.2	85	68	76.4	1.8	95	7	61	10+	9	0	63	67	8.98	6.25	6.24	8	6	.0	0	7.0	SW	39	N	12	12	12	7	5.0	74
Moline	589	993.2	1014.6	87	67	76.7	1.2	96	7+	54	24	10	0	66	72	4.47	1.25	2.13	11	10	.0	0	7.9	E	32	NW	4	10	10	11	5.5	65
Peoria	654	992.9	1015.1	88	68	77.6	1.9	96	7	60	24+	11	0	66	70	2.00	-1.70	1.26	8	7	.0	0	9.7	S	34	NW	4	9	9	13	5.8	70
Springfield	589	992.6	1015.3	88	68	78.2	1.9	96	7	60	5+	13	0	67	71	4.60	1.49	1.90	10	11	0	0	8.8	SSW	57	N	13	11	9	11	5.3	75
INDIANA																																
Evansville	383	1000.3	1016.0	88	68	77.8	-.4	94	7+	58	11	15	0	67	72	2.73	-.27	1.20	10	6	.0	0	6.5	SW	34	NW	14+	9	11	11	5.6	64
Fort Wayne	801	984.8	1015.7	84	63	73.4	-.1	93	20	52	10	5	0	62	70	2.91	-.37	1.22	8	5	.0	0	9.1	ENE	38	SW	12	13	9	9	5.0	76
Indianapolis	793	987.5	1016.4	86	65	75.4	-.6	92	19+	58	10+	4	0	66	73	5.91	2.88	2.40	12	[illegible]	.0	0	9.1	SW	57	W	8	9	11	11	5.5	--
South Bend	768	987.8	1015.7	85	63	73.7	.3	93	19	51	24	7	0	63	72	2.39	-.65	.64	9	8	.0	0	8.5	SSW	*29	SSW	4	13	9	9	4.7	--

See footnotes at end of table.

CLEMSON

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure: Station Ø	Pressure: Sea level	Temperature: Average maximum	Temperature: Average minimum	Temperature: Average	Temperature: Departure from normal	Temperature: Highest	Temperature: Date	Temperature: Lowest	Temperature: Date	Temperature: No. of days: Max. 90° F. or above	Temperature: No. of days: Min. 32° F. or below	Average dew point	Average relative humidity	Precipitation: Total	Precipitation: Departure from normal	Precipitation: Greatest in 24 hours	Precipitation: No. of days: .01 inch or more	Precipitation: No. of days: With thunderstorms	Snow, Sleet: Total	Snow, Sleet: Max. depth on ground	Wind: Average hourly speed	Wind: Prevailing direction	Wind: Fastest mile: Speed	Wind: Fastest mile: Direction	Wind: Fastest mile: Date	No. of days (sunrise to sunset): Clear	No. of days (sunrise to sunset): Partly cloudy	No. of days (sunrise to sunset): Cloudy	Sky cover, tenths (sunrise to sunset)	Possible sunshine
	Ft.	Mb	Mb.	°F	°F	°F	°F	°F		°F				°F.	%	In.	In.	In.			In.	In.	M. p. h.		M. p. h.			0–3	4–7	8–10	0–10	%
IOWA																																
Burlington	694	990.9	1015.7	89	68	78.3	1.5	99	17	57	24	15	0	68	72	3.91	0.48	2.40	8	9	0.0	0	8.8	SSW	30	NW	4	13	8	10	4.7	80
Des Moines	948	983.7	1014.4	90	69	79.7	3.5	102	12	59	24	16	0	67	69	2.47	-.47	1.14	8	6	.0	0	10.3	S	43	N	4	10	13	8	5.2	70
Dubuque	1065	989.8	1015.3	84	64	73.8	.5	94	7	53	24	6	0	64	72	6.94	3.53	1.83	9	9	.0	0	----	---	--	---	--	8	12	11	5.7	--
Sioux City	1094	972.6	1013.1	91	69	79.8	3.5	104	12	60	5	17	0	67	69	4.27	1.35	1.58	11	12	.0	0	11.3	SSE	61	N	4	12	13	6	4.5	74
Waterloo	870	------	------	88	66	76.8	2.3	101	12	54	24	12	0	--	--	2.87	-.89	.84	10	8	.0	0	10.6	---	--	---	--	--	--	--	---	--
KANSAS																																
Concordia (U)	1375	963.8	------	93	73	82.9	2.9	102	12+	58	5	21	0	--	59	1.11	-2.28	.47	6	6	.0	0	6.9	---	21	W	1	16	8	7	4.2	83
Dodge City	2594	927.2	1012.6	93	70	81.5	1.6	101	3	63	23	23	0	61	56	3.29	.64	1.89	7	8	.0	0	14.0	S	40	SW	20	17	8	6	4.0	86
Goodland	3645	888.9	1012.9	92	62	76.9	1.3	100	16	55	5	22	0	59	59	1.69	-1.11	1.05	11	13	.0	0	9.0	SSE	*27	N	7	15	12	4	3.9	--
Topeka	877	979.0	1013.9	91	70	80.5	1.3	99	13+	57	5	19	0	90	72	5.21	1.96	2.83	8	5	.0	0	10.0	S	31	S	7	13	11	7	4.6	72
Wichita	1321	965.5	1012.9	95	71	82.8	1.9	102	13	59	5	24	0	67	64	1.99	-1.44	1.04	4	5	.0	0	10.5	S	33	N	4	18	7	6	3.6	86
KENTUCKY																																
Lexington	979	981.1	1016.4	88	66	76.9	.3	95	22	56	10	13	0	64	69	.76	-3.49	.48	7	6	.0	0	8.1	SSW	--	---	--	12	9	10	5.1	--
Louisville	474	996.7	1015.7	87	68	77.6	-.3	92	15+	57	11	7	0	66	70	4.28	1.20	2.66	7	5	.0	0	6.6	SW	30	S	4	9	11	11	5.3	71
LOUISIANA																																
Baton Rouge	64	1012.5	1015.6	94	74	83.7	2.6	99	10+	68	7+	29	0	73	76	7.30	1.43	2.16	12	12	.0	0	6.1	W	--	---	--	5	16	10	5.9	--
Lake Charles	12	1013.5	1014.9	94	77	85.3	3.1	97	11+	71	7	29	0	74	73	2.92	-4.01	1.25	8	9	.0	0	5.2	SW	*21	NE	19	6	16	9	5.7	--
New Orleans (U)	9	1012.9	------	92	78	85.2	2.1	97	10	73	19	27	0	--	--	5.55	-1.54	2.04	12	8	.0	0	5.6	---	25	NE	10	11	14	6	4.8	66
New Orleans	3	1012.9	1014.9	92	76	84.2	2.4	97	10	73	23+	27	0	73	75	5.12	-.77	1.28	8	10	.0	0	5.5	SW	*31	NNE	10	13	12	6	4.9	--
Shreveport	252	1005.4	1014.9	94	74	83.8	.3	98	18+	69	13	28	0	71	70	3.26	-.44	1.32	9	6	.0	0	5.7	SE	--	---	--	18	6	7	4.0	79
MAINE																																
Caribou	624	987.5	1010.5	72	53	62.3	-1.7	86	19	45	26	0	0	56	81	6.83	2.80	1.90	18	8	.0	0	8.7	WSW	*29	WSW	6	1	10	20	7.8	--
Portland	61	1008.2	1012.3	80	55	67.1	-.7	93	20	45	25	2	0	57	71	1.34	-1.49	.50	8	5	.0	0	10.3	S	25	S	28	7	15	9	6.1	70
MARYLAND																																
Baltimore (U)	14	------	------	90	72	81.1	2.6	103	21	63	2	15	0	--	--	1.82	-2.12	.89	4	--	---	--	----	---	--	---	--	--	--	--	---	--
Baltimore	146	1010.4	1015.3	88	65	76.4	.1	102	21	55	2	12	0	62	60	1.25	-2.69	.60	5	5	.0	0	10.4	WNW	43	E	28	5	20	6	5.5	70
Frederick	294	------	------	88	61	74.4	-2.3	100	21+	50	2+	11	0	--	--	1.26	-2.39	.51	5	--	.0	0	----	---	--	---	--	--	--	--	---	--
MASSACHUSETTS																																
Blue Hill Obs. (R)	629	990.3	1013.2	83	61	71.3	2.1	96	20	51	2	6	0	--	65	.33	-3.38	.14	6	4	.0	0	13.1	WNW	36	W	22	4	18	9	6.2	65
Boston	15	1007.6	1012.2	83	65	74.1	1.9	98	20	58	25	4	0	57	60	.64	-2.54	.30	8	4	.0	0	14.5	SW	*43	W	22	5	17	9	5.8	83
Nantucket	43	1013.1	1013.8	75	62	68.8	1.7	84	21	56	2+	0	0	62	79	2.84	.01	1.53	7	4	.0	0	12.9	SW	37	SW	30	10	12	9	5.7	75
Pittsfield	1153	971.5	------	79	55	66.9	-.7	91	20	42	3	2	0	--	--	3.03	-1.92	1.19	12	9	.0	0	----	---	--	---	--	--	--	--	---	--
Worcester	986	977.6	------	79	59	69.0	-1.2	91	20+	49	2+	3	0	--	--	1.00	-2.78	.62	10	4	.0	0	12.2	---	*43	NW	5	5	17	9	6.1	--
MICHIGAN																																
Alpena (U)	587	992.9	------	76	58	67.0	-.4	88	3+	50	1+	0	0	--	71	3.49	1.04	1.60	8	8	.0	0	8.0	---	37	NW	5	9	13	9	5.4	69
Detroit	619	989.5	1015.9	83	63	72.8	-.3	95	20	53	16	3	0	60	65	5.98	3.07	2.80	6	6	.0	0	9.5	W	35	W	5	16	6	9	4.5	71
Detroit (Willow Run)	722	987.1	1015.2	85	62	73.5	.0	96	20	52	16	8	0	59	65	3.95	1.46	1.41	8	5	.0	0	9.3	SW	*28	WNW	5	16	8	7	4.4	--
East Lansing (U)	856	------	------	84	61	72.8	1.7	94	20	51	10	4	0	--	--	7.55	5.27	3.19	6	5	.0	0	3.8	---	16	NE	11	--	--	--	---	75
Escanaba (U)	594	991.5	------	75	59	67.2	.3	83	30	47	10	0	0	--	77	4.37	1.15	.97	9	9	.0	0	8.5	---	32	NW	5	11	14	6	5.1	74
Flint	761	987.8	1015.6	81	59	69.9	-1.1	90	20+	48	16	2	0	61	73	7.92	5.03	3.72	6	5	.0	0	6.0	WSW	*25	NNE	8	14	7	10	4.9	--
Grand Rapids	681	990.5	1015.5	83	61	72.2	.7	92	20	51	10	4	0	61	69	4.35	1.70	2.54	8	6	.0	0	8.6	ENE	33	NW	11	10	10	11	5.1	77
Marquette (U)	677	987.5	------	76	58	66.9	.8	90	2+	45	15	2	0	--	66	.75	-2.38	.26	6	5	.0	0	6.6	---	32	W	4	8	12	11	5.7	74
Muskegon	627	992.6	1015.6	82	61	71.3	1.4	91	20	51	1+	2	0	60	67	2.28	.16	.81	8	6	.0	0	----	---	--	---	--	15	8	8	4.4	--
Sault Ste. Marie	721	992.6	1015.2	75	52	63.5	-.4	87	19+	41	1	0	0	55	77	3.43	.94	1.53	7	4	.0	0	9.4	WNW	32	WNW	5	11	11	9	5.3	65
MINNESOTA																																
Duluth	1409	973.9	1015.0	78	55	66.6	.2	89	31	48	10+	0	0	57	76	5.56	1.92	2.52	9	9	.0	0	10.9	E	50	W	4	8	14	9	5.7	68
Intern'l. Falls	1179	972.6	1013.7	82	56	68.6	2.8	90	11+	45	9	2	0	58	72	4.33	.89	2.26	11	8	.0	0	9.6	SE	*32	W	5	7	17	7	5.4	--
Minneapolis	830	981.7	1014.5	86	67	76.5	2.4	97	11+	60	5+	11	0	65	70	6.31	3.64	2.62	12	10	.0	0	10.6	SE	49	NW	14	11	8	12	5.4	65
Rochester	1017	978.0	1014.4	85	65	75.0	3.2	95	7	55	24	8	0	64	70	5.81	2.34	2.97	11	9	.0	0	8.9	SE	--	---	--	7	15	9	5.7	--
St. Cloud	1034	976.3	1013.6	84	62	73.1	2.5	95	18	52	9	6	0	64	74	2.07	-.98	.68	8	6	.0	0	7.4	E	*67	N	12	12	7	12	5.2	--
MISSISSIPPI																																
Jackson	305	1003.5	1015.5	92	71	81.5	-.6	95	8+	63	7	24	0	71	76	3.22	-1.39	.81	9	9	.0	0	4.6	NNE	54	N	2	7	13	11	5.5	67
Meridian	294	1001.8	------	93	70	81.6	.7	99	8+	62	7	27	0	--	--	4.54	-1.42	1.07	11	8	.0	0	----	---	--	---	--	9	14	8	5.0	--
Vicksburg (U)	234	1006.1	------	91	74	82.2	.7	96	8	67	6	20	0	--	--	2.89	-1.07	1.32	9	5	.0	0	5.9	---	38	N	2	9	14	8	5.1	59
MISSOURI																																
Columbia	778	986.8	1013.7	90	69	79.6	1.8	100	14	59	25	18	0	68	72	4.77	1.76	3.86	6	8	.0	0	8.0	SSE	30	NW	4	13	10	8	4.8	72
Kansas City	741	980.7	1013.1	92	74	83.3	2.4	103	28	63	5	19	0	68	64	2.27	-.56	.69	6	4	.0	0	10.8	S	31	NW	4+	10	13	8	4.8	70
St. Joseph	809	979.0	------	93	72	82.5	2.4	102	28	57	5	22	0	--	--	.67	-2.42	.67	2	4	.0	0	11.1	---	*35	W	20	12	13	6	4.3	--
St. Louis (U)	465	------	------	89	73	80.7	.1	96	17	65	24	14	0	--	--	2.59	-.32	2.01	9	6	.0	0	9.1	---	35	NW	29	10	13	8	5.2	72
St. Louis	552	994.9	1015.4	90	70	80.1	.4	98	17	62	5	16	0	68	68	4.65	2.07	3.14	7	7	.0	0	7.3	SSW	--	---	--	6	13	12	5.8	--
Springfield	1265	968.5	1015.1	90	69	79.6	2.1	98	28	60	5+	19	0	68	73	2.72	-.45	1.39	3	2	.0	0	10.9	S	29	N	4	11	15	5	4.4	87
MONTANA																																
Billings	3568	891.3	1012.0	89	60	74.5	1.2	96	26	52	4	17	0	51	47	.25	-.89	.10	6	9	.0	0	10.3	SW	43	NW	14	13	18	0	3.8	79
Butte	5530	831.0	1015.2	81	44	62.3	-.1	89	9	34	4	0	0	42	--	.62	-.62	.21	7	15	.0	0	8.5	SSE	*40	WSW	13	10	19	2	4.5	--
Glasgow	2277	938.4	1011.3	90	60	74.6	2.4	100	10+	52	3+	15	0	46	41	.98	-.49	.34	4	8	.0	0	9.5	WNW	*30	NW	17+	14	12	5	4.5	--
Great Falls	3664	887.9	1012.0	86	58	71.8	2.2	96	10	49	18	11	0	38	32	.75	-.60	.41	11	13	.0	0	13.2	SW	68	SW	22	15	15	1	3.8	89
Havre (U)	2488	924.1	1011.2	89	58	73.2	1.9	99	11	49	18	16	0	45	41	.90	-.57	.43	8	13	.0	0	7.8	---	38	S	14	13	14	4	4.2	71
Helena	3893	873.7	1012.5	86	53	69.0	1.0	95	10	45	5+	10	0	42	42	.79	-.19	.24	8	16	.0	0	8.9	WSW	57	W	22	13	15	3	4.2	74
Kalispell	2965	------	------	81	48	64.5	-1.5	92	13	36	18	3	0	--	--	.85	-.31	.66	5	4	.0	0	----	---	--	---	--	9	18	4	4.7	--
Miles City	2629	928.9	1011.7	93	64	78.4	3.4	102	10+	54	4+	21	0	55	--	.38	-1.03	.15	6	3	.0	0	10.1	SE	*40	SW	16	13	13	5	4.3	--
Missoula	3200	902.1	1014.7	84	50	67.3	-1.1	95	12	40	18	7	0	43	46	.69	-.14	.31	8	12	.0	0	7.7	WNW	72	SE	12	13	15	3	3.8	80
NEBRASKA																																
Grand Island	1841	948.2	1012.9	91	68	79.3	.4	101	7+	54	5	18	0	64	63	1.68	-.95	.87	5	9	.0	0	12.1	S	--	---	--	15	12	4	3.5	--
Lincoln (U)	1166	------	------	93	72	82.3	3.1	104	12	60	5	19	0	--	--	6.05	2.95	4.86	4	6	.0	0	10.5	---	39	W	8	14	8	9	4.6	76
Norfolk	1544	958.3	1012.9	91	67	79.1	2.9	105	12	55	5	18	0	65	63	3.32	.29	1.91	9	10	.0	0	----	---	--	---	--	12	11	8	4.7	--
North Platte	2779	916.0	1012.4	90	64	76.5	.7	101	7	47	5	15	0	64	69	3.20	.80	1.12	11	12	.0	0	8.4	SE	44	N	13	15	11	5	4.1	74
Omaha	978	974.6	1013.5	92	71	81.5	3.0	103	12	61	5	17	0	68	67	1.74	-1.60	.92	9	5	.0	0	9.7	SSE	36	NW	4	12	13	6	4.4	80
Omaha, N. Omaha AP	1323	966.5	------	89	69	78.8	2.4	100	12	58	5	16	0	--	--	1.96	-1.38	.78	9	8	.0	0	----	---	--	---	--	--	--	--	---	--
Scottsbluff	3950	879.8	1012.4	90	60	74.6	.0	100	6	51	5	16	0	56	59	4.54	3.09	2.17	8	7	.0	0	9.0	ESE	*40	SW	15	19	6	6	3.9	--
Valentine (U)	2587	922.8	------	92	63	77.8	3.2	105	17	47	5	19	0	--	--	2.58	-.12	1.74	8	10	.0	0	9.4	---	33	NW	4+	17	9	5	3.8	79
NEVADA																																
Elko	5075	845.2	1012.6	89	46	67.8	-2.4	97	5	39	4+	17	0	32	29	.07	-.30	.06	2	3	.0	0	6.8	SW	*28	WNW	23	18	10	3	3.0	--
Ely	6257	811.4	1013.6	86	48	67.0	-1.4	93	5	36	23	6	0	30	30	.66	.11	.49	4	3	.0	0	12.5	S	50	S	28	16	11	4	3.7	82
Las Vegas	2162	944.8	1008.3	103	75	88.9	-1.6	112	5	64	24	31	0	37	20	.41	-.05	.41	1	3	.0	0	12.1	SW	*41	S	9	22	5	4	2.5	84
Reno	4397	862.5	1013.6	89	48	68.6	-1.0	95	9	41	31	16	0	37	37	.03	-.20	.03	2	5	.0	0	7.4	WNW	34	W	21	25	5	1	1.8	97
Winnemucca	4299	867.6	1012.3	90	49	69.6	-4.6	98	5	40	22	19	0	30	23	T	-.31	T	0	3	.0	0	8.3	W	56	W	28	20	8	3	2.7	83

See footnotes at end of table.

CLIMATOLOGICAL DATA

JULY 1957

State and station	Elevation (ground)	Pressure		Temperature											Average relative humidity	Precipitation							Wind					No. of days (sunrise to sunset)			Sky cover, tenths (sunrise to sunset)	Possible sunshine
												No. of days							No. of days		Snow, Sleet				Fastest mile							
		Ø Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F or above	Min. 32° F. or below	Average dew point		Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy		
	Ft	Mb	Mb.	°F	°F	°F	°F	°F.		°F.				°F.	%	In.	In.	In.			In.	In.	M p. h		M p. h			0–3	4–7	8–10	0–10	%
NEW HAMPSHIRE																																
Concord	339	1002.0	1012.8	82	54	68.2	-0.8	93	20	41	3	3	0	57	70	2.87	-0.70	0.70	11	9	0.0	0	7.2	NW	29	NW	30	5	17	9	6.3	63
Mt. Washington	6262	807.0	------	52	41	46.2	-3.1	63	14	29	2	0	2	--	92	10.70	4.34	2.50	21	9	1.1	1	28.7	W	%103	W	1	1	7	23	8.4	33
NEW JERSEY																																
Atlantic City (U)	8	1012.1	------	80	67	73.8	.2	92	5	60	2	1	0	--	--	.31	-3.47	.14	5	1	.0	0	14.2	---	29	S	21+	9	14	8	5.4	82
Newark	11	1012.6	1014.0	88	67	77.3	2.0	101	22	56	3	12	0	59	57	1.51	-2.69	.71	7	6	.0	0	9.8	SW	*27	WNW	1+	5	20	6	5.5	--
Trenton (U)	56	1006.9	1013.5	87	67	76.7	1.4	100	21+	56	3	12	0	--	--	1.23	-2.83	.49	6	6	.0	0	8.4	---	26	S	26	6	20	5	5.3	71
NEW MEXICO																																
Albuquerque	5310	850.3	1011.4	93	65	79.1	.1	104	3	61	14+	25	0	51	46	2.48	1.05	.70	13	15	.0	0	7.1	N	40	SE	8	10	16	5	4.8	69
Clayton	4969	848.0	1012.5	91	61	76.1	2.0	102	3	54	5	21	0	--	--	1.22	-1.34	.48	6	10	.0	0	---	---	---	---	--	15	8	8	4.5	--
Raton	6379	810.7	1014.9	85	56	70.6	2.0	98	3	51	12	5	0	--	--	3.55	1.05	1.48	13	20	.0	0	---	---	---	---	--	6	14	11	5.7	--
Roswell	3612	893.3	1010.8	98	67	82.6	3.6	108	1	62	9	30	0	54	44	.87	-.94	.38	6	7	.0	0	9.5	---	45	W	22	12	14	5	4.4	--
NEW YORK																																
Albany	277	1009.1	1013.0	83	59	71.1	-.3	95	20+	48	3	4	0	58	66	2.17	-1.13	.89	8	6	.0	0	7.5	WNW	30	NW	1	7	12	12	6.2	55
Binghamton	1601	956.6	1015.0	78	58	67.5	-1.6	90	21	46	2	1	0	56	71	4.24	.42	1.58	8	10	.0	0	8.9	NW	40	NW	22	2	17	12	6.5	70
Buffalo	693	987.4	1015.3	79	60	69.8	-.8	90	19	47	2	1	0	59	70	2.97	.54	.83	10	7	.0	0	9.9	SW	37	W	5	9	13	9	5.3	78
New York (U)	10	1012.3	------	84	68	76.0	1.4	97	21+	59	2	4	0	--	--	1.73	-2.51	1.12	6	4	.0	0	13.2	---	40	NW	1	12	13	6	4.9	87
New York	19	1011.8	1013.9	86	69	77.6	1.7	101	22	60	3	8	0	59	56	1.32	-2.80	.97	9	4	.0	0	12.2	WNW	36	NW	2	7	19	5	5.3	--
Rochester	543	995.3	1014.4	81	59	69.9	-1.3	93	21	46	2	2	0	59	70	2.24	-.85	.53	9	7	.0	0	11.1	WSW	38	SW	5	9	14	8	5.0	73
Schenectady	217	------	------	82	61	71.7	-1.0	94	21	51	3	3	0	--	--	3.17	-.40	1.07	9	6	.0	0	---	---	---	---	--	18	12	1	2.9	--
Syracuse	424	993.1	1014.8	81	60	70.4	-2.1	93	21	51	2	2	0	59	68	6.13	-2.87	2.38	8	7	.0	0	8.4	WNW	43	W	30	7	16	8	5.8	71
NORTH CAROLINA																																
Asheville (U)	2203	938.6	------	85	63	74.0	.2	91	22	54	7	6	0	--	--	1.43	-3.07	.60	7	5	.0	0	5.9	---	23	NE	17	11	12	8	5.1	67
Cape Hatteras (R)	9	1014.9	1015.6	84	71	77.6	-.9	90	8	60	3	1	0	68	72	5.60	-.88	2.42	8	5	.0	0	10.0	SSW	24	N	24	6	13	12	6.2	--
Charlotte	725	988.6	1016.3	92	68	80.0	1.4	99	14+	61	28	21	0	65	66	1.40	-3.27	.89	5	5	.0	0	6.9	NNE	26	NW	15	13	13	5	4.6	78
Greensboro	891	985.4	1016.9	89	65	76.9	-.3	96	14	58	7	14	0	64	68	2.14	-2.80	1.75	5	5	.0	0	6.4	SW	31	NW	5	10	12	9	5.2	85
Raleigh	433	1002.4	1016.0	90	66	77.9	-.6	98	9+	56	3	16	0	65	69	2.15	-3.30	1.00	5	4	.0	0	6.2	S	*35	WNW	15	10	13	8	5.1	85
Wilmington	30	1014.4	------	89	69	79.0	-1.0	98	9	65	21+	12	0	--	--	3.59	-4.57	1.84	5	7	.0	0	10.4	---	31	N	15	9	17	5	5.1	81
Winston-Salem	967	981.7	1016.5	89	67	77.8	.3	96	14	60	3	15	0	64	68	3.15	-1.42	2.74	3	4	.0	0	6.1	SW	*18	WSW	9	13	10	8	4.9	--
NORTH DAKOTA																																
Bismarck	1650	953.6	1012.5	89	61	75.3	3.2	101	11	52	5	19	0	60	63	1.58	-.75	.75	12	14	.0	0	10.6	SSE	59	SW	6	15	11	5	4.0	71
Devils Lake (U)	1471	960.4	------	86	60	73.0	3.7	100	10	51	5+	7	0	--	65	1.51	-1.16	.38	11	11	.0	0	7.2	---	31	E	16	12	13	6	4.4	74
Fargo	895	980.0	1013.9	87	64	75.4	4.1	98	11	53	5	10	0	63	70	4.72	2.41	1.60	9	9	.0	0	12.5	S	52	W	28	15	11	5	4.4	70
Williston (U)	1877	945.5	1011.8	89	62	75.5	4.6	101	10	52	8	16	0	54	51	1.83	-.30	.74	8	9	.0	0	7.1	---	40	NW	4	13	10	8	4.7	83
OHIO																																
Akron	1210	978.8	1016.7	81	60	70.6	-1.8	93	21	50	16	3	0	61	73	2.60	-1.60	1.44	8	5	.0	0	7.9	SW	--	---	--	11	13	7	5.4	--
Cincinnati Obs.	761	------	------	87	66	76.8	.2	95	21	58	10+	11	0	--	--	4.91	1.21	2.57	5	5	.0	0	5.0	---	20	NW	27	--	--	--	---	77
Cincinnati	869	984.4	1016.0	87	65	76.3	1.2	97	19	57	10+	10	0	63	67	2.44	-1.31	1.25	4	5	.0	0	7.7	SW	*23	WNW	4	11	10	10	5.5	--
Cleveland	787	988.1	1015.8	81	63	72.1	-1.6	94	21	53	2+	3	0	60	69	3.25	.21	1.45	8	5	.0	0	11.5	S	38	SW	4	12	10	9	5.2	64
Columbus (U)	724	------	------	86	66	76.2	.4	97	20	56	16	10	0	--	--	2.04	-1.49	1.17	5	5	.0	0	---	---	--	---	--	--	--	--	---	--
Columbus	815	986.5	1016.3	88	63	75.1	.7	98	20	52	16	10	0	62	67	2.98	-.87	1.25	7	7	.0	0	6.1	NNE	35	W	29	6	18	7	5.4	77
Dayton	1002	980.2	1016.1	85	65	74.9	-.1	93	20	56	10+	5	0	61	65	3.28	-.01	1.56	4	3	.0	0	8.9	SW	37	SW	13	8	15	8	5.4	75
Sandusky (U)	603	993.6	------	83	65	74.0	-.6	95	21	58	2	6	0	--	--	3.45	.00	1.48	7	5	.0	0	6.3	---	23	SW	4+	20	7	4	3.4	77
Toledo	676	990.6	1015.9	85	61	72.6	-.5	95	20	51	25	8	0	61	70	2.03	-.62	1.21	6	3	.0	0	9.2	WSW	33	N	22	14	9	8	4.5	77
Youngstown	1178	974.4	1016.5	81	58	69.9	-2.4	91	21	48	2+	3	0	59	71	1.57	-2.59	1.06	8	5	.0	0	9.4	SW	*27	SW	8	9	14	8	5.5	--
OKLAHOMA																																
Oklahoma City	1280	970.9	1013.7	95	72	83.5	1.4	102	29	61	5	27	0	68	64	.63	-1.52	.63	2	2	.0	0	11.5	SSE	42	SW	2	24	3	4	2.8	88
Tulsa	672	989.8	1013.7	97	75	85.9	3.8	107	29	65	5	31	0	71	64	.50	-2.19	.50	1	1	.0	0	7.5	S	23	NE	23	20	5	6	3.4	88
OREGON																																
Astoria	8	1018.3	1018.8	68	50	59.0	-1.8	73	4	44	2+	0	0	53	76	1.63	.56	1.06	8	0	.0	0	6.5	NW	*24	SW	10	3	13	15	7.1	--
Burns (U)	4140	873.4	1013.9	84	49	66.6	-3.2	92	5	37	17	4	0	37	37	.10	-.15	.05	3	4	.0	0	---	---	--	---	--	23	5	3	2.5	--
Eugene	361	1004.1	1017.6	80	49	64.1	-2.5	88	19	43	27	0	0	--	--	.19	-.07	.16	3	0	.0	0	7.7	---	*26	WSW	14	12	14	5	4.1	--
Meacham	4050	------	------	75	48	61.5	-1.7	88	5	39	7+	0	0	--	--	.06	-.40	.06	1	2	.0	0	---	---	--	---	--	18	8	5	3.5	--
Medford	1312	968.5	1015.5	86	53	69.3	-2.5	99	4	44	17	10	0	48	51	.16	-.01	.16	2	0	.0	0	6.5	WNW	*26	NW	14	22	6	3	2.4	--
Pendleton	1492	961.7	1014.5	85	57	71.1	-3.4	97	5	49	7	9	0	43	39	.11	-.15	.09	3	1	.0	0	11.0	WNW	*29	WNW	13+	21	6	4	3.1	--
Portland	21	1012.2	1017.6	77	55	65.6	-1.7	87	19	46	3	0	0	51	63	.19	-.23	.16	3	0	.0	0	8.8	WNW	29	SW	14	9	13	9	5.4	71
Roseburg	505	998.6	1017.3	81	49	65.3	-1.9	90	4+	44	8+	2	0	--	--	.32	.12	.30	2	0	.0	0	6.3	---	20	NW	5+	18	10	3	3.0	79
Salem	195	1010.2	1017.8	80	50	64.7	-3.0	90	19	43	7+	1	0	50	64	.18	-.14	.15	4	0	.0	0	7.7	N	*26	SSW	10	8	15	8	4.9	--
Sexton Summit (R)	3836	------	------	72	48	60.1	-3.1	86	4	41	17	0	0	--	--	.38	.06	.38	2	0	.0	0	---	---	--	---	--	21	6	4	2.8	--
PENNSYLVANIA																																
Allentown	376	1001.1	1015.2	86	61	73.6	-.5	100	21+	49	3	7	0	59	63	1.05	-3.73	.33	7	4	.0	0	8.7	WSW	--	---	--	6	19	6	5.1	--
Erie	732	------	------	78	60	68.8	-1.6	88	21	45	2	0	0	--	--	1.75	-1.44	.56	6	3	.0	0	9.7	---	*25	S	8	10	12	9	5.3	--
Harrisburg	335	1001.3	1015.0	86	64	75.0	-.4	97	21+	53	3	5	0	58	58	1.68	-1.96	1.23	4	0	.0	0	6.1	WNW	24	W	5	5	19	7	5.8	75
Philadelphia (U)	26	------	------	87	70	78.5	1.3	98	21+	62	2+	8	0	--	--	.95	-3.26	.27	6	--	---	--	---	---	--	---	--	--	--	--	---	--
Philadelphia	10	1009.8	1014.2	88	65	76.6	.3	101	21	54	3	11	0	60	60	.64	-3.56	.29	6	2	.0	0	8.9	WSW	28	NW	1	5	17	9	5.8	69
Pittsburgh (U)	749	------	------	85	65	74.9	-.5	95	21	53	2	7	0	--	--	2.83	-.89	1.95	6	--	.0	--	---	---	--	---	--	--	--	--	---	42
Pittsburgh	1151	985.7	1016.3	82	62	71.8	-.5	92	21	50	2	3	0	60	67	3.97	.06	2.73	10	5	.0	0	8.2	WSW	*27	WSW	5	6	15	10	6.2	73
Reading (U)	266	1002.5	1014.2	87	66	76.7	1.0	99	21	54	3	10	0	--	--	1.36	-3.07	.54	5	4	.0	0	9.3	---	45	SE	29	4	20	7	5.5	70
Scranton	940	981.5	1015.5	82	58	69.6	-2.6	94	21	45	3	3	0	57	64	2.05	-3.28	.84	9	7	.0	0	8.6	WSW	30	W	5	3	22	6	5.8	62
Shippingport	736	------	------	82	59	70.6	----	92	21	47	2	5	0	--	--	2.86	----	1.64	8	6	.0	0	1.9	---	%29	SSW	30	--	--	--	---	--
Williamsport	527	996.2	------	86	60	72.7	-.6	97	21+	49	3	10	0	--	--	1.65	-2.06	.55	9	--	.0	0	---	---	--	---	--	6	17	8	5.8	--
RHODE ISLAND																																
Block Island	110	1008.9	1013.0	77	62	69.3	.2	88	21	52	3	0	0	--	--	1.84	-.71	1.78	4	4	.0	0	---	---	--	---	--	9	13	9	5.4	--
Providence	55	1006.8	1013.0	83	62	72.4	1.4	97	20+	50	3	3	0	59	65	1.41	-1.65	.48	9	6	.0	0	12.1	SW	*27	SW	5	7	16	8	5.5	66
SOUTH CAROLINA																																
Charleston (U)	9	------	------	87	74	80.4	-1.1	94	9	71	28+	9	0	--	--	7.49	-.55	2.34	9	--	.0	0	9.5	---	32	NE	25	--	--	--	----	58
Charleston	41	1013.5	1015.5	88	69	78.9	-1.2	93	10+	64	21	11	0	71	80	8.32	.28	2.21	12	6	.0	0	8.8	NNE	--	---	--	6	12	13	6.5	--
Columbia	217	1006.9	1015.1	93	70	81.1	-.3	100	9+	63	30	25	0	67	68	1.15	-5.41	.58	6	5	.0	0	6.8	NE	*21	NNW	24	12	11	8	5.2	59
Florence	146	1010.0	------	91	69	80.2	-.7	100	9	64	26	22	0	--	--	2.55	-3.90	1.30	8	7	.0	0	---	---	--	---	--	11	15	5	4.8	--
Greenville	1018	979.2	1015.6	90	69	79.5	1.1	97	9+	64	7+	19	0	63	64	.58	-4.23	.58	2	3	.0	0	8.2	NE	31	E	18	10	13	8	5.2	72
Spartanburg	801	------	------	90	68	79.2	.3	97	9+	62	26	17	0	--	--	1.71	-2.99	1.14	5	5	.0	0	6.9	---	*21	NE	17	--	--	--	---	--
SOUTH DAKOTA																																
Huron	1282	966.5	1012.7	90	65	77.3	1.9	100	18	55	5	15	0	66	72	1.13	-.95	.59	9	5	.0	0	9.7	S	77	NW	3	17	9	5	3.9	83
Rapid City	3165	901.5	1013.1	90	61	75.3	3.0	100	11	52	5	20	0	56	57	2.01	-.05	1.49	11	12	.0	0	9.7	SSE	38	NW	3	13	14	4	4.0	70
Sioux Falls	1420	963.1	1013.3	90	67	78.6	3.8	100	18	56	5	16	0	64	65	2.80	-.20	1.44	8	8	.0	0	8.8	SSE	*40	NW	2	12	10	9	5.2	--
TENNESSEE																																
Bristol	1519	963.2	------	88	63	75.8	1.0	94	22	55	6+	14	0	--	--	.79	-4.35	.58	5	6	.0	0	---	---	--	---	--	10	9	12	5.3	--
Chattanooga	670	988.5	1015.7	91	68	79.2	.9	96	22+	58	7	21	0	66	69	.20	-5.14	.10	4	4	.0	0	6.2	NNE	24	SW	23	10	12	9	5.2	58
Knoxville	950	981.5	1016.4	91	69	79.6	1.2	95	12+	61	7+	21	0	65	66	.70	-4.02	.37	7	3	.0	0	6.6	NE	33	NE	29	10	11	10	5.3	71
Memphis (U)	271	------	------	89	73	80.6	-.7	96	15	67	25	14	0	--	--	6.62	3.52	2.57	10	--	.0	0	---	---	--	---	--	--	--	--	---	--
Memphis	263	1000.8	1015.5	90	71	80.4	-.8	97	15	63	12	18	0	70	74	4.95	1.72	1.17	11	9	.0	0	7.2	SE	40	N	18	7	13	11	5.7	74

See footnotes at end of table.

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure: Station Ø	Pressure: Sea level	Temperature: Average maximum	Temperature: Average minimum	Temperature: Average	Temperature: Departure from normal	Temperature: Highest	Date	Temperature: Lowest	Date	No. of days: Max. 90° F or above	No. of days: Min. 32° F. or below	Average dew point	Average relative humidity	Precipitation: Total	Precipitation: Departure from normal	Precipitation: Greatest in 24 hours	No. of days: .01 inch or more	No. of days: With thunderstorms	Snow, Sleet: Total	Snow, Sleet: Max. depth on ground	Wind: Average hourly speed	Wind: Prevailing direction	Fastest mile: Speed	Fastest mile: Direction	Fastest mile: Date	No. of days (sunrise to sunset): Clear	No. of days (sunrise to sunset): Partly cloudy	No. of days (sunrise to sunset): Cloudy	Sky cover, tenths (sunrise to sunset)	Possible sunshine
	Ft.	Mb.	Mb.	°F.	°F.	°F.	°F	°F.		°F.		#		°F.	%	In.	In.	In.			In.	In.	M p. h		M. p. h.			0–3	4–7	8–10	0–10	%
TENNESSEE (Cont'd.)																																
Nashville	577	996.4	1016.2	90	69	79.1	-0.9	95	17	61	11	17	0	69	73	1.83	-2.13	0.87	9	6	0.0	0	5.6	S	42	N	9	8	12	11	5.5	69
Oak Ridge (R)	905	983.8	------	90	68	79.0	2.3	95	8+	60	7	19	0	--	--	2.72	-2.62	1.42	5	7	.0	0	3.6	---	35	---	17	12	10	9	4.7	--
TEXAS																																
Abilene	1759	953.3	1012.5	98	74	85.7	2.6	105	30	70	5+	29	0	61	49	.62	-1.43	.55	3	5	.0	0	10.3	SSE	36	S	20	16	6	9	4.3	--
Amarillo	3590	890.3	1012.0	95	68	81.2	3.4	102	2+	61	9	29	0	55	45	.13	-2.23	.11	2	4	.0	0	11.0	S	39	NW	29	14	13	4	4.1	92
Austin	615	992.9	1014.3	98	75	86.3	2.2	104	30	73	6+	31	0	69	61	1.10	-1.08	.78	3	0	.0	0	7.8	S	25	E	22	19	11	1	2.9	85
Brownsville	16	1011.9	1014.3	93	76	84.9	1.1	97	28	72	12	31	0	73	72	.10	-1.87	.10	1	0	.0	0	13.5	SE	26	SE	15+	20	10	1	3.2	86
Corpus Christi	41	1013.2	1014.4	94	75	84.5	.7	98	28	71	11+	31	0	73	74	.00	-2.26	.00	0	0	.0	0	10.4	SSE	25	SE	31	16	13	2	3.5	98
Dallas	487	995.6	1014.1	100	79	89.2	3.7	110	30	75	1+	31	0	68	54	.25	-1.72	.25	1	1	.0	0	7.8	SE	27	NE	19	23	4	4	2.8	84
Del Rio	1091	978.7	1012.4	100	75	87.7	3.0	105	30	71	12	31	0	63	49	T	-1.58	T	0	0	.0	0	11.9	---	31	NE	31	17	12	2	3.4	83
El Paso	3920	885.5	1010.3	96	72	83.9	2.6	106	4	62	22	28	0	52	38	2.64	1.32	1.88	9	6	.0	0	12.2	N	61	S	23	11	15	5	4.5	81
Fort Worth	544	993.2	1013.8	98	77	87.4	2.3	106	30	74	1+	31	0	68	56	.65	-1.24	.38	4	5	.0	0	9.9	SE	*30	W	23	23	3	5	2.9	--
Galveston (U)	7	------	------	89	80	84.6	1.6	94	11+	77	21	13	0	--	--	.46	-4.34	.19	5	--	.0	0	10.3	---	25	S	30	--	--	--	---	76
Galveston	5	1013.2	1015.4	90	80	85.0	1.7	94	12+	78	4+	18	0	75	73	.54	-4.17	.28	6	3	.0	0	11.1	S	--	---	--	11	15	5	4.5	--
Houston (U)	41	1009.8	------	96	77	86.6	2.8	101	6	71	20	30	0	--	--	4.68	.23	2.33	7	8	.0	0	7.1	---	36	NE	20	13	14	4	4.5	84
Houston	50	1012.2	1014.8	95	76	85.4	2.8	99	28+	73	20	31	0	74	73	.84	-3.95	.61	5	5	.0	0	7.9	S	--	---	--	11	15	5	4.8	--
Laredo	500	997.0	1012.1	103	77	89.9	2.2	107	31	74	7+	31	0	66	52	T	-1.40	T	0	0	.0	0	14.3	SE	*29	ESE	15	25	6	0	2.1	--
Lubbock	3243	903.8	1012.0	95	68	81.4	2.1	101	3+	63	21	29	0	59	50	1.54	-.35	1.41	3	3	.0	0	11.6	S	*58	N	21	15	9	7	4.2	--
Midland	2854	915.7	1012.4	95	71	83.3	1.3	100	4	68	12	31	0	58	44	.40	-1.41	.24	4	6	.0	0	9.5	SE	*23	ENE	24	13	11	7	4.5	--
Port Arthur	16	1013.9	1015.3	92	75	83.8	2.1	96	10+	70	19	27	0	75	78	6.00	-.80	2.47	9	11	.0	0	7.8	SSW	35	NE	19	7	15	9	5.5	63
San Angelo	1903	947.2	1012.7	97	73	85.1	2.4	105	30	69	15	29	0	60	47	.05	-1.52	.04	2	1	.0	0	9.4	S	*23	SSE	7	18	4	9	3.8	--
San Antonio	792	989.2	1013.8	98	74	85.7	1.5	102	29+	69	12	31	0	66	57	.73	-1.18	.65	2	1	.0	0	7.8	SSE	21	S	9+	16	13	2	3.2	89
Victoria	110	1009.5	1014.3	96	74	84.8	.0	100	28+	71	16	31	0	72	68	.11	-4.02	.10	2	1	.0	0	8.0	---	%34	SW	23	18	12	1	3.4	--
Waco	500	992.9	1013.4	99	76	87.4	2.4	108	30	72	4	29	0	69	58	.61	-1.33	.35	4	5	.0	0	10.7	S	*25	SE	20+	22	7	2	2.9	--
Wichita Falls	1020	975.6	1012.5	100	75	87.5	3.7	106	29	70	5	31	0	65	52	.69	-1.50	.34	4	3	.0	0	9.1	S	*18	NE	4	22	3	6	2.9	--
UTAH																																
Milford	5028	845.6	1012.9	92	56	73.7	-.3	100	5+	45	23	25	0	--	--	.18	-.59	.10	3	8	.0	0	---	---	--	---	--	15	13	3	4.0	--
Salt Lake City	4220	867.6	1011.6	92	62	77.0	.4	99	1+	51	5	25	0	44	35	.31	-.30	.11	6	8	.0	0	10.6	SSE	45	W	21	15	10	6	3.7	85
VERMONT																																
Burlington	331	997.7	1012.5	78	58	68.4	-2.0	88	19+	48	3	0	0	56	68	5.34	1.59	1.98	11	11	.0	0	7.6	SSW	35	NW	3	2	12	17	7.1	54
VIRGINIA																																
Lynchburg	947	982.4	------	87	65	75.8	-.2	97	22	56	3	13	0	--	--	2.05	-2.10	.96	6	5	.0	0	6.1	---	24	S	27	8	13	10	5.5	71
Norfolk	26	1014.0	1015.4	89	69	78.6	1.1	99	22	60	3	13	0	65	67	2.18	-3.87	1.53	4	2	.0	0	7.8	SW	26	NE	23	10	14	7	5.1	81
Richmond	162	1009.7	1015.8	90	67	78.4	.9	100	22	55	3	16	0	63	62	1.80	-3.84	.96	6	9	.0	0	7.1	SW	21	NW	22	8	14	9	5.6	73
Roanoke	1174	976.1	1016.4	89	64	76.5	.6	98	21	54	11	15	0	62	65	1.13	-3.78	.58	4	5	.0	0	6.9	NW	--	---	--	8	14	9	5.4	--
WASHINGTON																																
Olympia	190	1010.2	1017.7	74	49	61.5	-1.3	86	19	40	2+	0	0	49	66	.97	.25	.65	8	0	.0	0	6.7	SW	*29	S	11	5	11	15	6.4	--
Seattle (U)	14	------	------	71	56	63.6	-2.0	80	19+	53	4	0	0	--	--	.57	.05	.34	8	0	.0	0	8.3	---	31	S	27	4	11	16	6.8	51
Seattle	14	1016.9	1017.8	--	--	----	----	--	---	--	--	--	--	50	63	----	----	----	--	--	---	--	7.1	S	--	---	--	--	--	--	---	--
Seattle-Tacoma	386	1004.4	1018.6	71	53	61.8	-2.1	82	19	48	2+	0	0	51	66	1.10	.52	.74	8	1	.0	0	10.5	SW	*29	N	5	4	7	20	7.0	--
Spokane	2357	945.8	1014.1	81	55	67.5	-2.1	92	5+	45	7	4	0	43	43	.04	-.32	.02	3	2	.0	0	9.2	SSW	26	S	6+	14	10	7	4.5	83
Stampede Pass (R)	3958	881.1	1018.9	61	43	52.1	-4.8	73	4+	38	6+	0	0	--	--	1.23	-.06	.53	11	0	.0	0	---	---	--	---	--	9	4	18	6.7	--
Tatoosh (R)	101	1015.2	1018.0	60	51	55.5	.0	63	18+	47	1	0	0	52	89	4.59	2.60	1.16	10	0	.0	0	9.3	SSW	33	E	10	3	9	19	7.5	51
Walla Walla (U)	949	978.3	1013.5	85	61	72.8	-3.4	96	5	53	18	10	0	--	--	T	-.28	T	0	2	.0	0	6.2	---	19	SW	6	19	7	5	3.3	92
Yakima	1061	975.3	1013.8	84	50	66.9	-4.5	98	5	42	17	6	0	44	46	.01	-.17	.01	1	0	.0	0	6.7	W	*29	SSW	14	17	11	3	3.3	--
WEST VIRGINIA																																
Charleston	950	981.0	1016.1	87	63	75.3	-.1	95	20+	51	3	13	0	62	66	4.27	-1.18	1.90	10	7	.0	0	6.2	S	*46	WNW	27	6	17	8	6.0	--
Elkins	1970	------	------	81	57	69.0	-1.0	90	21	44	3	1	0	--	--	3.32	-1.82	1.50	6	6	.0	0	3.6	NW	*15	W	5	5	15	11	6.4	--
Huntington (U)	565	------	------	90	65	77.7	.8	98	19+	56	3+	19	0	--	--	1.61	-3.21	.45	8	--	.0	0	---	---	--	---	--	--	--	--	---	--
Parkersburg (U)	615	------	------	87	64	75.8	.1	97	20+	53	11	9	0	--	--	2.75	-1.41	1.03	9	10	.0	0	4.9	---	18	W	5	13	10	8	4.9	67
WISCONSIN																																
Green Bay	689	992.6	1015.1	82	58	69.7	-.2	93	20	46	10	3	0	61	76	3.18	.59	1.00	13	8	.0	0	8.3	SW	70	NE	29	8	16	7	5.4	66
La Crosse	652	990.2	1014.4	85	67	75.9	1.9	93	7+	54	24	9	0	64	69	4.35	1.14	1.90	11	10	.0	0	7.2	SE	*23	NW	8	8	13	10	5.6	--
Madison	857	980.7	1015.2	85	61	73.1	.1	95	20	48	24	8	0	63	72	4.00	.70	1.86	10	5	.0	0	8.6	S	56	W	8	8	12	11	5.9	56
Milwaukee	672	990.9	1015.8	81	61	70.9	-.4	93	20+	52	10	3	0	62	74	1.50	-.93	.71	7	5	.0	0	11.0	SSW	47	N	11	12	12	7	5.0	69
WYOMING																																
Casper	5322	839.5	1011.9	88	56	71.8	.7	95	6+	44	4	14	0	44	44	1.00	-.17	.38	8	6	.0	0	12.0	WSW	*44	WSW	3	13	12	6	4.3	--
Cheyenne	6131	815.8	1014.5	83	55	69.0	.9	92	2	46	4	5	0	48	54	2.42	.46	.88	12	12	.0	0	10.8	WNW	37	NE	7	12	10	9	4.9	65
Lander	5563	837.8	1013.6	85	55	70.2	-.2	94	16	45	4	7	0	44	43	.69	-.19	.29	6	13	.0	0	7.1	---	47	SW	1	13	11	7	4.3	75
Sheridan	3942	884.2	1012.8	89	57	72.6	2.0	96	10+	49	5	15	0	49	47	.31	-1.07	.16	6	6	.0	0	8.2	S	56	NW	1	15	11	5	4.0	73
PACIFIC AREA																																
Canton Island	9	1008.8	1009.1	89	78	83.8	-.4	91	28+	75	6+	11	0	76	79	3.02	.69	1.15	17	2	.0	0	14.3	E	*37	NE	11	0	1	30	9.7	--
Guam (Taguac) R	361	------	------	88	71	79.6	----	91	27	67	25	7	0	--	--	4.74	----	1.38	18	--	.0	0	---	---	--	---	--	--	--	--	---	--
Hilo	31	1015.2	1017.1	82	69	75.4	.6	85	26	64	7	0	0	69	83	13.27	3.38	2.51	29	0	.0	0	8.9	WSW	*26	N	25	1	9	21	7.9	30
Honolulu	7	1016.3	1016.8	85	74	79.5	.7	87	1+	71	24	0	0	67	66	.39	.05	.33	5	0	.0	0	14.1	ENE	34	NE	31	12	19	0	4.2	77
Koror (R)	94	1005.8	1009.5	87	75	81.0	.5	89	8+	72	17	0	0	76	87	16.69	-2.12	4.18	31	2	.0	0	---	---	--	---	--	0	1	30	9.5	--
Lihue	115	1011.9	1017.1	85	73	79.1	1.7	88	26	70	1+	0	0	69	73	1.31	-.56	.20	21	0	.0	0	10.6	NE	31	NE	11	4	18	9	6.2	64
Majuro	10	1009.5	1009.8	86	77	81.4	----	88	3+	73	28	0	0	76	83	9.10	----	1.52	25	4	.0	0	---	---	--	---	--	0	9	22	8.5	--
Ponape (R)	120	1004.4	1009.8	88	74	81.0	.6	90	16	71	31	1	0	76	86	15.72	-1.34	2.29	27	5	.0	0	---	---	--	---	--	0	4	27	9.0	--
Truk, Moen Is.	8	1009.8	1010.2	86	76	81.2	.9	88	3+	72	10	0	0	77	86	10.71	-2.75	2.40	26	4	.0	0	---	---	--	---	--	0	0	31	9.9	--
Wake Island	11	1013.5	1013.9	88	77	82.8	.8	90	20+	74	1+	4	0	75	77	1.78	-3.64	.31	24	1	.0	0	10.4	E	*23	ESE	7+	11	10	10	5.5	--
Yap (R)	53	1007.5	1009.4	87	76	81.2	-.5	92	31	73	13+	2	0	77	86	13.82	-2.78	3.52	26	1	.0	0	---	---	--	---	--	0	2	29	9.7	--
WEST INDIES																																
San Juan, P.R.(U)	47	------	------	84	76	80.2	.2	87	5+	71	13+	0	0	--	--	7.03	1.01	1.97	14	2	.0	0	---	---	--	---	--	--	--	--	---	--
San Juan P.R.	15	1013.9	1016.5	88	74	80.9	----	91	23+	71	16+	5	0	73	78	7.16	----	1.81	16	3	.0	0	9.2	ENE	24	NE	24	2	17	12	6.7	55
Swan Island	31	1012.0	------	87	78	82.7	.3	89	10+	72	23	0	0	--	--	10.85	6.55	8.66	10	6	.0	0	---	---	--	---	--	3	15	13	6.9	--
ALASKA																																
Anchorage	92	1008.5	1013.5	66	50	58.1	.8	76	30	43	27+	7	0	50	74	1.64	.09	.48	12	1	.0	0	6.7	WNW	*29	SSE	1	6	7	18	7.4	51
Annette	110	1011.9	1015.9	62	50	55.9	-.9	74	17	44	1	3	0	50	81	7.18	1.59	1.73	17	0	.0	0	8.4	SSE	*26	SSE	3	0	8	23	8.3	--
Barrow	22	1010.8	1011.4	45	34	39.3	-.4	61	10	30	3+	0	14	37	93	.80	-.03	.18	13	1	.9	T	12.2	E	33	SW	19	2	4	25	8.9	--
Barter Island	39	1010.2	1012.1	47	35	40.7	----	66	6	31	1+	0	7	38	88	.96	----	.27	9	0	T	T	9.0	ENE	*25	E	13	0	10	21	8.3	--
Bethel	10	1013.2	1014.7	64	47	55.9	1.4	79	10	43	26+	6	0	48	77	.49	-1.80	.22	8	0	.0	0	9.6	NW	*25	NW	21	2	7	22	8.2	--
Cold Bay	90	1012.2	1015.8	54	46	50.3	.3	59	1+	44	5	0	0	46	88	2.50	.36	.80	17	0	.0	0	14.1	NW	*47	SE	10	0	0	31	9.7	--
Cordova	40	1012.9	1014.6	62	45	53.9	.6	76	29	37	28	5	0	48	80	4.12	-2.32	1.52	18	2	.0	0	4.4	E	*17	ESE	4+	3	3	25	8.3	--
Fairbanks	436	995.3	1012.3	72	49	60.7	-.2	88	12	35	27	22	0	51	69	.40	-1.52	.17	5	2	.0	0	4.4	W	*29	E	13	2	9	20	7.6	--
Juneau	15	1013.5	1014.4	65	46	55.5	.8	79	11	37	8	9	0	48	78	2.83	-1.82	.70	16	0	.0	0	7.9	N	26	SE	12	4	3	24	8.2	31
King Salmon	44	1012.2	1014.0	67	46	56.4	1.8	77	9	38	1	12	0	48	77	2.09	-.73	.50	13	0	.0	0	9.4	S	*28	S	10+	2	6	23	8.1	--
Kotzebue	10	1012.2	1012.6	58	48	53.0	.4	80	11	39	25	2	0	48	83	.56	-.97	.35	9	0	.0	0	13.5	WNW	*35	SW	7	2	5	24	8.4	--
McGrath	334	1001.0	1013.6	69	48	58.6	-.1	83	10+	40	28	16	0	47	66	.79	-1.53	.34	9	2	.0	0	5.1	WNW	*18	SSE	1	2	9	20	7.9	--
Nome	13	1014.2	1014.7	53	43	48.0	-1.6	66	11	36	22	0	0	45	87	.44	-2.02	.21	7	0	.0	0	10.7	W	*26	N	21	4	9	18	7.4	31
Northway	1713	949.9	1012.5	66	46	56.1	-3.1	79	31	36	29	11	0	46	70	2.51	-.38	.95	14	8	.0	0	---	---	--	---	--	2	8	21	7.7	--
St. Paul Island	22	1015.9	1017.3	51	44	47.6	1.7	55	25	38	22	0	0	45	93	.57	-1.86	.37	7	0	.0	0	---	---	--	---	--	0	1	30	9.6	--
Yakutat	28	1013.9	1015.0	62	47	54.4	1.7	79	29	38	6+	3	0	50	82	1.70	-6.93	.37	13	0	.0	0	5.9	ESE	*28	E	24	4	4	23	8.0	--

Data from airport unless otherwise specified. U indicates Urban, R indicates Rural, sites.
* Data entered in column "Fastest Mile" is the fastest mile observed. This station is not equipped with automatic recording wind instrument.
+ And also on a later date or dates.
a Maximum hourly average
% Peak gust.
# Number of days maximum 70° or above for Alaskan stations.
Ø Station pressures apply to elevation shown in Table 10b of the annual issue of this publication.

HEATING DEGREE DAYS

(Base 65°F.)

JULY 1957

State and station	Current season		Normals
	This month	Period July through this month	July through this month
ALABAMA			
Birmingham	0	0	0
Mobile	0	0	0
Montgomery	0	0	0
ARIZONA			
Flagstaff	47	47	49
Phoenix (U)	0	0	0
Phoenix	0	0	0
Prescott	0	0	0
Tucson	0	0	0
Winslow	0	0	0
Yuma	0	0	0
ARKANSAS			
Ft. Smith	0	0	0
Little Rock	0	0	0
Texarkana	0	0	0
CALIFORNIA			
Bakersfield	0	0	0
Bishop	0	0	0
Blue Canyon	21	21	36
Burbank	0	0	0
Eureka (U)	254	254	267
Fresno	0	0	0
Los Angeles (U)	0	0	0
Los Angeles	0	0	31
Mt. Shasta (R)	29	29	37
Oakland	14	14	84
Red Bluff	0	0	0
Sacramento (U)	0	0	0
Sacramento	0	0	0
Sandberg (R)	0	0	0
San Diego	0	0	11
San Francisco (U)	162	162	189
San Francisco	45	45	144
San Jose	0	0	7
Santa Maria	55	55	98
COLORADO			
Alamosa	21	21	64
Colorado Springs	1	1	8
Denver	0	0	5
Grand Junction	0	0	0
Pueblo	0	0	0
CONNECTICUT			
Bridgeport	0	0	0
Hartford	0	0	0
New Haven	0	0	0
DELAWARE			
Wilmington	0	0	0
DIST. OF COLUMBIA			
Washington (U)	0	0	0
Washington	0	0	0
FLORIDA			
Apalachicola (U)	0	0	0
Daytona Beach	0	0	0
Fort Myers	0	0	0
Jacksonville	0	0	0
Key West (U)	0	0	0
Miami (U)	0	0	0
Miami	0	0	0
Miami Beach	0	0	0
Orlando	0	0	0
Pensacola (U)	0	0	0
Tallahassee	0	0	0
Tampa	0	0	0
West Palm Beach	0	0	0
GEORGIA			
Athens	0	0	0
Atlanta	0	0	0
Augusta	0	0	0
Columbus	0	0	0
Macon	0	0	0
Rome	0	0	0
Savannah	0	0	0
IDAHO			
Boise	5	5	0
Lewiston	1	1	0
Pocatello	2	2	0
ILLINOIS			
Cairo (U)	0	0	0
Chicago	0	0	0
Chicago University	0	0	
Moline	0	0	0
Peoria	0	0	0
Springfield	0	0	0
INDIANA			
Evansville	0	0	0
Ft. Wayne	0	0	0
Indianapolis	0	0	0
South Bend	0	0	5
IOWA			
Burlington	0	0	0
Des Moines	0	0	5
Dubuque	1	1	8
Keokuk (U)	0	0	
Sioux City	0	0	8
KANSAS			
Concordia (U)	0	0	0
Dodge City	0	0	0
Goodland	0	0	0
Topeka (U)	0	0	0
Topeka	0	0	0
Wichita	0	0	0
KENTUCKY			
Lexington	0	0	0
Louisville	0	0	0
Pikeville (U)	0	0	
LOUISIANA			
Baton Rouge	0	0	0
Lake Charles	0	0	0
New Orleans (U)	0	0	0
New Orleans	0	0	0
Shreveport	0	0	0
MAINE			
Caribou	102	102	85
Greenville (U)	83	83	
Portland	23	23	15
MARYLAND			
Baltimore (U)	0	0	0
Baltimore	0	0	0
Frederick	0	0	0
MASSACHUSETTS			
Blue Hill Obs. (R)	4	4	
Boston	0	0	0
Nantucket	2	2	22
Pittsfield	40	40	25
MICHIGAN			
Alpena (U)	37	37	50
Detroit	0	0	0
Detroit (Willow Run)	0	0	0
East Lansing (U)	0	0	
Escanaba (U)	30	30	62
Grand Rapids	1	1	14
Marquette (U)	62	62	69
Muskegon	4	4	26
S. Ste. Marie	90	90	109
MINNESOTA			
Duluth (U)	51	51	66
Duluth	35	35	56
Internat. Falls	21	21	70
Minneapolis	0	0	[illegible]
Rochester	0	0	24
St. Cloud	0	0	32
MISSISSIPPI			
Jackson	0	0	0
Meridian	0	0	0
Vicksburg (U)	0	0	0
MISSOURI			
Columbia	0	0	0
Kansas City	0	0	0
St. Joseph	0	0	0
St. Louis (U)	0	0	0
St. Louis	0	0	0
Springfield	0	0	0
MONTANA			
Billings	3	3	[illegible]
Glasgow	4	4	14
Great Falls	7	7	24
Havre (U)	3	3	20
Helena	7	7	36
Kalispell	60	60	47
Miles City	0	0	[illegible]
Missoula	26	26	22
NEBRASKA			
Grand Island	0	0	0
Lincoln (U)	0	0	0
Norfolk	0	0	0
North Platte	0	0	7
Omaha	0	0	0
Scottsbluff	0	0	0
Valentine	0	0	11
NEVADA			
Elko	4	4	6
Ely	12	12	22
Las Vegas	0	0	0
Reno	1	1	27
Tonopah	0	0	0
Winnemucca	1	1	0
NEW HAMPSHIRE			
Concord	17	17	11
Mt. Washington Obs.	578	578	
NEW JERSEY			
Atlantic City (U)	0	0	0
Newark	0	0	0
Trenton (U)	0	0	0
NEW MEXICO			
Albuquerque	0	0	0
Clayton	0	0	0
Roswell	0	0	0
NEW YORK			
Albany	3	3	0
Binghamton	42	42	16
Buffalo	13	13	16
New York (U)	0	0	0
New York	0	0	0
Rochester	17	17	9
Schenectady	0	0	
Syracuse	10	10	0
NORTH CAROLINA			
Asheville (U)	0	0	0
Cape Hatteras (R)	0	0	0
Charlotte	0	0	0
Greensboro	0	0	0
Raleigh	0	0	0
Wilmington	0	0	0
Winston-Salem	0	0	0
NORTH DAKOTA			
Bismarck	0	0	29
Devils Lake (U)	1	1	47
Fargo	0	0	25
Grand Forks	2	2	
Pembina	5	5	
Williston (U)	0	0	29
OHIO			
Akron	11	11	0
Cincinnati (U)	0	0	0
Cincinnati	0	0	0
Cleveland	0	0	0
Columbus	0	0	0
Dayton	0	0	0
Sandusky (U)	0	0	0
Toledo	0	0	0
Youngstown	12	12	0
OKLAHOMA			
Oklahoma City	0	0	0
Tulsa	0	0	0
OREGON			
Astoria	181	181	138
Burns (U)	24	24	10
Eugene	42	42	33
Meacham	123	123	88
Medford	6	6	[illegible]
Pendleton	0	0	0
Portland (U)	14	14	13
Portland	25	25	25
Roseburg	24	24	
Salem	39	39	21
Sexton Summit (R)	157	157	88
PENNSYLVANIA			
Allentown	0	0	0
Harrisburg	0	0	0
Philadelphia (U)	0	0	0
Philadelphia	0	0	0
Pittsburgh (U)	0	0	0
Pittsburgh	4	4	0
Reading (U)	0	0	0
Scranton	11	11	0
Williamsport	0	0	0
RHODE ISLAND			
Block Island	3	3	6
Providence	0	0	0
SOUTH CAROLINA			
Charleston (U)	0	0	0
Charleston	0	0	0
Columbia	0	0	0
Florence	0	0	0
Greenville	0	0	0
Spartanburg	0	0	0
SOUTH DAKOTA			
Huron	0	0	10
Pierre	0	0	
Rapid City	0	0	32
Sioux Falls	0	0	16
TENNESSEE			
Bristol	0	0	0
Chattanooga	0	0	0
Knoxville	0	0	0
Memphis	0	0	0
Nashville	0	0	0
TEXAS			
Abilene	0	0	0
Amarillo	0	0	0
Austin	0	0	0
Brownsville	0	0	0
Corpus Christi	0	0	[illegible]
Dallas	0	0	0
Del Rio	0	0	0
El Paso	0	0	0
Ft. Worth	0	0	0
Galveston (U)	0	0	0
Galveston	0	0	0
Houston (U)	0	0	0
Houston	0	0	0
Laredo	0	0	[illegible]
Lubbock	0	0	0
Midland	0	0	
Port Arthur	0	0	0
TEXAS (Cont'd.)			
San Angelo	0	0	0
San Antonio	0	0	0
Victoria	0	0	0
Waco	0	0	0
Wichita Falls	0	0	0
UTAH			
Milford	0	0	0
Salt Lake City	0	0	0
VERMONT			
Burlington	17	17	19
VIRGINIA			
Lynchburg	0	0	0
Norfolk	0	0	0
Richmond	0	0	0
Roanoke	0	0	0
WASHINGTON			
Olympia	105	105	91
Seattle (U)	47	47	49
Seattle-Tacoma	97	97	75
Spokane	30	30	17
Stampede Pass (R)	393	393	251
Tatoosh Island (R)	287	287	295
Walla Walla (U)	0	0	0
Yakima	28	28	0
WEST VIRGINIA			
Charleston	0	0	0
Elkins	13	13	9
Huntington (U)	0	0	0
Parkersburg (U)	0	0	0
WISCONSIN			
Green Bay	14	14	32
La Crosse	0	0	11
Madison (U)	0	0	10
Madison	1	1	13
Milwaukee	8	8	20
WYOMING			
Casper	5	5	13
Cheyenne	8	8	33
Lander	6	6	7
Sheridan	3	3	27
ALASKA			
Anchorage	206	206	239
Annette	273	273	262
Barrow	788	788	784
Barter Island	746	746	
Bethel	274	274	326
Cold Bay	450	450	
Cordova	339	339	363
Fairbanks	150	150	149
Juneau	288	288	319
King Salmon	261	261	
Kotzebue	369	369	384
McGrath	190	190	206
Nome	521	521	477
Northway	272	272	186
St. Paul	535	535	592
Yakutat	321	321	381

Data from airport unless otherwise specified.
U indicates Urban, R indicates Rural, sites.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

JULY 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MISSISSIPPI Grenada area, Grenada County	1	Midnight -5 a.m.					4	4	Rain	6.29 inches of rain, of which about 5 inches fell in 2 hours, flooded streets of Grenada with 10 stores damaged by floodwaters; heavy runoff and overflow from creek caused considerable damage to crops in surrounding area.
OKLAHOMA Sand Springs, Tulsa County	1	2 a.m.			0	0		1	Tornado	Funnel reported to have dipped down and destroyed revival tent and broke many of the 2,000 chairs.
KANSAS Rice and Saline Counties	1	2-3 a.m.							Wind and electrical	Thunderstorm hit Salina about 2 a.m. Wind gusts to 44 m.p.h., recorded at Air base but were evidently higher in nearby area. Power and transmission lines broken in a number of places. At 2:15 a.m., bolt of lightning struck house in Lyons, Rice County. T.V. set ruined and some damage done the house and contents by fire. Storm moved southeastward.
OKLAHOMA Tulsa, Tulsa County	1	2:20 a.m.			0	0	4	1	Tornado, rain, electrical, and funnel aloft	Tornado dipped to tree-top level and moved across southern edge of Tulsa. House unroofed, shopping center had building damage and broken windows; other buildings damaged, trees uprooted, and utility lines damaged. Several homes struck by lightning, causing damage varying from $200 to $3,000. Second funnel sighted at same time about 1 mile southwest; evidently remained aloft as no other reports received. Storm moved northeastward.
OKLAHOMA Vinita area, Craig County	1	3:10 a.m.					4	1	Wind and rain	Strong winds destroyed large barn and windmill and damaged small shed on farm north of Vinita. Barn contained 100 bushels of grain. Windblown tin cut through telephone cable and electric powerline.
ARKANSAS Sebastian, Crawford, Washington, Benton, and Carroll Counties	1	3:15 a.m.				1			Wind and rain	Widespread thunderstorm activity with high winds and locally heavy rains. Extensive wind damage to powerlines, roofs, trees, and TV antennas. Several homes and outbuildings damaged; 600 young turkeys killed. Heavy rains caused about $5,000 damage by local flooding in Fort Smith.
KANSAS Southeastern portion	1	3:30-6 a.m.							Wind and electrical	Heavy thunderstorm over extreme southeast. Winds estimated at 50 m.p.h., or higher, broke tree limbs, and some windows, and caused roof damage at both Parsons and Fort Scott. Storm moved southeastward.
OKLAHOMA Coweta, Wagoner County	1	5 a.m.			0	0			Funnel aloft	Funnel aloft reported over Coweta moving northeastward.
OKLAHOMA Sallisaw area, Sequoyah County	1	A.m.							Wind and rain	Strong winds accompanied by heavy rain caused damage to roofs, outbuildings, trees, utilities, etc.
MISSOURI Kennett, Dunklin County	1	Early morning							Rain	Up to 5 inches of rain. Local flooding around 20 homes.
ARKANSAS Conway (3 miles west of), Faulkner County	1	1 p.m.	** 880	150			4	1	Wind and rain	Hangar destroyed and 3 airplanes extensively damaged by wind at private airport. Excessively heavy rainfall accompanied storm. Storm moved northeastward.
MISSOURI Pleasant Hill, Cass County	1	1:15 p.m.			0	0			Funnel aloft	
MONTANA Richland County	1	3 p.m.	6-8	*1-1/2			1	5	Hail	Hailstones 1/4 to 1/2 inch in diameter. Damage in 3 communities, Lambert, Hilcrest, and Girard. Storm moved eastward.
SOUTH DAKOTA Southeastern portion	1	3-7 p.m.			0	0	3	4	Funnels aloft, hail and wind	Series of thunderstorms left hail up to size of golf balls. Most between Wessington Springs and Academy. Minor wind damage. Irregularly shaped clouds described by some as "funnels". Storm moved southeastward.
MONTANA Brockway and Circle areas, McCone County	1	3:30 p.m.	10	* 1-1/2			2	5	Hail and wind	Heavy wind accompanied storm. Hailstones up to size of walnuts. Storm moved northeastward.
MINNESOTA Madison (near), Lac Qui Parle County	1	4 p.m.			0	0	3	4	Hail and funnel aloft	Hail from pea size up to 3 inches in diameter damaged roofs, broke windows, and flattened crops. Several persons observed funnel cloud aloft. Storm moved eastward.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TEXAS Plains area, Yoakum County	1	5 p.m.	25	*15			°4	C	Wind, rain, hail, and dust	Winds estimated at 90 m.p.h., with gusts even higher brought blinding dust and sand. Heavy rain dumped official 1.89 inches in 20 minutes. Hail of marble size fell heavily. Some farmers estimated crop losses of 100 percent; roofs and phone lines and equipment damaged and granary blown down.
ARKANSAS Howard and Pike Counties	1	7 p.m.					4	3	Wind, electrical, rain, and hail	Widespread thunderstorm activity. Extensive damage to homes, outbuildings, and trees, with principal damage in Saratoga area, Howard County. Some hail reported in Antoine area, Pike County. Storm moved northwestward.
MONTANA Square Butte, Chouteau County	1	8:30 p.m.	11	*2			1	4	Hail	Ground covered up to 1 inch with hail. Stones up to 1 inch in diameter. Storm moved eastward.
NEBRASKA Knox County (western portion)	1	Evening					2	4	Hail	Hailstones size of marbles.
ARIZONA Phoenix, Maricopa County	1				1		1	1	Heat	Man died of heatstroke.
OKLAHOMA Creek County	1				0	0			Tornado and funnel aloft	Motorist lifted off highway and set in ditch by what was believed to have been tornado 8 miles east of Drumright. Police reported funnel aloft 8 miles west of Sapulpa at 3:15 a.m. Funnel evidently moved through open country or dipped down momentarily as no other damage reported. Storm moved eastward.
	1									Minor storms also reported at Blackfoot, Idaho; at Emporia, Kans.; at Vida, Mont.; near Central City and Page and in western Washington County, Nebr.; and at Blackwell, Cushing, and Okmulgee, Okla.
SOUTH DAKOTA Northern and eastern portions	1-2	9 p.m.-7 a.m.			0	0	3	5	Funnel aloft, hail, and wind	Scattered hail in Harding and Perkins Counties before midnight. Thunderstorm, with intermittent hail and gusts to 50 m.p.h., passed Pollock at midnight, reached Huron at 5 a.m., with gusts to 75 m.p.h. Funnel cloud southeast of Huron. Wind died after passing Madison at 6:40 a.m. Sporadic hail and wind damage from Pollock to Madison. Storm moved southeastward.
NEBRASKA Burt County (northwestern portion)	2	3-5 a.m.	5	*3-4			2	4	Hail	Storm moved eastward or southeastward.
NEBRASKA Pender (9 miles east of), Thurston County	2	5:30-5:45 a.m.	4-1/2	*1-1/2			1	4	Hail	Stones 1-1/2 to 2 inches in diameter. Storm moved northeastward.
TENNESSEE Gates and Ripley areas, Lauderdale County	2	A.m.							Rain	At Gates, several inches of water backed into business houses and some homes flooded. Near Ripley, numerous fields and 1 house flooded. Stretch of Highway 51 between Gates and Dyersburg inundated.
NEBRASKA Hitchcock County (southwestern and south-central portions)	2	4 p.m.	12	*1-2			3	5	Hail	Hailstones size of marbles. Storm moved eastward.
NORTH DAKOTA Sheridan, Wells, Foster, Griggs, and McLean Counties	2	4:45 p.m.	160	*2-7		4	5	6	Wind and hail	Hailstones 1 inch in diameter. Some crops completely destroyed, building roofs and windows broken and damaged at Carrington. Storm moved southeastward.
MICHIGAN Northern portion	2	Afternoon-evening				1	4	3	Wind, electrical, rain, and hail	Squall line moved across Upper Peninsula and extreme northern Lower Michigan. High winds downed many trees and utility lines. Lightning caused some damage, and in some areas heavy showers resulted in flooding. Heavy hail reported in Escanaba area. Storm moved eastward.
NEBRASKA Curtis (9 miles southwest of), Frontier County	2	5:15-5:30 p.m.	5	880	0	0	4	3	Tornado	Tornado moved northwestward.

See footnotes at end of table

STORM DATA AND UNUSUAL WEATHER PHENOMENA

JULY 1957

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					Killed	Injured	Property (exclusive of crops)	Crops		
FLORIDA Jacksonville, Duval County	2	6:30 p.m.			0	0			Tornado (suspected)	Moved southeastward.
MISSISSIPPI Hermanville, Claiborne County	2	7 p.m.				4	4	2	Wind	Squall line apparently developed at Vicksburg and moved southeastward with increasing violence until small town of Hermanville reached; several small homes badly damaged.
SOUTH DAKOTA Nisland, Vale, Butte, Wall and Pennington Counties	2	8 p.m.					4	4	Hail	Hailstones up to 16 inches in circumference. Buildings and cars damaged, a few young livestock killed. Less severe hail extended to near Wall. Storm moved southeastward.
MINNESOTA Grant and Wilkin Counties	2	8-10 p.m.					1		Hail	Damage spotty. Some areas up to 100 percent small grain loss. Storm moved southeastward.
NEBRASKA Wisner (near), Cuming County	2	8:30 p.m.	Short	Narrow	0	0	2	1	Tornado	Hog house moved to 50 feet turned around, and set down with only minor damage.
NEBRASKA Nelson (9 miles west of), Nuckolls County	2	9 p.m.			0	0			Funnel aloft	Moved northeastward.
NEBRASKA Clay Center (southwest of), Clay County	2	9:40 p.m.	Short	Narrow	0	0			Funnel aloft	
NEBRASKA Brady (9 miles southeast of), Lincoln County	2	10:02 p.m.	Short	Narrow	0	0			Funnel aloft	
NORTH DAKOTA Richland County	2						4	5	Wind and hail	Several barns damaged.
	2									Minor storm also reported near Minneapolis, Minn.
SOUTH DAKOTA Harding to Minnehaha Counties	2-3	9 p.m.-5 a.m.					5	5	Wind, hail, and electrical	Thunderstorms entered northwest corner; hail began in western Perkins County, and fell in narrow band across State, ending near Sioux Falls. Extensive high winds from Faith to Sioux Falls. Most damage east of Missouri River. 13 barns and numerous smaller buildings wrecked. 10 barns and 1 house unroofed. 4 house trailers overturned. Lightning fire demolished home and contents. Strongest wind of record at Huron, gusts to 97 m.p.h. Storm moved east-southeastward.
MISSOURI Valley Park, St. Louis County	2-3								Rain	Meramec River crested at 32 feet, 16 feet above flood stage. 800 persons in 200 homes had to be evacuated.
IOWA Northern portion	3	3:45-7 a.m.	300	*50			5	5	Wind	Damaged buildings, utilities, crops, and injured or killed livestock. Entered State at Lyon County about 3:45 a.m., and moved east-southeastward crossing Fayette County about 7 a.m.
MINNESOTA Rock and Nobles Counties	3	5-6 a.m.	50	*8	0	2	5	5	Wind, electrical, hail, and tornado (suspected)	Generally straight-line winds with some local evidence of tornado blew down at least 12 barns, thousands of trees, telephone lines, outbuildings and windmills. Livestock killed by lightning. Drive-in theater and house trailer damaged in Luverne. Lumberyard roof blown off and church destroyed at Ellsworth. Grain downed in fields. Hail damage to crops in 5 townships. Storm moved southeastward.
IOWA Boone and Jasper Counties	3	7 a.m.			0	0			Funnels aloft	Public reported sighting funnel clouds aloft.
IOWA Mahaska and Iowa Counties southeastward to Van Buren County	3	7:15-9:30 a.m.					4	5	Wind and electrical	Destroyed farm buildings, and caused local flooding. Storm moved southeastward.
IOWA Pottawattamie County	3	Morning			1		1	1	Electrical	Farmer killed as he worked in field.

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STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MONTANA Phillips County	3	2 p.m.					1	4	Hail	Heavy rain at Malta flooded roads. Hail damage reported from local areas in county. Storm moved eastward.
MINNESOTA Houston County	3	Afternoon			0	0			Funnels aloft	Air force pilot reported funnel clouds moving southward.
SOUTH DAKOTA Brule and Lyman Counties	3	3-9:25 p.m.			0	0	5	4	Hail, wind, and funnels aloft	Thunderstorms began in northwestern part of State about 3 p.m., with intermittent hail Strong winds developed in Lyman County. Unidentified person told press 2 funnels met north of Kimball. Buildings damaged on 5 farms. County fairground exhibition hall and grandstand demolished. 2 display windows broken. House trailer overturned. Storm moved east-southeastward.
COLORADO Meeker, Rio Blanco County	3	4:40 p.m.			0	0			Tornado	Freak wind damaged Rio Blanco County High School building at Meeker. Wind caught corner of roof, peeling it back over one-half building.
NEBRASKA Roscoe (6 miles south-southeast of), Keith County	3	8 p.m.	Short	Narrow	0	0	3	2	Tornado	Tornado moved eastward.
MONTANA Hilger and Roy, Fergus County	3	10 p.m.	30	*8			1	4	Hail	Storm moved northeastward.
NEBRASKA North Platte and vicinity, Lincoln County	3	10 p.m.			0	0	3	2	Wind and funnels aloft	2 funnels observed.
NEBRASKA Callaway (near), Custer County	3	10:30 p.m.	Short	Narrow	0	0	3	1	Tornado	Funnel observed. Storm moved north-northeastward.
NEBRASKA Comstock (north and east of), Custer County	3	Late evening			0	0	3	2	Wind and tornado (suspected)	Possibly with tornado. Storm moved eastward.
	3									Minor storms also reported at Rexville, Ind.; in Hamilton and Marshall Counties, Iowa; at Essex Center, Essex Junction, and Underhill, Vt.
SOUTH DAKOTA Gregory to Union Counties	3-4	10 p.m.-2 a.m.					3	4	Wind and hail	Small buildings blown down near Gregory and Tyndall. Most hail fell near and shortly after midnight between Lesterville and Elk Point. Storm track 25 miles south of more severe hailstorm (listed separately). Storm moved east-southeastward.
SOUTH DAKOTA Hutchinson, Turner, Lincoln, and Union Counties	3-4	11 p.m.-1 a.m.					[illegible]	6	Hail and wind	Said to have been most destructive hailstorm in State history. Resulted from same thunderstorms that produced earlier storm. Sporadic hail from Kimball to Freeman, then devastating along 8-mile wide band to Hawarden, Iowa. Most crops total loss. Hailstones reached baseball size. Buildings and cars damaged, cattle bruised, several hogs killed, and bark stripped from trees. Strong winds blew car from road. Storm moved southeastward.
IOWA Sioux County	4	12:30 a.m.	35	*8			5	5	Hail and wind	Damaged buildings and crops. Storm moved southeastward.
IOWA Ida County to Iowa County	4	1:45 a.m.-5 a.m.	150	*50	0	1	6	5	Wind and tornado (suspected)	Damaged buildings and utilities. Motorist reported seeing funnel in northeastern Crawford County. Woman injured when her basement home collapsed. Storm moved east-southeastward.
WISCONSIN Brill, Barron County	4	6:30 a.m.	4	150	0	4	5	1	Tornado	2 funnels reported moving northeastward.
WISCONSIN Door County	4	2 p.m.				2	4	3	Wind	High winds with cold front passage. Storm moved eastward.
MICHIGAN Harbor Springs, Emmet County	4	4 p.m.	6	35	0	0	4	3	Tornado	Funnel developed near western edge of Harbor Springs, destroyed 2 barns, damaged several other rural buildings, and uprooted many trees; moved northeastward.

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STORM DATA AND UNUSUAL WEATHER PHENOMENA

JULY 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
INDIANA Johnson County	4	4:45 p.m.				25	°5	C	Wind and rain	High winds damaged houses, TV antennas, and utility lines. Several barns flattened. Court house at Franklin damaged severely. 3 inches of rain falling in 40 minutes at Franklin flooded streets and basements. Over 1,000 trees blown down in Franklin. 500-foot radio tower collapsed.
ILLINOIS Southwestern portion	4	5 p.m.							Wind and hail	Scattered wind damage in Jerseyville and heavy hail damage to crops west of city. Impossible to estimate damages for particular areas. Scattered wind, rain, and hail damage occurred during following three hours in area southeastward to Carbondale and West Frankfort.
INDIANA Bengal and Marietta, Shelby County	4	5 p.m.			0	0	°5	C	Tornado	Tornado struck area between Bengal and Marietta. Many buildings damaged or destroyed.
MICHIGAN Presque Isle County	4	5 p.m.	5	130	0	0	4	3	Tornado	Funnel developed just south of Lake May, destroyed 3 barns, damaged several other rural buildings, and downed a large number of trees; moved eastward.
NEBRASKA Maywood (2 miles east of), Frontier County	4	5-5:30 p.m.	Short	33	0	0	4	2	Tornado and funnel aloft	4 other funnels observed in vicinity.
INDIANA Bartholomew County	4	6-9 p.m.					5	4	Electrical, wind, and hail	Residence west of Columbus struck by lightning and burned to ground. Several other house fires of same origin. Winds reached 80 m.p.h., at Bakalar Air Force base where wind damaged 2 planes. Many trees blown down which damaged utility lines, cars, and other property. Crops damaged by hail. $25,000 damage by lightning, $75,000 by wind to property; $50,000 hail damage to crops.
MICHIGAN Livingston and Oakland Counties	4	6:55 p.m.	32	50	0	5	5	1	Tornado, wind, rain, and hail	Funnel developed just southeast of Brighton, injuring 4 persons, destroying 2 homes and damaging 10 others in new subdivision. Funnel lifted several times as it moved eastward toward northern suburbs of Detroit, where funnel apparently was replaced by windsqualls. Damage to buildings, trees, and powerlines reported at many points along path, including Detroit suburban area. Heavy rains and some hail occurred along and near storm path, causing flooding in some places. Storm moved eastward.
OHIO Bryan, Williams County	4	6:55 p.m.	4	75-100	0	5	°5	C	Tornado, funnels aloft, and rain	This storm struck about an hour after rain started, and was part of squall line thunderstorm. Witnesses reported seeing several small funnel clouds aloft, but only 1 made contact with ground. Even so, it caught only tree and roof tops over most of its path. Only in rural sections did it demolish whole buildings (barns). Principal damage to some 30 business buildings and homes in city, most of which lost large sections of roofs, to windows, signs, etc. Included was Williams County Court house where clock face blown off west side of tower and landed on east side. Tornado moved east-southeastward. This is well substantiated as real tornado although it never made firm contact with ground. Mr. Lautzenheiser, State Climatologist on leave from Boston, viewed damage and concurred with local residents that true funnel cloud was present.
MICHIGAN New Lothrop (near), Shiawassee County	4	7 p.m.	1				4	1	Wind	High winds struck small area 3 to 4 miles west of New Lothrop, destroying or damaging several farm buildings and downing many trees.
INDIANA Marion County	4	7:45 p.m.				2	4	1	Electrical and wind	Lightning started fires in at least 10 houses and 7 other buildings. Wind blew down outdoor theater screen and damaged several cars. $30,000 damage by lightning, $20,000 by wind.
KENTUCKY Gallatin, Grant, and Pendleton Counties	4	10 p.m.			0	3	5	5	Wind, hail, and tornadoes (suspected)	Storm seemed to begin in Gallatin County, moved into Grant County, and then passed into Pendleton County. By path of destruction and type of damage, it is possible that tornadoes may have existed, although no funnel clouds observed. Numerous barns, several homes, and other buildings unroofed or otherwise damaged or destroyed. Trailer turned over and occupants injured. Many trees and utility poles blown over, causing disruption to power and

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JULY 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
KENTUCKY (Cont'd.)										telephone services. Hail destroyed tobacco, corn, and gardens, with about 200 claims for crop damage reported by insurance companies.
TENNESSEE Martin, Weakly County	4	10:30-10:45 p.m.	2		0	0	4	1	Tornado	Funnel observed moving eastward. 2 paths of damage across city about 1/4 mile apart, each 200 yards wide. Winds felled carnival ferris wheel, demolished store house, and damaged roofs of 2 others, and blew down trees and limbs which damaged church, 4 homes, automobile and truck.
INDIANA Jefferson County	4	P.m.					6	6	Rain	Heavy rain and resulting floods washed out several bridges, damaged about 100 pleasure boats at Brooksburg and flooded many tobacco fields. Flood water from Crooked Creek damaged 123 homes and businesses in Madison. Road damage alone estimated at $100,000.
KENTUCKY Harrison, Robertson, and Bracken Counties	4	P.m.					4	4	Wind and hail	Winds ripped through barns and dwellings, destroying several barns and damaging a few homes. Chimney of church blown off. Power services disrupted by falling limbs. Extensive damage to tobacco crops caused by hail.
INDIANA New Castle, Henry County	4	Evening				2	3	1	Wind	High winds collapsed skating rink tent injuring 2 persons.
INDIANA Dover (northwest of), Boone County	4	Evening			0	0	4	1	Tornado	Small tornado reported to have destroyed barn and other small buildings.
INDIANA Preble and Decatur, Adams County	4	Evening				5	4	1	Wind	Winds of severe thunderstorm struck tavern removing most of roof. Several automobiles crushed by parts of roof. Minor damage occurred at nearby Decatur.
INDIANA Huntington County	4	Evening					°4	C	Wind	High winds struck eastern half of county, destroying barn, damaging many buildings, overturning house trailer, and toppling many trees.
KANSAS Riley County	4					1			Electrical	Woman injured and slight damage done to house by lightning a few miles south of Randolph.
	4									Minor storms also reported at Yuma, Ariz.; in Putnam County and at Whiting, Ind.; near Carthage and Washington, Mo.; at Fairbury, Nebr.; at Bennington, Vt.; and at Wausau, Wis.
INDIANA Switzerland County	4-5	8 p.m.-3 a.m.				1	6	5	Rain and electrical	4 to 7 inches of rain flooded fields, streets, and houses. Most damage occurred in Vevay and western part of county. Damage to tobacco fields estimated at $130,000 and corn $105,000. A few farm animals killed by lightning. $750,000 rain damage and $5,000 lightning damage to property. Crop damage by rain.
MISSOURI Labadie, Franklin County	4-5								Rain and wind	Labadie and Fiddle Creeks flooded. 37 persons driven from homes by flood waters.
MASSACHUSETTS Central and Western portion **NEW HAMPSHIRE** and **VERMONT** Extreme southern portions	5	Midday - evening			0	0	4	3	Electrical, hail, wind, and tornadoes (suspected)	Brief but severe thundersqualls struck many scattered localities in area. Many reports of hail of marble size, with golf-ball size at Fitchburg, Mass., with loss of gardens and crops. Lightning and wind damage to trees and utility lines. 3 localities reported "baby twisters" with narrow severe damage paths. At Northampton, Mass., at 9:20 a.m., a 1-mile very narrow path of damage to trees and wires in southeast direction. At about 7:30 p.m., second one reported from Brattleboro, Vt., accompanied by wierd, yellow and red-colored sky, and hail, with extensive damage to trees and utilities in path to southeast. Near 8 p.m., third, 20-yard wide damage path in Leominster, Mass., with hail up to 1-1/2 to 2 inches in diameter. Path direction to southeast. No confirmation of funnel clouds or tornadoes received concerning these storms.
NORTH CAROLINA Cabarrus, Martin, Pasquotank, and Wilson Counties	5	Afternoon -evening					4	4	Electrical, wind, and hail	Widespread heavy thunderstorms in connection with prefrontal squall line caused damage in several localities. Crop damage mostly from hail, property damage mostly to power and communications facilities by lightning and falling trees.

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JULY 1957

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					Killed	Injured	Property (exclusive of crops)	Crops		
ARIZONA Nogales, Santa Cruz County	5	5 p.m.	5	2	3		3	1	Electrical, wind, rain, and hail	3 deaths and considerable property damage in Nogales and Sonora.
DELAWARE Fenwick Island Beach, Sussex County	5	5 p.m.			0	0	3		Tornado	Small tornado picked up jeep, carried it 50 feet; took small house off foundation; lifted small boat out of water and flung it about 200 feet against telephone pole.
DELAWARE Frankford, Roxana, and Fenwick Island, Sussex County	5	5 p.m.	10	100			4		Wind and hail	Winds up to 80 m.p.h., associated with thunderstorm and hail caused damage to barns, cottages, chicken houses, TV antennas, and trees. Storm moved southeastward.
SOUTH CAROLINA Cooper River, Charleston County	6	11 a.m.			0	0			Waterspout	Small waterspout.
WYOMING Casper, Natrona County	6	3 p.m.						1	Electrical	Lightning set afire oil storage tank, destroying over 10,000 barrels of oil and the tank.
CALIFORNIA Chowchilla and LeGrand areas and southeast of Copperopolis, Madera, Merced and Calaveras Counties	6	5:23-6:30 p.m.					5		Wind, electrical, rain, and hail	Thunderstorms over central Sierras and high local winds in some foothill areas. High wind gusts sweeping up Stanislaus River Canyon tore out false work and dropped center span of O'Byrnes Ferry Bridge under construction, damage estimated about $75,000 by Secretary of Tri-Dam Project. Windstorm toppled trees up to 20 inches in diameter, accompanied by thunder, lightning, traces of rain and scattered hail, with some damage in orchards reported. At LeGrand, heavy wind gusts lasted 5 to 10 minutes, uprooted trees and broke windows, gusts estimated above 80 m.p.h., by observer. Hail fell at Tahoe and Squaw Valley.
NORTH DAKOTA Cavalier County	6	6 p.m.		*14			4	6	Wind and hail	One of the most devastating hailstorms ever to hit area caused damage to grain, potatoes, and beets. Unusually large area. Hailstones larger than golf balls. Storm moved southeastward.
MINNESOTA Polk County	6	7 p.m.	16	*3					Hail	Damage reported in 5 townships ranging from 5 to 90 percent loss. Windows broken and siding damaged. Hail generally 1/4 inch in diameter with some up to 3-1/2 inches. Storm moved east-southeastward.
WEST VIRGINIA St. Marys and vicinity, Pleasants County	6	7 p.m.						1	Wind and rain	Trees uprooted, roofs and outbuildings damaged, antennas broken and bent, telephone and power services disrupted.
MINNESOTA Warren and vicinity, Marshall County	6	8 p.m.	30	*12		2	5	6	Hail and wind	Hailstones up to size of baseballs battered 12 townships. Crop damage up to 100 percent in some sections. Extensive damage at Warren to residences, business establishments, and automobiles estimated at $200 per car. Storm moved southeastward.
MINNESOTA Red Lake Falls and vicinity, Red Lake County	6	8 p.m.	15	*3			4	5	Hail	Crops damaged over 45-square mile area. Hailstones 1 inch with some near 3 inches. Storm moved southeastward.
ARIZONA Sunnyslope, Maricopa County	6	Evening						1	Wind	Winds damaged roofs and aerials in residential section.
	6									Minor storms also reported at Lakeland and Savannah, Ga.; at Uniontown and Winstead, Pa.; and at Paris, Tenn.
ARIZONA Tonto National Forest	6-7						5	1	Electrical	Lightning started fires that destroyed over 500 acres of fir trees.
WISCONSIN Madison (north of), Dane County	7	12:36 p.m.			0	0			Funnel aloft	Funnel moved northeastward.
VERMONT Bristol, Addison County	7	2 p.m.	10	*1-1/2			1	4	Hail and wind	1-inch diameter hail covered ground up to 3 inches deep, destroyed gardens and crops, and shredded tree leaves. Storm moved eastward.

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					Killed	Injured	Property (exclusive of crops)	Crops		
MONTANA Utica (3 miles east of), Judith Basin County	7	Afternoon			0	0	2	1	Tornado	Small tornado destroyed machine shed.
NEW YORK Woodbourne, Sullivan County	7	Afternoon			1				Electrical and wind	High winds and severe lightning brought damage to wires and burned down barn. Man inspecting sparking wire killed when wire broke and struck him as it fell.
NEW YORK Mendon, Monroe County	7	Afternoon			1	2			Electrical	Family on picnic outing took shelter under tree which was struck by lightning; 1 child killed, father and baby injured, 5 other children and mother stunned but not hurt.
ILLINOIS Sheldon, Iroquois County	7	3:30 p.m.						5	Hail	Repeated hailstorms during 1-1/2 hour period affected 40-square mile area.
NEBRASKA Dundy County	7	5:30-7:30 p.m.	36	*18	0	1	5	4	Tornado, hail, and funnels aloft	Hailstones 3/8 to 1/2 inch in diameter. 5 funnels observed. Property damage by tornado, crop by hail. Storm moved eastward.
NEBRASKA Callaway (north and northwest of), Custer County	7	6 p.m.	15	*2-4			3	5	Hail	Hailstones size of golf to baseballs, rough and jagged.
INDIANA Warren and Benton Counties	7	6:30 p.m.					3	5	Hail	Center of devastation from Freeland Park and southwest 5 miles. Another area of damage south and southwest of Boswell. Hail size of golf balls dented cars and broke some windows besides laying waste many fields of crops.
NEBRASKA Trenton (near), Hitchcock County	7	8 p.m.			0	0	4	4	Hail, wind, and tornado (suspected)	Possibly with tornado. Property damage by wind, crop by hail.
MINNESOTA Waterville (10 miles north of), Le Sueur County	7	9 p.m.			0	0			Tornado (suspected) and wind	Funnel observed; winds to 60 m.p.h.
NEBRASKA Clearwater to near Pender, Antelope to Thurston Counties	7	9-11 p.m.	90	*5-10			5	6	Hail and wind	Hailstones 3/4 to 2-1/2 inches in diameter most damage Wayne County. Storm moved eastward.
IOWA Spencer (3 miles north and 1/2 mile west of), Clay County	7	9:40 p.m.			0	0			Funnel aloft	Funnel aloft moving eastward reported by farmer.
MINNESOTA Jackson County	7	10 p.m.	10	*1-2					Hail	Damage varied from light to nearly complete loss over 15-square mile area. Storm moved southeastward.
MINNESOTA Ellendale, Steele County	7	11 p.m.			0	0			Funnel aloft	State Police reported funnel cloud.
IOWA LeMars, Plymouth County	7	11:30 p.m			0	0			Funnel aloft	Mayor of town reported seeing funnel cloud aloft.
NEBRASKA Oxford and vicinity, Furnas County	7	Evening			0	0	3	2	Wind and tornado (suspected)	Possibly with tornado.
NEBRASKA Boone County (south-central portion)	7	Night					1		Hail	Crops badly damaged.
	7									Minor storms also reported near Newfolden and Waseca, Minn.; at Benkelman, near Alma, Elm Creek, Hartington, and in Burt and Dodge Counties, Nebr.; at Durham, Lebanon, and Lyme, N. H.; at Seiling, Okla.; and at Necedah, Wis.
MICHIGAN Lower	7-8	Late evening-morning			0	0	6	6	Rain, electrical, wind, hail and funnels aloft	Thunderstorms covered practically all of area, with heaviest rains, often measuring 4 to 6 inches, extending from interior of north-central counties southeastward to Detroit area.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MICHIGAN (Cont'd.)										Flooding caused severe crop damage in areas of heavier rain, especially in Saginaw Valley, and heavy property damage, especially in Detroit area. Many streams went over their banks. Lightning set several fires and scattered wind damage reported. Heavy hail wiped out large area of fruit and field crops in Kalamazoo County. Funnels aloft reported on evening of 7th in Allegan and Kalamazoo Counties.
PENNSYLVANIA Rostraver Township, Westmoreland County	8	Midnight			0	0	4	1	Tornado	Winds which reached 100 m.p.h., at Donora Zinc Works Weather Station destroyed several small buildings in area and caused considerable damage to others. Storm moved eastward.
IOWA Buena Vista County to Wright County	8	1-2 a.m.	100	*40	0	0	4	1	Wind and funnel aloft	Damaged buildings and utilities. Citizen reported seeing a funnel cloud aloft. Storm moved eastward.
IOWA Winneshiek County to Clinton County	8	1-3 a.m.					4	1	Wind and electrical	Damaged buildings and utilities. Storm moved eastward.
WISCONSIN Southern half	8	3-4:30 a.m.			1		4	4	Wind, hail, rain, and electrical	High winds, hail, rain and lightning losses. Storm moved eastward.
NEBRASKA Hamilton County (northern portion)	8	Early a.m.	20	Narrow	0	0	3	4	Wind or tornado (suspected)	Possible tornado. Ripe wheat shattered and stalks broken. Storm moved northeastward.
NEBRASKA Merrick County (western half)	8	9:30 a.m. -noon					4	4	Wind	
	8									Minor storms also reported in Freeport, Lanark, and Marengo areas, Ill.; at Buckner and Owensville, Mo.; at Oil City, Pa.; and at Volga, S. Dak.
PENNSYLVANIA Southwestern counties	8-9	10 p.m.-2 a.m.				1	4	C	Electrical	Lightning fired several homes.
NEBRASKA Shelton to Northern Polk County, Buffalo to Polk County	8-9	Midnight - 2 a.m.	60	*5	0	0	5	2	Wind and tornado (suspected)	Probably with tornado. Storm moved east-northeastward.
COLORADO Elbert and Lincoln Counties	9	2-3:30 p.m.	2	1760			4	2	Hail	Hail pounded town of Simla, damaging roofs and buildings. Most hailstones 1/2 inch and a few 1 inch in diameter. Hail on ground averaged 5 to 8 inches in depth. In Lincoln County, near Hugo, local hailstorm did heavy damage to grain crops. Storm moved southeastward.
FLORIDA Jacksonville, Duval County	9	2:15 p.m.		20	0	0	2		Tornado	Cloud touched ground, visible 5 minutes.
COLORADO Otero County	9	Afternoon		1760					Rain, hail, and wind	Area around Rocky Ford and Swink had heavy crop losses due to heavy rain, hail, and wind. Near-ripe grain beaten into ground and garden vegetables damaged severely. Damage spotty.
WEST VIRGINIA Williamson and vicinity, Mingo County	9	3-4 p.m.						1	Rain	Rain of near cloudburst intensity; roads washed out or covered with mud from slides; streets flooded where sewers inadequate; some disruption of utility services.
WEST VIRGINIA Charleston and vicinity, Kanawha County	9	3:10-5 p.m.			1	6	4	1	Rain, wind, and electrical	Rain of cloudburst intensity flooded streets and basements trapping several automobiles in rapidly rising waters, weakened foundations, caused landslides which blocked traffic; landslide caused automobile accident in which 6 persons injured; man suffered fatal heart attack while attempting to plug basement drain; telephone and power services disrupted for some time; many electrical appliances in basements damaged by water; $12,000 damage to candy and popcorn stocks of vending company; 1 residence damaged by lightning.
CONNECTICUT Hartford County	9	6-10 p.m.					2	1	Electrical and rain	Sudden downpour of rain between 6 and 7 p.m. netted 0.63 inches in 15 minutes at Hartford and 0.91 inches in 42 minutes at WBAS at Windsor Locks, 15 miles north of Hartford. Street

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STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
CONNECTICUT (Cont'd.)										flooding hampered traffic at several points in Hartford. House struck by lightning in Granby, with minor fire damage in basement. Peak wind gust during storm of 37 m.p.h., observed at WBAS.
TENNESSEE Sumner and Robertson Counties	9	P.m.					1		Hail and electrical	6 head of cattle struck by lightning and killed in Clearview community, Sumner County. Hail caused heavy damage to tobacco crops in Oak Grove community, Sumner County and in eastern sections of Robertson County.
KENTUCKY Powell County	9				1	4			Electrical	Lightning killed man and knocked down several other persons.
	9									Minor storms also reported at Tucson, Ariz.; in Wallace County, Kans.; in Garrard County, Ky.; at Holyoke, Mass.; in Martin County, N.C.; and in Cookeville and vicinity, Tenn.
MISSOURI Macks Creek, Camden County	10	3:50 a.m.			0	0			Funnel aloft	
CALIFORNIA Daggett and Lenwood areas, San Bernardino County	10	12:26-1:47 p.m.						1	Rain and electrical	0.96 inch rain fell at Daggett between 12:26 and 1:47 p.m. with thunder from 12:58 to 1:47 p.m. Excessive rains also reported west of Lenwood on Highways 66 and 91, with resulting floodwaters covering highway with debris, momentarily halting traffic.
LOUISIANA Burrwood, Plaquemines Parish	10	2:14 p.m.				0			Waterspouts	3 waterspouts observed west of station.
MONTANA Missoula, Missoula County	10	5:23 p.m.	2-5	*2-5			4	1	Wind	Fastest mile ever recorded at Missoula WBAS, 60 m.p.h., occurred during storm. On 12th, new Missoula record fastest mile, 72 m.p.h., set, but no damage from this storm. Storm moved north-northeastward.
NORTH DAKOTA Burke County	10	Evening					3	4	Hail	
SOUTH CAROLINA Dale (near), Beaufort County	10				1				Electrical	
	10									Minor storms also reported at Powellton, Ill.; at Beloit, Topeka, Russell, and Sylvan Grove, Kans.; at Limestone and in Mars Hill Township, Maine; and at Proctor, Minn.
WISCONSIN Eastern Counties	11	1 p.m.					4	3	Wind, rain, electrical, and hail	Wind, flood, and lightning damages. Storm moved eastward.
WISCONSIN Green Bay (5 miles south of), Brown County	11	1 p.m.			0	0			Funnel aloft	Funnel moved east-northeastward.
WISCONSIN Denmark, Brown County	11	1:30 p.m.			0	0	3	1	Tornado	Tornado moved east-northeastward.
CALIFORNIA Redlands and Big Bear Lake areas, San Bernardino County	11	1:45-2:15 p.m.			1	2		1	Rain and electrical	Intense local thunderstorm centered over Redlands dropped 0.90 inch of rain in less than 30 minutes, mostly in 15 minutes for greatest July daily and monthly amounts since records began in 1888. Heavy rain confined within city, outskirts had only traces. Resulting floodwaters drowned child in open, flood-control channel. Lightning started several forest fires in nearby mountain areas, sheared 50-foot treetop at Big Bear, smashing roof of cabin. Lightning also slightly burned woman and daughter in trailer park and interrupted radio and TV reception at Big Bear.
WISCONSIN Whitelaw, Manitowoc County	11	2 p.m.			0	0	3	1	Tornado	Small tornado moved northeastward.
MICHIGAN Lower southern portion	11	Afternoon					5	6	Rain and wind	Heavy rainfall, up to 5 inches, caused severe crop damage in Clinton County and sections of adjacent counties. Some areas in southeast and east-central that had suffered flooding a few days earlier, received another 1 to 2 inches of rain. Fowler, Clinton County, flooded, and many roads, streets, and basements flooded in heavy rain

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

JULY 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MICHIGAN (Cont'd.)										area. Several streams rose above flood stage. Scattered wind damage reported in several areas of southern Lower Michigan.
NORTH DAKOTA Grand Forks (2 miles west of) Grand Forks County	11	3:56 p.m.			0	0	1	1	Tornado	Funnel apparently touched down several times.
NORTH DAKOTA Grant County	11	Late afternoon							Wind	Wind damaged barns and other buildings and a few barns blown down.
SOUTH CAROLINA Hiltonhead (near), Beaufort County	11	9 p.m.			0	0			Waterspout	Small waterspout apparently moved inland, no damage reported; moved northwestward.
FLORIDA Ft. Lauderdale, Broward County	11	P.m.				1			Rain and electrical	1 person injured by lightning.
FLORIDA Jacksonville, Duval County	11	P.m.					4		Electrical	Severe electrical storm; Weather Bureau counted 374 lightning strokes. Lightning-started fires caused estimated $15,000 damages in city.
FLORIDA Miami (18 miles west of), Dade County	11	P.m.			0	0			Funnel aloft	
COLORADO Grand County	11				1				Electrical	Man killed by lightning while fishing on Granby Reservoir.
NORTH DAKOTA Sheridan County	11								Wind	Heavy damage to crops and farm buildings.
	11									Minor storm also reported near Montpelier, Vt.
WISCONSIN Madison (south of), Dane County	12	9:20 a.m.			0	0			Funnel aloft	Near Lake Waubesa. Funnel moved northeastward.
ILLINOIS Mt. Carroll, Carroll County	12	9:30 a.m.					4	4	Rain and hail	Rainfall of 2.84 inches fell in slightly more than 1 hour. Crop damage by water and some hail.
NEBRASKA Atkinson (northeast of), Holt County	12	1 p.m.	Short	Narrow	0	0			Funnel aloft	
SOUTH DAKOTA Southeastern portion	12	Afternoon					2	4	Hail	Hailstones reached hens' egg size northeast of Bonesteel. Small areas of hail also near Stickney, Loomis, and south of Sioux Falls.
WISCONSIN Madison (8 miles south of), Dane County	12	4:02 p.m.			0	0			Funnel aloft	Funnel moved northeastward.
NORTH CAROLINA Jones County	12	4:30 p.m.						4	Hail	8 square miles damaged, mostly tobacco and corn.
NEBRASKA Grand Island (northeast of), Hall County	12	5:30 p.m.	Short	Narrow	0	0			Funnel aloft	
NEBRASKA Boyd County (extreme eastern portion)	12	5:30-6 p.m.	4	*3			3	4	Hail	Hailstones 1-1/2 to 2-1/2 inches in diameter. Ground covered in center of storm. Storm moved southward.
NEBRASKA McCook (32 miles northeast of), Frontier County	12	6:38 p.m.	Short	Narrow	0	0			Tornado	Struck nothing of value.
INDIANA Fowler, Benton County	12	7 p.m.					4	1	Electrical	Barn located 11 miles west and 1-1/2 miles north of Fowler struck by lightning and burned to ground.
NEBRASKA Knox County (central and eastern portions)	12	7-8 p.m.	20	*1-1/2			3	4	Hail	Hailstones 3/4 to 2 inches in diameter. Storm moved southeastward.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
INDIANA Cedar Lake Airport, Lake County	12	8-9 p.m.	** 200	25	0	0	5	1	Tornado	Small tornado destroyed hangar, 70 x 100 feet, and damaged 7 small aircraft. Tornado moved northward.
NEBRASKA North Platte (5 miles north of), Lincoln County	12	8:50 p.m.	Short	Narrow	0	0			Funnels aloft	2 funnels aloft reported.
INDIANA Lake County	12	Evening					°5	C	Wind, rain, and electrical	Severe thunderstorms raked county. High winds blew down trees, and damaged buildings. Lightning and resulting fire damaged warehouse, some buildings, and electric lines. Several inches of rain flooded streets and houses. 300 families evacuated from homes. $50,000 damage by wind, $120,000 by lightning, and $30,000 by rain.
MICHIGAN Armada, Macomb County	12	Evening					4	1	Electrical	Lightning struck chimney of high school, ripping off section which dropped through roof.
	12									Minor storms also reported at Clinton and West Union, Iowa; and near Atkinson, Nebr.
ILLINOIS Estreme northeastern portion	12-13	Night			4		7		Rain	Chicago had second major flash flood in less than 3 years. Rainfall amounts comparable to October 1954 storm, but occurred in shorter period. For second time in history, locks at Lake Michigan opened to permit reverse flow of water into Lake Michigan from Chicago river. Total damages lighter than in October 1954 storm because of better control measures and drier soil condition to start with. Chicago and Joliet areas had 5 to 8 inches of rain while peak rain totals 7 to 10 inches in Kankakee area. All transportation paralyzed. Midway Airport out of service for approximately 24 hours. Crop losses heavy, but impossible to estimate. Record high water observed on lower Kankakee River and on Illinois River at Marseille.
INDIANA Tippecanoe County	13	Early morning					4	1	Wind	Severe thunderstorm caused minor damage by blowing down trees and knocking out electric service in local areas temporarily.
MINNESOTA Lake Kabetogama area, St. Louis County	13	Early a.m.				3	1	1	Electrical and wind	Lightning struck tree, injuring 3 nearby campers. Strong winds damaged boats and docks, uprooted trees, and downed powerlines.
LOUISIANA New Orleans, Orleans Parish	13	12:50 p.m.			0	0	2	1	Waterspout	Waterspout on Bayou St. John at Mirabeau moved onto land and tore felt roofing off house under construction, then dissipated.
IDAHO Nezperce (north of), Lewis County	13	4 p.m.	6	*2-1/2					Electrical, wind, and hail	Peas, barley, clover, and grass seed fields complete loss in hail path. Clover and peas especially beaten into ground. Summer fallow badly gullied and silt carried onto highways and roads. Maximum hail depth 3 inches, with some hail still on ground next morning. Average diameter of stones 1/2 inch. Storm moved northward.
MONTANA Kalispell, Flathead County	13	5 p.m.				1	1	1	Electrical	Woman injured by lightning strike.
OREGON Scattered over northern half	13	Late afternoon -evening	200	*100			3	4	Electrical and wind	Major force of storm in central and east-central, although high winds blew over and scattered some 350 tents at church camp near Portland. Numerous power interruptions, several brush and grass fires due to lightning. Approximately 1,100 acres of grass and brush land burnt over in 1 fire along southeastern border. Some western and considerable central hay and grain lodged, some partly harvested seed crops scattered beyond recovery. Lightning damage $15,000, wind $9,000.
MINNESOTA Sibley County	13	6 p.m.	10	2000			°5	C	Hail	Damage to crops, buildings, and livestock. Storm moved eastward.
NEBRASKA Chappell (northeast of), Deuel County	13	6:30 p.m.	3	880			2	4	Hail	

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STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
NEBRASKA Nuckolls County (northeastern portion)	13	7:30-8 p.m.	8	*2-4			2	5	Hail	Hailstones 1/2 to 1 inch in diameter. Storm moved southeastward.
ILLINOIS Springfield, Sangamon County	13	7:40 p.m.					5		Wind	Severe thundersqualls caused widespread light damage to trees, utility lines, and structures. 2500 insurance damage claims filed.
NEBRASKA Central City (north of), Merrick County	13	10-11:30 p.m.	10	1760			4	4	Hail and wind	Hailstones 1/2 inch in diameter. Wind damage $6,000 to property, $16,000 to crops; hail damage $5,000 to property, $9,000 to crops. Storm moved eastward.
NEBRASKA Norfolk (5 miles south of), Madison County	13	Night	Short	880			2	4	Hail	
WASHINGTON Okanogan, Chelan, and Whitman Counties	13								Electrical	Lightning damaged several residences and set fires on 2 farms near Pullman. Several forest fires started in northern Cascade Mountains.
	13									Minor storms also reported in Harrison and Marshall Counties, Iowa; at Goodland, Kans.; at St. Paul, Minn.; near Deshler and in southwestern Clay County, northern Deuel County, southern Garden County, and northeastern Webster County, Nebr.; and at Grant, Okla.
COLORADO Weld County (northern portion)	13-14	Afternoon					1		Rain and hail	Heavy rain and hail both days, which damaged ripening grain and other crops.
ILLINOIS Central and southern portions	13-14	Night							Electrical	During thunderstorms of night and also on following day there was an unusual amount of damaging lightning activity reported from many scattered points. Damage usually light, except when farm barns struck.
SOUTH DAKOTA Black Hills	14	12:40-4 p.m.			0	0	4		Tornado, rain, hail, and funnels aloft	Tornado struck wooded area near Rochford 5 times shortly after 12:40 p.m. At least 2 other funnels did not reach ground. Heavy localized rains caused minor flooding at Spearfish and Rapid City.
NEW YORK Hudson Falls, Washington County	14	1:30-3 p.m.	3 to 4						Wind, hail, and rain	Severe thunderstorms with heavy rains, strong winds, and some hail caused damage, including falling trees, roofs, etc. No estimates of damage available but County Agent reports 60 to 70 percent damage in apple orchard, but size is not included in report. Total damage likely in neighborhood of $10,000 to property. Storm moved southward.
NEBRASKA Atkinson (11 miles north and 2 miles east of), Holt County	14	1:37 p.m.	Short	Narrow	0	0			Funnel aloft	
NEW HAMPSHIRE Bath area, Grafton County	14	2 p.m.	4-6	*2			4	3	Wind, hail, and electrical	Hail covered ground up to 3 inches deep and stones up to 1 inch in diameter. Crops ruined. Severe wind damage to building, trees, and utilities in small section of Bath and also in Upper Bath. Trees felled to east in Upper Bath, but to southwest in Bath. Storm said to be a twister by some, but no funnel seen.
NEBRASKA Sidney (near), Cheyenne County	14	2-5 p.m.	6	*2			2	4	Hail	Hailstones 1/2 to 1-1/2 inches in diameter. Storm moved eastward.
MONTANA Fort Benton and Highwood area, Chouteau County	14	2:30 p.m.	10	*1-3			1	5	Hail and wind	$30,000 damage by wind, $100,000 by hail.
MONTANA Wolf Point, Roosevelt County	14	2:30 p.m.					1	2	Wind, hail, and rain	Wind speed observed at 67 m.p.h., at Wolf Point Airport.
MONTANA Winifred, Fergus County	14	3 p.m.	16	*3			1	4	Hail and wind	Hail about size of peas. Strong wind accompanied storm. Storm moved eastward.

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STORM DATA AND UNUSUAL WEATHER PHENOMENA

JULY 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
NEW YORK Keeseville, Elizabethtown, and Essex, Essex County	14	3:45-4:30 p.m.	10	*2-1/2			5	5	Wind, hail, and electrical	Violent electrical storm (with some unconfirmed tornadic reports) hit area during late afternoon. Average size of hail reported as 2 inches with some to 3 inches (size of baseballs and some reported too large to fit tea cup). Severe hail damage to orchards ruined crop this year, next year, and possibly following year due to damage not only to fruit and leaves but even severe bark damage in places. Much damage to glass, roofs, and automobiles from both hail and falling trees and limbs. Elizabeth, Keeseville, and Essex areas without power or telephone services for several hours and in some cases until next day. Storm moved southeastward.
ILLINOIS Nashville, Washington County	14	Afternoon					4		Electrical	Oil storage tanks struck by lightning.
MINNESOTA Minneapolis-St. Paul, Hennepin and Ramsey Counties	14	Afternoon					4	1	Electrical	Several homes and business establishments struck by lightning. Loss at 1 home $10,000, power substation $30,000.
MONTANA Coffee Creek and Denton area, Fergus County	14	Afternoon	30	*1			1	5	Hail	
WYOMING Alva (near), Crook County	14	Afternoon					1	4	Hail	
VERMONT Central portion	14	4 p.m.	10	*2-1/2		3	3	3	Hail, wind, and electrical	Hail in Charlotte area up to 2-1/2 inches in diameter broke windows, damaged many roofs and automobiles, and stripped vegetation and trees; covered ground from 1 to 3 inches deep. Larger hail flat with scalloped edges. Lightning slightly injured 3 persons at Bristol. Trees and wires downed at Randolph and some gardens flooded. White River Junction area also hit; tree and utility lines downed. Storm moved eastward.
IDAHO Cottonwood and Camas Prairie, Idaho County	14	5 p.m.							Rain, hail, and wind	Many grain fields badly lodged by torrential rain and high wind. Extensive damage to barley and pea crops, ranging up to 70 percent on some farms. Winter wheat damage in storm track estimated at 10 to 15 percent.
INDIANA Batesville (10 miles southwest of), Ripley County	14	5:51 p.m.			0	0			Funnel aloft	Airline pilot observed funnel cloud aloft moving southeastward.
MONTANA Circle, Brockway, Watkins, and Vida areas, McCone County	14	6 p.m.					3	5	Hail and rain	About $500 damage from rain to real and personal property.
KENTUCKY Jefferson County	14	6:15 p.m.			0	0			Funnel aloft	Funnel cloud reported by pilot near Ohio River, northeast of Bowman field in Louisville.
SOUTH DAKOTA Vale, Butte County	14	7:30 p.m.			0	1	3	3	Tornado and hail	Woman bruised by flying objects. Shed and granary destroyed.
MONTANA Richland County	14	8 p.m.					1	4	Hail and rain	Hail hit scattered areas throughout county. Storm moved eastward
WASHINGTON Western portion and Cascades	14								Electrical, rain, and hail	Lightning and heavy rainfall caused numerous power and communication outages in west. Several forest fires started by lightning in Cascades. Light hail reported in a few of orchard areas of Chelan and Okanogan Counties.
	14									Minor storms also reported at Albion, Skowhegan, and Waterville, Maine; at Monett, Washington, and West Plains, Mo.; near Roy and at Thompson Falls, Mont.; in southeastern Holt County and at Schuyler, Nebr.; at Claremont, Hanover, and Lebanon, N. H.; and in Sampson County, N. C.
MISSOURI Mercer County	15	1:30 a.m.							Rain and electrical	Precipitation 1.5 to over 4 inches. Lightning killed several animals, destroyed haystacks, and barn.

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Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
IOWA Shelby, Cass, and Adair Counties	15	1:30 a.m.					4	1	Electrical	Burned 3 homes 2 business establishments.
MAINE Aroostook County	15	Midday					3	2	Rain	Washing and flooding rains in some sections of northern Aroostook County. Limestone hit for second time within week. Soil loss from erosion, road washouts, and damage to flooded cellars resulted. Flash flood inundated first floor of old Post Office building at Limestone.
ARIZONA Wickenburg (near), Maricopa County	15	2:30 p.m.			0	0		1	Dust devil	Dust devil unroofed ranch house.
NORTH CAROLINA Craven, Duplin, Lenoir, Robeson, Wilson, and Catawba Counties	15	Afternoon					4	5	Hail, wind, and electrical	Widespread thunderstorms in connection with approaching front caused hail in several sections of east, damaging tobacco and other crops. Heavy windstorm with some hail hit Newton, Catawba County, blowing down trees, damaging roofs and powerlines. Lightning fires also in Newton.
SOUTH DAKOTA Tyndall, Bon Homme County	15	4:15 p.m.				1	3		Electrical	Lightning strike rendered occupant of house unconscious for short period. House ignited.
NEBRASKA Chadron (7 miles east of), Dawes County	15	Late afternoon			1		1	1	Electrical	Farmer struck by lightning and killed while working on tractor.
FLORIDA Miami, Dade County	15	8 p.m.			0	0			Tornado (suspected)	
SOUTH DAKOTA Corson and Walworth Counties	15	9-10:30 p.m.			0	0	3	4	Funnel cloud, hail, and electrical	Funnel cloud seen northeast of Mclaughlin. Crop damage caused by hail, other by lightning fire.
MINNESOTA Southern portion	15	P.m.							Rain and electrical	Heavy rains flooded business establishments and homes in Paynesville and washed out sections of trunk highway and railroad right of way. Lightning-started fire destroyed barn, granary, and machine shed near Austin. Minor crop damage due to flash flooding of small streams.
TENNESSEE Bells, Crockett County	15	P.m.			1	1			Electrical	Lightning struck and killed 16-year old boy playing baseball. Second boy slightly injured.
	15									Minor storms also reported near Mobile, Tallassee, Titus, and Wetumpka, Ala.; at Cleveland, Ga.; in Howard County, Iowa; at Poplar Bluff, Mo.; and in Covington and vicinity, Tenn.
ILLINOIS Central portion	16	1p.m.				2	4		Electrical	Several strikes north of Lincoln. Other lightning or minor wind damage reported from a dozen communities extending from Kewanee to Decatur.
NORTH DAKOTA Williston (15 miles northwest of), Williams County	16	4:34 p.m.			0	0			Tornado	Funnel seen.
NORTH DAKOTA Williston, Williams County	16	5:10 p.m.							Hail	Hailstones 1 inch in diameter.
MONTANA Rock Springs, Rosebud County	16	6 p.m.	10-15	*2-3			1		Hail	Considerable crop damage. Storm moved northeastward.
NORTH DAKOTA Mandan (25 miles northwest of), Oliver County	16	6 p.m.					4	4	Hail, wind, and rain	Heavy hail and windstorm in 25 mile area. Town of Center suffered heavy loss from hail, wind, and heavy rain.
MONTANA Hanover, Fergus County	16	7:30 p.m.	10				1		Hail	Storm moved northeastward. Heavy crop damage.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
NORTH DAKOTA Wing (2 miles north of), Burleigh County	16	8 p.m.			0	0	3	1	Tornado	Damaged or destroyed several small sheds.
NORTH DAKOTA Bismarck (25 miles north of), Burleigh County	16	9 p.m.	100		0	0	4	4	Hail, Wind, and tornado (suspected)	5 barns blown down; powerlines and telephone lines downed.
NORTH DAKOTA Stutsman and Griggs Counties	16	9 p.m.					5	4	Wind and hail	2-1/2 story brick and block building damaged beyond repair; covered large area. Many farm buildings destroyed and trees uprooted; much damage in Cooperstown; other property damage.
SOUTH DAKOTA Martin (17 miles southwest of), Bennett County	16	9 p.m.					4		Electrical	Barn burned following lightning strike.
NORTH DAKOTA Walum (near), Griggs County	16	9:45 p.m.			0	0	4	3	Tornado	House sucked up and dropped again, with heavy damage. Several barns, garages, and granary destroyed.
FLORIDA Dade City, Pasco County	16	P.m.			1				Electrical	1 person killed by lightning.
MAINE Central and eastern portions	16	P.m.					3	1	Electrical and rain	Widely scattered areas hit, Hancock and Somerset Counties especially, where cloudburst rains fell. Some power failures from lightning strikes
ARIZONA Florence, Valley Farms, Pinal County	16	Evening					4	1	Wind and rain	Strong winds unroofed a number of houses and farm buildings; rain damaged interiors. Storm moved northward.
NORTH DAKOTA Kidder County	16	Evening					4	4	Wind and hail	Farm buildings damaged; 40 farms damaged.
	16									Minor storms also reported near Lafayette and at Opelika, Ala.; at Whitesburg, Ga.; at East Prairie and Montrose, Mo.; at Cartersville, Kolin, and Rosebud, Mont.; and at Westhope, N. Dak.
NORTH DAKOTA McClusky (north of), Sheridan County	16-17	Night					4	4	Wind	Severe windstorm both evenings.
INDIANA White County	17	Early morning					4	1	Rain	Up to 6 inches of rain in a few hours fell in triangle area of Monticello, Monon, and Brookston. Flood gates opened on Oakdale Dam, lower of dams on long-and-slender Shafer-Freeman Lake, and there was some flooding down river. Several cottages flooded, causing evacuation of about 50 persons. Streets and basements flooded in northwestern Monticello.
INDIANA Frankfort (southeast of), Clinton County	17	Early morning					4	1	Electrical	Lightning struck barn which burned to ground. 58 pigs and 2 calves also lost. Minor damage by lightning occurred to a few other buildings in community.
FLORIDA Key West, Monroe County	17	5:50 a.m.			0	0	3		Waterspout	Spout moved inland to city causing minor damages to buildings and shrubbery.
ARIZONA Phoenix, Maricopa County	17	Morning				1	3	1	Electrical and rain	Most damage caused by lightning fires and flooding in residential section.
TENNESSEE Knoxville, Knox County	17	2:30-4:30 p.m.			2	2	5	1	Electrical, wind, and rain	Woman and 11-year old girl struck by lightning and killed while gathering in clothes. 2 men received minor injuries from lightning. Lightning caused $100,000 lumber mill fire. extensive damage to home, and several minor fires. Wind blew out large plate-glass window. Rain flooded basement of machine company, causing extensive damage to stored patterns. Storm moved southeastward.
DELAWARE Wilmington, New Castle County	17	Afternoon			0	0	3		Dust devil	Dust devil tore much of roof off home and pulled some shingles off neighboring house, knocked over TV aerial, and blew clothes off clothes lines. Unusual whirlwind appeared suddenly on otherwise calm and sunny afternoon in which temperatures rose to 86°.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

JULY 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
NORTH CAROLINA Guilford, Johnston, Nash, Rutherford, and Wilson Counties	17	Afternoon -evening					4	5	Electrical, hail, wind, and rain	Same front that approached on 15th continued over North Carolina, causing more heavy thunderstorms over wide area. Wind and lightning damage to property, hail damage to crops, mostly tobacco. Also some local flash floods.
IDAHO Pocatello, Bannock County	17	5 p.m.							Electrical, wind, rain, and hail	Some grain crops in area flattened by hail. In Pocatello, lightning bolt disrupted electric service, burned out one-half the lights along Miracle Mile. Streets and underpasses flooded from 5 to 6 p.m.
NORTH DAKOTA Oliver County	17	6 p.m.					4	4	Hail and wind	Large hailstones.
NORTH DAKOTA Dickinson, Stark County	17	6:14 p.m.					5	4	Wind, rain, and hail	1/4-inch diameter hail; wind 45 m.p.h., with gusts to 80 m.p.h. Severe damage to buildings at radar base; 1 airplane destroyed and 1 badly damaged; trees uprooted.
NORTH DAKOTA Washburn and Turtle Lake (near), McLean County	17	8-9 p.m.					4	4	Wind and hail	Barns blown down, other buildings damaged, and trees uprooted.
TENNESSEE Odd Fellows Hall Community, Giles County	17	9:30 p.m.						0	Wind, rain, and electrical	Lightning ignited barn containing 1000 bales of hay, burning it to ground. Several trees blown down.
KENTUCKY Western portion	17	P.m.				2	4		Wind and electrical	Wind-felled trees damaged powerlines. TV antennas torn loose from houses. Tree fell across car, causing 2 injuries. Home damaged by falling tree. Lightning struck barn, destroying barn and its contents.
MASSACHUSETTS Eastern portion	17	P.m.			0	0	1	1	Dust devils	Picked up dirt and tore leaves from trees at Medfield at 1:45 p.m. 2 others seen at Rockland at 2:25 p.m., no damage. Height "as tall as tree tops".
TENNESSEE Athens, McMinn County	17	P.m.				1			Electrical	Woman mill worker suffered broken hip in connection with severe bolt of lightning.
COLORADO Alamosa and Conejos Counties	17	Night							Rain and flood	Cloudburst above Terrace Reservoir Dam filled it beyond capacity which caused it to start crumbling. Several hundred residents left their homes for higher ground. Dam held, but suffered unestimated amount of damage.
	17									Minor storms also reported at Dadeville, Selma, Six Mile, and Tuscaloosa, and in Luverne, Muscle Shoals, and Tri-Cities areas, Ala.; at Tucson, Ariz.; at Central City, Colo.; at Marietta and in Carroll and Floyd Counties, Ga.; and at Milan, Tenn.
FLORIDA St. Petersburg, Pinellas County	18	9:28 a.m.			0	0			Waterspout	
FLORIDA Hollywood, Dade County	18	9:55 a.m.			0	0			Funnel aloft	
COLORADO Colorado Springs, El Paso County	18	Morning				1	3		Rain	Heavy showers in northeastern portion did heavy damage from flooding to streets, homes, and other property; $3,000 damage estimate on curbing. 3-year old boy washed 306 feet down a street, suffering broken pelvis and numerous bruises.
ALABAMA Birmingham, Jefferson County	18	Afternoon			1	1	2	1	Electrical	Chimney of house in Wylam section hit, knocking man unconscious in kitchen. Man died of heart attack when lightning hit about 200 yards away.
COLORADO Monte Vista (10 miles southeast of), Rio Grande County	18	Afternoon				1			Electrical	Man injured by lightning bolt, while on tractor working in field.
COLORADO Fleming and Daily areas, Logan County	18	Afternoon		*4					Rain and hail	Heavy rain and hail damaged crops. Hail fell for about 20 minutes, some of golf-ball size. Storm moved eastward.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MISSOURI Chadwick, Christian County	18	3:30 p.m.					4		Electrical, wind, and rain	Church damaged by lightning.
NEBRASKA Kimball, Kimball County	18	6:05 p.m.						1	Hail	C45 plane incurred moderate damage while in air
MASSACHUSETTS Eastern portion	18				0	0	1	1	Dust devils	Dust devil at North Andover in midmorning, with no damage reported, was 2 yards wide and treetop height. Dust devil at Marlboro at 1 p.m., lifted shelter house and carried it 20 feet with but little damage.
	18									Minor storms also reported at Mobile, Ala.; at Tuckerman, Ark.; near Montrose, Colo.; at Pittsburg, Kans.; at Poplar Bluff, Mo.; near Scottsbluff, Nebr.; at Nashville, Tenn.; and at Torrington, Wyo.
MONTANA Benchland, Judith Basin County	19	12:30 p.m.	5	*1			1	4	Hail	Barley and wheat damaged, 16 to 48 percent over 5-square mile area. Storm moved eastward.
NEBRASKA Duncan, Platte County	19	1:30 p.m.	Short	Narrow	0	0	3	2	Tornado	
NEBRASKA Odessa (north of), Buffalo County	19	3-3:10 p.m.	1-1/2	1760			1	4	Hail	Hailstones rather small. Storm moved southward.
MONTANA Bozeman vicinity, Gallatin County	19	3:30 p.m.	20	*3			1	4	Hail	50 percent damage to grain and 90 percent damage to peas on some farms. Hailstones up to 1/2 inch in diameter. Storm moved eastward.
MINNESOTA Albert Lea (5 miles south of), Freeborn County	19	Afternoon			0	0			Tornado	Funnel cloud touched ground in field.
MONTANA Dillon (east of), Beaverhead County	19	Afternoon					1	4	Hail	Damage mostly to wheat.
UTAH Castle Dale area, Emery County	19	Afternoon					3		Rain	Heavy rainstorm caused flooding of low-lying farms, washed out roads, and did some damage to crops.
IOWA Sioux County	19	4 p.m.	2	*2			1	4	Hail	Destroyed crops in 4-square mile area.
KANSAS Wells (2-1/2 miles northeast of), Ottawa County	19	4-5 p.m.					4		Electrical	Modern 8 room farmhome struck by lightning and completely burned.
LOUISIANA Monroe, Ouachita Parish	19	5 p.m.				2	3	2	Wind	Thunderstorm with winds to 60 m.p.h., struck north side of town, blew down utility poles, putting large section in darkness, caused automobile crash, injuring 1 person and smashed windows injuring another.
NEBRASKA Aurora (southwest of), Hamilton County	19	5-6 p.m.	12	*2-3	0	0	4	5	Tornado and hail	3 funnels touched ground. Hailstones 3/8 to 1 inch in diameter. Tornado damage $12,000 to property, $20,000 to crops; hail damage $175,000 to crops. Storm moved northward.
TEXAS Beaumont (near), Jefferson County	19	6 p.m.			1		1	1	Electrical	Man working on farm killed by lightning.
OKLAHOMA Clinton (northwest of), Custer County	19	7:40 p.m.	2	880					Wind, rain, and hail	Severe winds blowing from varying directions unroofed and damaged buildings on several farmsteads in small area. Crops flattened and some damaged by flying debris. Peach orchard destroyed.
ARKANSAS Malvern, Hot Spring County	19	8 p.m.					6		Electrical	Lumberyard and lumber processing plant destroyed by fire set by lightning.

See footnotes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
NEBRASKA North Platte (1 mile west of), Lincoln County	19	9:05 p.m.	Short	Narrow	0	0			Funnel aloft	
OKLAHOMA Panama, Le-Flore County	19	9:15 p.m.						1	Wind and electrical	Strong winds damaged roofs, trees, and TV antennas. Lightning caused estimated $1,000 damage to 1 home, killed 10 head of cattle valued at $1,000, and caused fire which completely burned another home and contents.
MINNESOTA Southern portion	19	P.m.							Rain, electrical, and wind	Strong winds demolished farm buildings, flattened grain, and downed powerlines in Douglas County. St. Cloud WBAS reported 64-m.p.h., winds. Flooded basements and damaged streets reported in St. Paul and Hastings. Hastings home damaged by fire due to lightning strike.
SOUTH DAKOTA Union County	19	Night						4	Hail	Losses occurred southeast of Alcaster and also near Elk Point.
ALABAMA Dothan (near), Houston County	19					1	2	1	Electrical	Tree hit, man about 25 feet away on a porch knocked unconscious. Cow about 40 feet from tree killed.
	19									Minor storms also reported near Lamar, Colo.; near Harlem and at Windham, Mont.; near Atkinson, Aurora, Giltner, Hastings, Madison, Odessa, Sutherland, Wallace, and Wood River, Nebr.; and at Rattan, Okla.
KANSAS Barton County	20	1:50 p.m.					4		Wind	Severe wind squall with some evidence of tornadic violence struck farmstead 1-1/2 miles northwest of Great Bend, damaging several buildings. Large storage building near northwest city limits also damaged. 2 cars blown from road and 8-foot concrete wall levelled.
ARIZONA Tucson, Pima County	20	2:30 p.m.	1		0	0	3	1	Dust devil	Dust devil moving eastward severely damaged home and furnishings.
KANSAS Cheyenne and Sherman Counties	20	Afternoon							Wind, hail, and electrical	Wind damaged buildings over northern Sherman and southern Cheyenne Counties. Near county line, high winds and hail damaged wheat 30 percent and many other fields flattened by wind and rain. 2 large telephone cables in Goodland put out of service by lightning.
MISSOURI St. Joseph, Buchanan County	20	Afternoon				1			Electrical	Man hit by lightning, temporarily paralyzed.
KANSAS Geary County	20	3 p.m.				2			Wind and dust	Locally severe winds carried a great deal of dust. Storm struck in downtown Junction City where large front display windows exploded, and momentarily doors could not be opened against suction. Glass and other such solid debris strewn for more than 1/2 block. No funnel cloud actually observed.
MONTANA Raymond, Sheridan County	20	3 p.m.	10	*5			3	5	Hail and wind	Hailstones up to 1 inch in diameter. Wind up to 60 m.p.h., during storm. Storm moved eastward.
WYOMING Fort Laramie (11 miles north-northwest of), Goshen County	20	4 p.m.			0	0			Tornado	Over open country and on ground for very brief period; moved southeastward.
OKLAHOMA Healdton, Carter County	20	P.m.			0	0		1	Tornado (suspected)	Tore garage off house, blew side out of bathroom and moved house short distance off its foundation. Outbuildings also damaged.
	20									Minor storms also reported at Lamar, Colo.; at Luray, Kans.; near Crab Orchard, Paxton, and Sidney, Nebr.; at El Reno and Medicine Park, Okla.; near Blooming Grove, Tex.; and in Emery County, Utah.
OREGON Scattered over much of State	20-21	Afternoons of 2 days	300	200			3	4	Electrical	Series of lightning strikes touched off well over 100 fires in grass and forest lands. Practically all small and brought under control immediately, although about 2,900 acres of Bureau of Land Management experimental range land burned over in Malheur County. Power and telephone services interrupted over fairly widespread areas at several places and a few head of cattle killed by lightning.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MONTANA Scobey Vicinity, Daniels County	20 and 22							2	Hail and rain	Crop damage mostly to barley. Windows broken and roofs damaged in Scobey. Second storm in same area on 22d. Rains from 2 storms of more benefit than hail damage.
IOWA Decatur County	21	11 a.m.			0	0			Tornado (suspected)	Unconfirmed report received from CAA station.
MICHIGAN Lake Huron area	21	Afternoon			1		4	1	Wind and electrical	Strong winds downed many trees and caused scattered property damage at several localities between Alpena and Thumb area. Lightning also struck several homes. Boy drowned near Port Austin when his sailboat capsized by strong winds.
NEBRASKA Duncan (3 to 4 miles south of), Platte County	21	3 p.m.	Short	Narrow	0	0			Funnel aloft	Not known to have touched ground.
WISCONSIN Sheboygan, Sheboygan County	21	3 p.m.				1	3	4	Wind	Storm moved eastward.
MISSOURI Saline, Mercer County	21	3:30 p.m.			0	0			Tornado (suspected)	Some freakish damage such as screen pulled off of frames suggest tornadic action. Several buildings destroyed or severely damaged.
IOWA Jasper County	21	6:30 p.m.			0	0			Funnels aloft	Funnels aloft reported by public.
KANSAS Edwards County	21	6:50 p.m.			0	0			Tornado and funnel aloft	2 funnel clouds reported about 10 miles northwest of Kinsley, 1 touched ground but other remained aloft. Little or no damage resulted. Funnels visible only a few minutes.
MONTANA Between Turner and Loring Blaine and Phillips Counties	21	7 p.m.	30	*4-1/2			1	5	Hail	Storm began in Canada. Ground covered up to 1 inch depth with hail. Hailstones up to 1 inch in diameter. Storm moved southeastward.
FLORIDA St. Petersburg, Pinellas County	21	P.m.				1			Electrical	1 person injured by lightning bolt.
UTAH Sevier County	21								Hail	Hail 1/4 to 1/2 inch in diameter in Central and Richfield farming areas did extensive damage to crops. Losses ranged from 50 to 100 percent in some areas.
	21									Minor storms also reported at Dinnehotso, Ariz.; at Grand View, Idaho; in Black Hawk County, Iowa; at Winfield, Kans.; at Gilman City, Mo.; at McAlester and Waurika, Okla.; in Kress and Plainview areas, Tex.; and at Spanish Fork, Utah.
KANSAS Pratt County	22	1-2:30 a.m.				1			Electrical	2 houses about 2 blocks apart struck by lightning about same time. Man injured slightly at 1 house. At the other, shingles torn from roof and some timbers in upper portion of house split. A number of rural telephone lines out of service for a while.
OKLAHOMA Friendship, Jackson County	22	7:30 a.m.						1	Wind, rain, and electrical	Strong winds damaged outbuildings, TV antennas, and utilities. Storm moved northeastward.
MICHIGAN Lower southern portion	22	Day					4	5	Rain	Scattered heavy rains caused flooding in several localities, particularly in Flint area. Wheat and bean crops harmed and wheat harvest delayed in some areas.
MASSACHUSETTS Westfield, Hampden County	22	3 p.m.	2	300	0	3	4	1	Dust devil, wind, rain, and electrical	Severe thunderstorm preceded by whirling column of dust and debris which twisted many branches from trees. Tree fell against home, another onto automobile, injuring 1 person. Many wires downed. Other injuries in automobile accident, due to storm. Storm moved southeastward.
CONNECTICUT Western and central portions	22	3 to 4 p.m.			1	1	3	1	Electrical and wind	Lightning killed boy walking across open field in Manchester. 1 of 2 companions knocked unconscious, but recovered. Third youth unhurt. Sudden wind of estimated gale force leveled 1 large tent and 9 smaller ones at Southbury fair grounds. Considerable wind damage to trees and powerlines in nearby towns of Newton, Bethel, and New Milford. Power and telephones disrupted for about 1 hour to over 50 percent of users.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MONTANA Plentywood and Antelope area, Sheridan County	22	4 p.m.	15	1,000			1	5	Hail and rain	$1,000 property damage from flooded basements. Storm moved northeastward.
NEW YORK Hudson Valley	22	Late afternoon							Wind, rain, hail, and electrical	Thunderstorms brought some hail and heavy rains to scattered areas. Hail reported in Spencertown, Kinderhook, and Steward Field. No estimate of crop or property damage made, but it is likely less than $10,000 in each category and possible in combined total.
MONTANA Galata, Toole County	22	5:30 p.m.	15-20	*1-3			1	4	Hail	Hailstones 1/2 to 3/4 inch in diameter. Storm moved east-northeastward.
ILLINOIS Richland and Shelby Counties	22	6:30 p.m.			1				Electrical	Man struck by lightning at Dundas about same time as 2 lightning-struck barns burned near Cowden.
MASSACHUSETTS Central and eastern portions	22	P.m.					4	1	Electrical, wind, and rain	Locally severe thunderstorms, with high winds struck numerous communities. Trees and wires felled and some lightning damage in Worcester, West Brookfield, Palmer, Ware, Monson, Southbridge, Dudley, Middleboro, Segreganset, and Easton. Hail also in some areas, but little damage. Short duration intense rains caused a few road washouts.
COLORADO Colorado Springs, El Paso County	22	Night							Electrical	Heavy electrical storm over city caused much damage. Lightning struck 2 homes, setting 1 afire and damaging the other.
INDIANA Michigan City, La Porte County	22				1		0	0	Electrical	Man killed by lightning while mowing grass along highway.
	22									Minor storms also reported in Tule Lake Basin, Calif.; at Wallace, Idaho; at Fulton, Kans.; at Hartshorne, Okla.; and at Mount Pleasant, Tex.
MISSOURI Sikeston (7 miles south of), Scott County	23	11:25 a.m.			0	0			Funnel aloft	Moved northeastward.
LOUISIANA Lake Charles (10 miles west of), Calcasieu Parish	23	2 p.m.			0	0			Funnel aloft	Observed for about 5 minutes; did not touch ground; 10 miles west of Lake Charles.
COLORADO Eastern portion	23	Afternoon			0	0			Funnels aloft and thunderstorms	Several funnel clouds observed, one 25 miles east-northeast of Denver, and several others in vicinity of Kennesburg, Roggen, and Nunn. Thunderstorms in Denver, Colorado Springs, and other points caused flooding and some damage to powerlines and telephones.
MONTANA Richland and Dawson Counties	23	Afternoon					1		Hail	Some sections reported 50 percent hail damage in Savage area. Also damage reported around Glendive.
NORTH CAROLINA Alamance, Lee, Lenoir, and Wayne Counties	23	Afternoon-night					4	4	Electrical, wind, and rain	Roofs and buildings destroyed and damaged by wind and lightning. Storm drains overloaded by downpours. Crop damage more than compensated by beneficial effects of rain.
UTAH Duchesne County	23	4 p.m.					4		Electrical	Church building destroyed after lightning strike.
ARKANSAS Jacksonville, Pulaski County	23	6:10 p.m.				1	1	1	Electrical	Man injured when lightning fired heavy dynamite charge that he was setting.
MONTANA Comertown and Westby areas, Sheridan County	23	7 p.m.	15	880			3	4	Hail	About 20 percent damage to crops. Hailstones up to 1 inch. Storm hit or miss over area; moved southeastward.
	23									Minor storms also reported at Charleston and Cape Girardeau, Mo.; in southern Wibaux County, Mont.; at Bristol, Tenn.; and at New Ulm, Tex.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TEXAS Between Ralls and Lorenzo, Crosby County	24	12:30 p.m.			0	0			Funnel aloft	Funnel reported moving northwestward.
COLORADO Walsenburg (northwest of), Huerfano County	24	Afternoon							Rain	Violent rain and hailstorm washed out railroad bridge, a stretch of mine tracking, and sent streams of water 8 inches deep over highway.
NEBRASKA Crookston (near), Cherry County	24	3:05 p.m.	Short	Narrow	0	0			Funnel aloft	
NEBRASKA Valentine (15 miles northeast of), Cherry County	24	3:07 p.m.	Short	Narrow	0	0			Funnel aloft	
NEBRASKA Valentine (10 miles west of), Cherry County	24	3:27	Short	Narrow	0	0			Funnel aloft	
MISSISSIPPI Biloxi (12 miles south of), Harrison County	24	6 p.m.			0	0			Waterspout	Observed over Mississippi Sound moving southeastward.
FLORIDA West Palm Beach, Palm Beach County	24	P.m.			0	0			Waterspout	
FLORIDA Key West Monroe County	24	P.m.			0	0			Funnel aloft	
TENNESSEE Sinking Springs community, Anderson County	24	P.m.				1			Electrical	Woman received minor injuries from lightning which struck tree in yard and ran into house.
	24									Minor storms also reported in Beaufort County, N. C.; near McIntosh, S. Dak.; and at Price, Utah.
COLORADO Lamar area, Prowers County	25	After midnight							Rain	From 2-1/2 to 5 inches of rain fell in about 2 hours, putting irrigation ditches out of their banks and inundating hundreds of acres of farmlands.
OKLAHOMA Newcastle (5 miles southwest of), McClain County	25	12:38 p.m.			0	0			Funnel aloft	Telephone company reported funnel aloft moving northwestward.
COLORADO Franktown area, Elbert County	25	1:18 p.m.			0	0			Funnels aloft	Pilots reported 2 funnel clouds. First funnel extended to within 1,000 feet of ground.
FLORIDA Miami (5 miles west of airport) Dade County	25	1:50 p.m.			0	0			Funnel aloft	
FLORIDA Key West, Monroe County	25	4 p.m.			0	0			Waterspout	
FLORIDA Key West, Monroe County	25	7:15 p.m.			0	0			Funnel aloft	
FLORIDA McClenny, Baker County	25	P.m.			2	1			Electrical	Lightning killed 2 workers, injured another.
FLORIDA St. Petersburg, Pinellas County	25	P.m.				1			Electrical	Lightning struck person walking on beach.
FLORIDA Orlando (15 miles northwest of airport) Orange County	25	P.m.			0	0			Funnel aloft	

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Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
FLORIDA Tampa, Hillsborough County	25	P.m.					5		Electrical and rain	Lightning-set fire caused damages estimated at $100,000 as livestock market burned.
ARIZONA Safford and Thatcher, Graham County	26	Morning					5	5	Rain	Heavy rains caused flooding of homes, stores, and farm lands. Storm moved northwestward.
COLORADO Washington, Lincoln, and Yuma Counties	26	3:23 -6:40 p.m.							Hail and rain	Heavy rain and hail covered large area in Washington, Lincoln, and Yuma Counties. 5-1/2 inches of rain with intermittent hail reported in Akron vicinity. Damage reported as major.
MASSACHUSETTS southeastern portion	26	P.m.					3		Rain	Washing and flooding rains in several towns, including Middleboro and Lakeville, caused several serious road washouts and many small ones. Much flooding of cellars.
CONNECTICUT Eastern portion	26	Early evening							Electrical and hail	Scattered thunderstorms moving across State concentrated their fury at Danielson at about 7 p.m. Rainfall totaling 1.5 inches in less than 30 minutes accompanied by golf-ball-size hail. Streets and nearby basements flooded to 4-foot depth forced evacuation of family from low-level apartment and abandonment of several stalled automobiles. Hail damage confined to small gardens and shrubbery as unmelted stones remained after 24 hours. Scattered but light wind damage to powerlines. Storm moved eastward.
RHODE ISLAND South-central portion	26	Early evening							Electrical and rain	Storm concentrated in Warwick-East Greenwich areas. Rainfall amounts highly variable within distances of a few miles. Streets flooded in Crompton and only trace of rain at Fiskeville, 3 miles north; Quonset Naval Station received 3.10 inches and WBAS 10 miles north measured 0.26 inches. Heavy downpours washed out several sidewalks and roads, flooded dairy plant, and stalled cars at heavy traffic points. Lightning struck 2 houses, barn, police radio antenna, and scattered powerlines. Telephones out to 2,500 users from Warwick southward to North Kingstown. Storm moved eastward.
NEBRASKA Atkinson (southwest of), Holt County	26	Night						1	Electrical	Barn struck and burned.
COLORADO San Juan Basin	26								Rain	Week of rain in San Juan Basin caused flood of Animas and Florida Rivers, Junction and Vallecito Creeks, and others. Heavy damage to roads, bridges, and other property and farmlands reported.
	26									Minor storms also reported at Bethany, Mo.; and at Las Vegas, Nev.
OREGON Scattered, largely in northeast quadrant	26-27	Afternoons of 2 days	150	*100			4	4	Electrical	State again dotted at many points by fires, resulting from 2 days of frequent and widespread lightning. Several forest fires started in Blue Mountains, but little or no timber lost. Additional 1,500 acres of Bureau of Land Management range land burnt over, also several hundred acres of private grass land and some grain fields. At least 2 homes destroyed.
SOUTH DAKOTA Sioux Falls and Delmont, Douglas and Minnehaha Counties	27	3-6 a.m.							Electrical	At 3 a.m., minor lightning and fire damage to residence at Delmont. At 5:45 a.m., lightning believed to have started fire which totally destroyed Sioux Falls grandstand insured for $40,000. Loss considered to be much higher.
MISSOURI Chillicothe, Livingston County	27	5:05 a.m.							Rain and electrical	Precipitation varied in vicinity from 1-1/2 to 3-1/2 inches. 2 houses destroyed by lightning. Considerable local flooding.
MASSACHUSETTS Martha's Vineyard	27	Noon					3	1	Rain and hail	Washing and flooding rains struck Tisbury, Oak Bluffs, and Vineyard Haven. Small amount of hail fell.
LOUISIANA Lake Charles (5 miles south of), Calcasieu Parish	27	3 p.m.			0	0			Funnel aloft	

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

JULY 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
NEW JERSEY Union County (north-central portion)	27	Afternoon			2				Electrical	2 boys killed when struck by bolt of lightning while playing in woods near their home in Roselle Park.
NORTH DAKOTA Mountrail County	27	Afternoon					4	1	Wind	2 grainaries completely wrecked.
NEW YORK Central portion	27	Afternoon -evening						5	Wind and hail	Slashing hail and wind accompanied thunderstorms, destroying some crops with usual other damages. Heaviest activity in eastern Wayne and northern Cayuga Counties and in Addison-Bath sections of south-central counties.
NORTH DAKOTA Wells County	27	7 p.m.			0	0			Funnel aloft	Funnel sighted 3 miles west of weather station.
MASSACHUSETTS Townsend, Middlesex County	27	P.m.					3	3	Rain, wind, and hail	Considerable local damage from flooding and washing rains. Trees damaged by wind. Wind and hail flattened garden crops.
MAINE Hamlin, Aroostook County	27	P.m.						4	Hail, rain, and wind	Hail, size of walnuts piled in drifts up to 2-1/2 feet high in fields, ruined fields of oats, peas, and potatoes.
	27									Minor storms also reported at Lawson and Tipton, Mo.
IOWA Des Moines, Polk County	28	8 a.m.			1		1	1	Wind	Man killed by high tension line felled by tree limb as it was blown down.
PENNSYLVANIA Southeastern counties	28	A.m.-p.m.					3	1	Wind and rain	Widespread thunderstorms caused only minor damage. Near Philadelphia, winds toppled large tent and several trees, while near Allentown 5-inch downpour flooded streets and house basements.
SOUTH DAKOTA Custer State Park	28	1-2 p.m.					4	4	Hail, rain	Heavy rain caused local flooding. Hailstones which reached golfball size, accumulated 2 feet deep on level and up to 4 feet in drifts. Small animals including several hundred rabbits killed. Most destruction in area south of Hermosa, measuring 10 miles long and 5 miles wide.
NEW JERSEY Camden and Burlington Counties	28	Midafternoon					4		Wind, rain, and electrical	Wind blew down tent of summer theater, also blew down trees and disabled power- and communications lines. Driving rain flooded some streets and highways, stalling traffic. Lightning set fire to 1 home and tore hole in roof of another. Damage by wind $15,000, by rain $8,000, and by lightning $2,000. Storm moved northeastward.
MARYLAND Charlotte Hall, St. Mary County	28	2:30-4:15 p.m.	4	*2					Hail	Hail damage to tobacco. Hailstones from 1/2 to 1 inch in diameter fell in area 8 to 10 square miles. Storm moved southeastward.
MARYLAND Glen Burnie, Anne Arundel County	28	Afternoon				1	4		Electrical and hail	Violent thunderstorm accompanied by destructive fire damage to 2 homes and minor damage to others within period of 1 hour. Hail up to 1/2 inch in diameter reported. Man standing in doorway of his home knocked halfway across living room by bolt of lightning which struck tree in his front yard. He was taken to hospital for treatment but was released shortly afterward.
SOUTH DAKOTA Perkins, Corson, Potter, Edmunds, and McPherson Counties	28	Afternoon						5	Hail	Hailstones reached walnut size.
MARYLAND Baltimore County	28	4-5 p.m.					4		Electrical and wind	Violent thunderstorms touched off several major fires and brought extensive wind damage to Baltimore County. Lightning started blaze which severely damaged country mansion near Monkton. $6,600-chicken house near Baldwin and barn near Monkton destroyed. Strong winds toppled trees north of Cockeysville and knocked out over 600 telephones. Storm put additional 150 phones out of commission in Dundalk and Essex districts.
IOWA Southeastern portion	28	Evening					4	3	Rain	Heavy rain damaged buildings and crops and killed livestock.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

JULY 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
SOUTH DAKOTA Greenwood, Charles Mix County	28	Evening			0	0			Funnel aloft	No details given in press report.
IDAHO Pocatello, Bannock County	28								Rain, hail, and electrical	Flooded streets in Pocatello and did some damage to crops in the area.
	28									Minor storms also reported at Tucson, Ariz.; at Atlanta and Wellsville, Mo.; and in Union County, N. J.
MISSOURI St. Charles, St. Charles County	29	2 a.m.							Rain	Precipitation totaled 4.59 inches caused local flooding.
MISSOURI Farmington, St. Francois County	29	3:55-7:53 a.m.			0	0			Funnels aloft	2 funnels reported by pilot of DC-7 at 1,900 feet over Farmington; moved southward.
CONNECTICUT Litchfield, Hartford, and Middlesex Counties	29	8 to 11 a.m.					4	1	Electrical and rain	Lightning-caused fire destroyed home in Avon for estimated loss of $15,000. 1 house each struck in Middletown and East Hampton and barn in West Hartford, with little or no fire damage. Lightning felled large tree onto house in New Milford, causing extensive damage to 1 side. Road washed out and streets flooded in and southeast of Hartford. Storm moved southeastward.
IOWA Montrose, Lee County	29	A.m.					4	1	Electrical	Burned dairy barn and contents.
FLORIDA Miami (east of), Dade County	29	Noon			0	0			Waterspouts	4 waterspouts seen.
IDAHO Pocatello, Bannock County	29	1:30 p.m.							Rain and electrical	Several streets and 2 subways partly flooded. Lightning damaged powerlines, 400 telephones affected. Crop damage slight.
MISSOURI Salem, Dent County	29	3:30 p.m.					3	3	Rain and hail	Wind gusts to 50 m.p.h. Hail 1/4 inch in diameter.
IOWA Fairfield, Jefferson County	29	6 p.m.	10	*10			4	1	Wind	Damaged buildings and utilities. Storm moved southeastward.
MISSOURI Rolla area, Phelps County	29	6:15 p.m.			0	0			Tornado (suspected) and wind	Twister reported to have swooped down upon river bank along Country Club area at Nagogami Lodge near Rolla. Several boats and cabin roofs damaged.
PENNSYLVANIA Hanover, York County	29	9:15 p.m.					4	1	Electrical	Barn fired by lightning.
SOUTH DAKOTA Bison (near), Perkins County	29	Evening				1			Electrical	Man injured when lightning struck windmill and trailer which were wired together.
COLORADO Morgan County	29								Rain and hail	Hail damaged 774 acres of sugar beets in Wiggin area. Heavy rain, hail, and wind laid corn over and damaged grain.
MASSACHUSETTS, NEW HAMPSHIRE, and southwestern MAINE	29				1		5	1	Electrical	Lightning inflicted losses at many widely scattered localities over area. Minor damage to power and phone facilities. Much damage from fires. $250,000 loss to factory at East Freetown, Mass.; $7,000 loss in Franklin and Boscawen, N. H., area; $5,000 loss at Milford, N.H., and many small losses. 1 death in Hillsboro, N. H., in automobile accident blamed on thunderstorm.
	29									Minor storms also reported at Vandalia, Mo.; at Scranton, Pa.; and near Plainview, Tex.
ARKANSAS Pulaski, Lonoke, Jefferson, Prairie, White, Jackson and Clay Counties	29-30	Late evening-early morning							Wind, electrical, hail, and rain	Widespread thunderstorm activity. Wind damage to homes, outbuildings, signs, TV antennas, and trees. Some scattered lightning damage. Hail reported in Clay County.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

JULY 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
FLORIDA Daytona Beach Volusia County	30	Early afternoon			0	0	3		Waterspout	Moved northeastward along Halifax River.
COLORADO Yuma (south of), Yuma County	30	Afternoon			0	0			Tornado	Small tornado tore down buildings, windmills, and house; moved eastward.
PENNSYLVANIA Western and eastern sections	30	Afternoon				1	°4	C	Hail and electrical	Damage by hail $1,000 in southwestern counties. Lightning struck several homes and barns, but caused only minor damage.
SOUTH DAKOTA Clear Lake, (3 miles east of), Deuel County	30	Late afternoon							Wind and hail	Strong northeast wind wrecked large barn and killed 133 chickens.
NEW YORK Lower Adirondacks and Hudson Valley area	30	Late afternoon-evening			3			6	Wind, rain, hail, and electrical	During afternoon and evening severe thunderstorms brought scattered areas of hail, 1/2 to 1-1/2 inches in diameter, strong, local winds and severe lightning to scattered areas of eastern New York from southern Adirondacks southward through mid-Hudson Valley. Hail reported in numerous areas from lower Adirondacks southward through Dutchess County. Power- and communication lines downed in several areas. Lightning killed 3 persons north of Glens Falls.
TEXAS Trent (near), Taylor County	30	9 p.m.			0	0			Funnel aloft	
PENNSYLVANIA Scranton area, Lackawanna County	30	10:30 p.m.					4	1	Electrical	Several barns fired by lightning.
MASSACHUSETTS, NEW HAMPSHIRE, and VERMONT	30	P.m.				3	5	1	Electrical	Lightning caused damage at widely scattered points over area. Boy slightly injured at East Corinth, Vt., and 2 women severely burned in Burlington, Mass., by lightning. Lightning inflicted heavy damage to power- and phone lines. Power substation at Scituate, Mass., heavily damaged. $35,000 loss from fire at barn of Leominster, Mass., City Infirmary. Cottage at Wellfleet, Mass., struck 6 times by bolts.
COLORADO Lincoln, Elbert, Douglas, El Paso, and Arapahoe Counties	30								Rain	Rain up to 2-1/2 inches fell in watershed of Kiowa and Cherry Creek. Some damage to roads, culverts, and bridges. Due to Kiowa Flood Control Project and Cherry Creek Dam, damage held to minimum. Colorado Springs reported $5,000 damage to streets and alleys in northeastern portion.
MONTANA Hill County (northern portion)	30						1	3	Rain, wind, and hail	Military unit operating in area reported 140 m.p.h., wind. Storm lasted 45 minutes. Some hail. Storm moved east-northeastward.
	30									Minor storms also reported between Santa Maria and Zaco substation, Calif.; at Hamden, Conn.; at West Plains, Mo.; in Snyder area, Tex.; and in Mingo County, W. Va.
ARIZONA Phoenix, Maricopa County	31	Afternoon			1		1	1	Heat	Man died of heat prostration.
NEW JERSEY Clementon Borough, Camden County	31	3:10-4 p.m.	** 400	300		3	4		Wind, rain, and electrical	Isolated thunderstorm struck Clementon Borough at 3:10 p.m. E.D.T. Winds estimated to have reached 75 m.p.h., or higher in gusts. Large portions of roofs blown off motion picture theater, bank, warehouse, and 3 other buildings in business block. Plate-glass windows blown out of 3 business establishments. Front of arcade in amusement park blown down, and 2 cashiers' booths in same park blown over. Several large trees uprooted. 1 tree upset tool house, as tree roots came up from ground. Lightning struck 1 large tree, top of which fell on private residence. Heavy rain damaged interior of unroofed buildings and buildings with windows blown out. Damage by rain also in private homes. Eyewitnesses say that rain driven almost horizontally across interior of some rooms before windows closed. 3 persons injured in amusement park by flying debris. 1 home struck by lightning, with minor damage by fire as a result. Wind damage $25,000, rain $4,000, lightning $1,000. Storm moved east-northeastward.

See footnotes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
WYOMING Auburn (north of), Lincoln County	31	3:15-3:30 p.m.	3	*1			2	5	Hail	Crop destruction complete. Storm moved northeastward.
NEW JERSEY Monmouth County, (eastern portion)	31	Late afternoon					4		Wind, rain, and electrical	Trees and utility poles blown down. Electrical substation and 2 homes struck by lightning. Heavy rains flooded streets, highways, and some storm sewers. Wind damage $3,000, rain $1,000, and lightning $6,000.
IOWA Dubuque County	31	5:30 p.m.					5	1	Wind and rain	Damaged homes, highways, and utilities.
CONNECTICUT Western and central portions	31	Early p.m.					4	5	Electrical, hail, and wind	Thunderstorms caused scattered but considerable property and crop damage from New Canaan northeast to Windsor. About 75 acres of Tobacco, corn, and truck crops sustained heavy to total damage in Windsor-South Windsor area. Loss estimated at $75,000. 2 dairy barns and contents destroyed by lightning-caused fires. 2 curing barns in Windsor struck, endangering some 60 workers. About 12 homes hit, but fire damage slight. Lightning and fire damage set at $2,000 to homes and $6,000 to barns. Widespread but localized power failures lasted from 1 to 4 hours in affected area. Storm moved eastward.
MAINE, MASSACHUSETTS, NEW HAMPSHIRE, and VERMONT	31	P.m.			5	1	5	4	Electrical, wind, rain, hail.	Severe thunderstorms hit many spots in widely scattered areas. Said to be worst storm in over 50 years at Springfield, Mass., where $25,000 damage from flooding rain resulted and in Hull, Mass., where 45 homes struck by lightning. Estimated 200 buildings struck in Massachusetts, and many in northern New England. Man thrown 10 feet by lightning bolt at Quincy, Mass. 1 killed at South Weymouth, Mass., in automobile accident blamed on storm and 4 killed in airplane crash at Brownington, Vt., believed to be caused by thunderstorm. $62,000 fire loss to barn and livestock at Middlebury, Vt., from lightning. $5,000 loss to barn from wind at Hamlin, Maine, with some crop damage. Hail in many places, 1-inch size reported at Haverhill, Mass., with largest crop loss at Rumford, Maine. Hail loss estimated at $5,000. Utility lines hit in many areas, with 2,000 homes without power in Nashua-Hudson, N. H., section. Trees and limbs felled in many communities. Severe lightning damage to electrical appliances in homes, said to be of unprecedented extent in some localities.
	31									Minor storms also reported at Moline, Ill.; and in Black Hawk County, Iowa.

* Miles instead of yards.
** Yards instead of miles.
° Includes crop damage.
C Crop damage.
† Storm damages are placed in categories varying from 1 to 9 as follows:

Category	Damage
1	Less than $50
2	$50 to $500
3	$500 to $5,000
4	$5,000 to $50,000
5	$50,000 to $500,000
6	$500,000 to $5,000,000
7	$5,000,000 to $50,000,000
8	$50,000,000 to $500,000,000
9	$500,000,000 to $5,000,000,000.

GENERAL SUMMARY OF RIVER AND FLOOD CONDITIONS

JULY 1957

The floods in the Chicago area on the 12th caused a loss of 9 lives and heavy property damage. Near record crests occurred in the lower Meramec Basin in Missouri during the first 2 days of July. Major flooding occurred in the Saline Basin In Kansas from the heavy June rains. The Wakarusa River approached within 2 feet of the record July 1951 flood. The most damaging flood of record occurred in the White and Wabash Rivers in Indiana.

ST. LAWRENCE DRAINAGE

Lake Michigan.--Torrential rains during the night of the 12th in the Chicago, Ill., area caused streams in the area to rise rapidly. The Chicago River in the Loop rose 6 feet. Sluice gates at the dam at Lockport, Ill., were opened lowering the level of the Sanitary Canal 5.5 feet in an effort to prevent flooding in the downtown district. Flood waters were also discharged through four turbines at the Lockport Power Plant. Sluice gates at the Des Plaines River were opened near Lockport to hasten the runoff of flood waters. Observers indicated that this flood was much worse than the October 1954 flood. Hundreds of basements were flooded. The Congress Street Expressway was blocked by water up to several feet deep in places. Hundreds of autoists were marooned by the rising waters. At least 9 persons lost their lives in this flood.

Minor flooding occurred on the Red Cedar in Michigan from the 12th to the 14th and on the Tittabawassee at Midland, Mich., on the 9th and 10th. Only minor damage was reported.

The heavy rains over the Grand River Basin on the 8th caused moderate rapid rises on streams in the basin with lowland flooding at Ionia, Mich., on the 14th. It approached within 3 feet of the official flood stage and the lowland flooding was confined to the parking area of the Ionia fairgrounds. Damage was minor.

EAST GULF OF MEXICO DRAINAGE

The rise in the Pearl River at Bogalusa and Pearl River, La., during the first part of July was due to rainfall on the 2d and 3d plus accumulated runoff from the late June rains. The combined flow produced a brief period of slightly above flood stage on the Mississippi side of the Pearl River, mostly in forested areas, from above Bogalusa, La., to the coastal marshes. No damage of consequence was reported.

MISSISSIPPI SYSTEM

Upper Mississippi Basin.--The abnormally heavy rains of June 16-17 and June 21 and 22, continued to affect the rivers with the Minnesota River remaining above flood stage from New Ulm to Savage, Minn., until the middle of July. The Mississippi River exceeded flood stage at St. Paul and Hastings, Minn., from June 27 to July 4. It did not reach flood stage in the reach below.

Heavy rains in central and southeastern Minnesota on July 16 caused minor flooding on the Shakopee Creek and the Zumbro and Root Rivers in Minnesota and the Upper Iowa River in Iowa on the 16th and 17th. Some damage was reported to crops and highways.

The minor flooding on the Iowa River at Marshalltown, Iowa, on the 3d and 4th was due to heavy rain (3.7 inches) during the mornings of the 3d and 4th.

The flooding in the Illinois Basin between the 13th and 26th was due to heavy precipitation in the headwaters during the 24-hour period ending on the morning of the 13th. Rainfall amounts ranged from 1.85 inches to 6.24 inches. Additional heavy rain occurred over the lower portion of the basin during the following 24-hour period. Flood stage in the upper portion was exceeded by 6.5 to 11 feet.

Near record flooding occurred in the Meramec Basin at Pacific and Valley Park, Mo., on the 1st and 2d. The crest of 32.0 feet at Valley Park, Mo., was the 4th highest of record and the crest of 25.0 at Pacific, Mo., was the 3d highest. In the Bourbeuse Basin at Union, Mo., the crest of 24.6 feet was the second highest stage of record.

Missouri Basin.--Local flooding occurred along Antelope Creek and Salt Creek in Lincoln, Nebr., and along Wahoo Creek near Wahoo and Ithaca, Nebr., due to locally heavy rains in eastern Nebraska on the morning of the 1st. Damage was minor.

Severe local flooding occurred on several tributaries in the Kansas River Basin during July. The Solomon River at Beloit, Kans., rose 5.8 feet above bankfull on the 3d, with considerable flooding upstream to the lower portions of the North Fork and South Fork. The major flooding which developed in the Saline Basin by the end of June crested at Tescott, Kans., on the 1st at a stage of 29.55 feet; within 0.5 foot of the record 1951 crest of 30.06 feet. For a detailed report of this flood, see the June report.

Major flooding occurred on the Wakarusa River between the 10th and 12th from the heavy rains (4 to 6 inches) on the 10th. The crest of 29.75 feet near Lawrence, Kans., on the 11th approached within 2 feet of the record July 1951 flood. Camp Creek, a tributary of the Wakarusa, overflowed at Richland, Kans., early on the 10th. Shunganunga and Martin Creeks overflowed into the residential and business area in Topeka on the same date, necessitating Red Cross aid for approximately 40 families.

Flash flooding occurred in the Republican Basin on Peet Creek during the late afternoon and evening of the 20th. Estimates of 5.5 inches occurred in the area 5 miles east of Clifton, Kans.

Ohio Basin.--Major flood crests were moving down the middle reaches of the White and Wabash Rivers in Indiana as the month began due to unusually heavy rains late in the previous month. At a number of points, crests were the highest since the great flood of 1950. Secondary crests occurred over the upper reaches of the White and Wabash Rivers from heavy rains (1 to 1.5 inches) on the 4th-5th. The crests for this rise were generally much lower than the earlier crests. Heavy thunderstorms during the morning of the 17th on the Tippecanoe River caused the highest stage (14 feet) near Delphi, Ind., since records began in 1936. Heavy damages occurred from the flooding along the larger streams. The crop damage alone has been estimated as far in excess of the total dollar damage attributed to the 1913 flood, the previous most damaging flood of record. In many areas the third planting of corn was destroyed and since it occurred so late in the season it precluded the planting of another crop.

White Basin.--The flooding on the White River in the reach at Clarendon, Ark., and below was a continuation of the June flood. Damage was limited to continued loss of the use of fields in lowlands adjacent to the streams for agricultural purposes.

Arkansas Basin.--The upper Arkansas and tributaries in Colorado remained critical during the entire month of July, especially from the headwaters to John Martin Dam (Caddoa Reservoir). This was a continuation of the high water that developed during the latter part of June and was due to the excessive runoff from the unusually large snow pack on the higher mountains. Areal precipitation ranged from slightly under 2 inches to 2.5 inches. The overflow of Cottonwood Creek at Buena Vista on the 1st and 2d was described as the worst in many years. The overflow of Delagua Creek in Delagua Canon, Colo., area was due to a cloud-burst on the 10th. Traffic on U. S. Highway 85-87 north of Trinidad, Colo., was slowed down for several hours as water spilled over the highway to a depth of 1 foot.

The slight overflow of the Salt Fork at Tonkawa, Okla., during the first few days of the month was due mainly to releases from Great Salt Plains Reservoir. The Cimarron River at Perkins, Okla., overflowed for the 8th time in the last 3 months. The flooding in July was minor and no damage resulted. The flooding on the Arkansas from Webbers Falls, Okla., to Van Buren, Ark., was due to continued releases of water at upstream reservoirs.

Red Basin.--The flooding on the Red River at Alexandria, La., during July was the recession type and was due to heavy upstream rains during the previous month. The Sulphur River receded below flood stage at Naples, Tex., on the 4th but continued in flood at Texarkana, Tex., the entire month. Most of the damage from the flooding occurred during June. The Black River at Jonesville, La., was above flood stage and falling as the month opened and remained above flood through the 11th.

Lower Mississippi Basin.--The flooding on the St. Francis River between the 2d and the 17th was due to heavy rain in the upper basin on June 30. The heaviest amount reported was 6.97 inches at Arcadia, Mo.; other stations in the basin reported amounts between 2 and 6 inches. Additional rain was reported on July 1 and 2. Most of the damage was in the Missouri reach of the basin. The overflow was confined, primarily, to areas inside levees and floodways, except in unprotected areas near St. Francis, Ark.

WEST GULF OF MEXICO DRAINAGE

There were no new floods that developed in this drainage area during July. As the month began the Mermentau River was out of its banks at Mermentau, La., and three-fourths bankfull at Lafayette, La. The Nezpique Bayou at Basile, La., was over bankfull, but no overflow of any consequence occurred. The Calcasieu was near bankfull throughout its course as a result of heavy rains from hurricane "Audrey" with some light flooding reported at Old Town Bay, La. In the Trinity River in Texas, the flow from the upstream reservoirs kept the stream above flood stage from Dallas to Trinidad, Tex.

GULF OF CALIFORNIA DRAINAGE

Colorado Basin.--Light flooding occurred along the San Juan River at Pagosa Springs, Colo., and Farmington, N. Mex., during the latter part of July due to heavy rains. No damages were reported.

FLOOD STAGE DATA

(All dates in July unless otherwise specified)

River and station	Flood stage	Above flood stages -dates		Crest*	
		From–	To–	Stage	Date
	Ft.			Ft.	
ST. LAWRENCE DRAINAGE					
Lake Michigan					
Red Cedar: Williamston, Mich.	7	12	13	8.5	12
East Lansing, Mich.	8	12	14	9.1	13
Tittabawasee: Midland, Mich.	18	9	10	19.9	9
EAST GULF OF MEXICO DRAINAGE					
Pearl: Bogalusa, La.	15	June 30	4	18.0	4
Pearl River, La.	12	4	6	12.8	5
MISSISSIPPI SYSTEM					
Upper Mississippi Basin					
Minnesota: New Ulm, Minn.	797.5	June 20	14	806.8	June 23
Carver, Minn.	18	June 24	13	26.1	June 27
Chaska, Minn.	17.5	June 24	12	25.3	June 28
Savage, Minn.	697.5	June 23	15	708.4	June 29
Zumbro: Theilman, Minn.	13	16	17	15.2	16
Zumbro Falls, Minn.	18	16	16	18.9	16
Upper Iowa: Dorchester, Iowa	14	16	16	15.9	16
Iowa: Marshalltown, Iowa	16	3	4	14.5	4
Illinois: Morris, Ill.	13	13	18	E23.9	14
La Salle, Ill.	20	14	15	26.5	15
Havana, Ill.	14	20	28	14.8	23
Beardstown, Ill.	14	24	26	14.2	25
Bourbeuse: Union, Mo.	15	June 28	2	24.6	1
Meramec: Sullivan, Mo.	11	June 30	1	22.2	June 30
Pacific, Mo.	11	June 28	4	15.0	June 28
				25.0	July 1
Valley Park, Mo.	16	June 30	4	32.0	July 2
Mississippi: St. Paul, Minn.	14	June 27	4	16.7	June 29
Hastings, Minn.	15	June 27	4	16.6	June 30
Missouri Basin					
South Fork: Alton, Kans.	12	1	1	14.6	1
Osborne, Kans.	12	June 30	2	18.1	2
		11	11	15.25	11
		17	18	12.3	18
North Fork: Downs, Kans.	18	June 30	2	23.0	June 30
				22.95	2
Solomon: Beloit, Kans.	20	1	4	25.8	3
Smoky Hill: Arnold, Kans.	7	2	2	7.0	2
		11	11	9.0	11
Saline: Wilson, Kans.	12	I	3	16.6	1
Trescott, Kans.	25	June 28	5	29.55	1
Lincoln Creek: Seward, Nebr.	A16	20	20	16.0	20
Big Blue: Ulysses, Nebr.	15	20	20	#15.0	20
Crete, Nebr.	16	21	21	16.05	21
Wakarusa Creek: Lawrence, Kans.	23	10	12	29.75	11
Marais Des Cygnes: Ottawa, Kans.	23	11	11	24.5	11
Osawatomie, Kans.	28	11	12	29.4	12
La Cygne, Kans.	25	12	13	27.4	12
Ohio Basin					
Skillet Fork: Wayne City, Ill.	15	17	18	15.65	18
Embarrass: Ste. Marie, Ill.	18	June 29	4	25.5	June 30
East Fork: Seymour, Ind.	14	1	1	14.3	1
		6	7	16.9	6
White: Anderson, Ind.	10	June 29	1	17.7	June 29
Noblesville, Ind.	14	June 29	1	19.95	June 30
Spencer, Ind.	14	June 29	6	21.5	1
				17.95	5
Elliston, Ind.	18	June 28	8	27.3	3
Newberry, Ind.	18	2	5	21.4	3
Edwardsport, Ind.	12	June 12	17	17.9	June 15
				23.9	4
Petersburg, Ind.	16	3	12	12.3	6
Hazleton, Ind.	16	--	--	22.5	7
Wabash: Bluffton, Ind.	10	June 30	2	14.35	June 30
		6	8	13.5	7
Wabash, Ind.	11	June 29	9	17.4	2
Lafayette, Ind.	11	June 29	10	18.2	2
		18	18	13.8	18
		24	24	11.0	24
Covington, Ind.	16	June 30	10	21.45	2
		14	14	16.8	14
		19	19	16.0	19
		24	24	16.1	24
Montezuma, Ind.	14	June 28	11	26.05	June 29
		14	16	16.6	16
		19	19	14.15	19
		25	25	14.6	25
Clinton, Ind.	20	June 28	5	27.5	June 29
Terre Haute, Ind.	14	June 28	11	23.0	June 30
		15	16	14.6	16
Hutsonville, Ill.	A20	June 29	9	25.3	2

River and station	Flood stage	Above flood stages -dates		Crest *	
		From–	To–	Stage	Date
	Ft.			Ft.	
MISSISSIPPI SYSTEM (Cont'd.)					
Ohio Basin (Cont'd.)					
Wabash (Cont'd.)					
Riverton, Ind.	18	June 30	10	21.9	2
Vincennes, Ind.	16	1	12	#23.7	4
Mt. Carmel, Ill.	17	2	14	23.0	7
New Harmony, Ind.	15	4	14	----	--
White Basin					
White: Clarendon, Ark.	26	Apr. 9	July 10	30.9	1
St. Charles, Ark.	25	Apr. 12	July 9	30.6	4
Arkansas Basin					
Salt Fork: Tonkawa, Okla.	17	June 23	3	21.9	June 24
				19.15	2
Cimarron: Perkins, Okla.	11	3	4	12.4	3
Arkansas: Hutchinson, Kans.	6	June 28	4	9.15	June 30
Wichita, Kans.	12	June 30	2	12.3	1
Arkansas City, Kans.	16	June 28	5	21.3	June 29
Ralston, Okla.	13	June 29	2	20.0	1
Webbers Falls, Okla.	23	May 18	4	30.0	May 20
				31.0	May 23
				35.5	May 26
				27.7	June 2
				24.9	2
Van Buren, Ark.	22	May 19	9	30.1	May 21
				32.2	May 24
				36.35	May 27
				30.5	June 3
				24.15	2
Dardanelle, Ark.	22	May 21	4	30.1	May 26
				33.6	May 30
				27.8	June 5
				27.3	June 14
				26.1	June 18
				23.5	June 27
Red Basin					
Black: Jonesville, La.	50	June 4	11	52.2	June 22
				52.3	June 28
Sulphur: Naples, Tex.	22	May 15	4	30.0	May 17
				31.25	May 29
				31.45	June 8
Texarkana, Tex.	20		1/	27.3	June 23
				27.4	1
				27.4	8
Red: Alexandria, La.	32	Apr. 30	3	40.7	May 13
				40.6	June 17
Lower Mississippi Basin					
St. Francis: Fisk, Mo.	20	2	11	23.6	4-7
St. Francis, Ark.	18	5	17	20.6	8-11
WEST GULF OF MEXICO DRAINAGE					
Mermentau: Mermentau, La.	5	June 29	8	7.8	1
Calcasieu: Old Town Bay, La.	4	June 28	1	4.1	1
Sabine: Bon Wier, Tex.	17	June 28	2	18.5	June 29
				17.75	1
Deweyville, Tex	14	June 23	7	15.2	1
Trinity: Dallas, Tex.	28	May 9	4	41.7	May 26
				35.9	June 6
Rosser, Tex.	26	June 26	5	27.3	June 30
Trinidad, Tex.	28	Apr. 21	9	43.5	May 1
				44.4	June 1
				29.7	4
Liberty, Tex.	24	Apr. 26	3	29.3	May 12
				28.1	June 22

* Provisional
# Highest Observed Stage
1/ Continued at end of month
A Tentative
E Estimated

RAWINSONDE DATA

Average monthly values

JULY 1957

Standard pressure surface (mb)	ALBANY, N. Y. (1003 MB.)						ALBUQUERQUE, N. MEX. (841 MB.)						AMARILLO, TEX. (894 MB.)						ANCHORAGE, ALASKA (1009 MB.)						1/ ANNETTE, ALASKA (1012 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	86	17.8	84	242	2.5	31	1,619	20.1	63	68	2.7	30	1,099	20.7	63	211	3.9	31	30	12.2	84	184	2.7	31	37	11.4	89	56	0.6
1,000	30	114			256	2.7	31	93					30	108					31	104	12.6	80	188	3.3	31	136	11.5	87	138	.8
950	30	549	17.4	69	287	8.0	31	546					30	555					31	534	11.3	73	187	5.2	31	564	9.6	83	135	1.6
900	30	1,015	14.6	70	297	11.3	31	1,026					30	1,031					31	985	9.0	74	186	3.9	31	1,012	7.0	80	174	2.5
850	30	1,496	11.6	69	295	13.4	31	1,525					30	1,533	22.7	48	220	14.2	31	1,457	6.3	75	114	1.4	31	1,480	4.1	80	171	2.9
800	30	2,002	8.6	68	295	15.9	31	2,051	19.8	51	74	1.6	30	2,058	19.4	49	221	11.5	31	1,953	3.5	74	84	2.5	31	1,972	1.4	79	176	2.5
750	30	2,533	5.6	63	297	17.9	31	2,602	16.6	50	229	1.6	30	2,604	15.5	47	232	6.2	31	2,470	.6	70	67	2.9	31	2,488	- 1.5	77	165	1.6
700	30	3,097	3.3	50	294	20.4	31	3,189	12.4	53	237	3.9	30	3,192	11.6	49	249	1.2	31	3,025	- 3.0	65	76	4.5	31	3,036	- 4.6	72	185	1.0
650	30	3,694	.3	42	297	21.2	31	3,801	7.6	59	235	5.8	30	3,798	7.0	52	99	1.9	31	3,601	- 6.5	62	78	5.2	31	3,614	- 7.8	65	185	2.1
600	30	4,333	- 3.3	39	294	22.5	31	4,462	2.6	65	223	6.6	30	4,460	2.7	46	129	3.7	31	4,231	-10.0	53	76	4.5	31	4,235	-11.7	61	206	2.3
550	30	5,010	- 7.3		293	23.9	31	5,152	- 2.5	68	209	6.0	30	5,148	- 1.7	43	163	3.9	31	4,891	-14.4	50	55	4.7	31	4,891	-15.9	56	224	2.7
500	30	5,754	-12.0		293	26.8	31	5,911	- 7.1	62	191	7.0	30	5,912	- 6.4	41	178	6.0	31	5,613	-19.4	46	52	6.2	31	5,610	-20.7	54	231	3.3
450	30	6,544	-17.5		295	29.1	31	6,722	-11.8	52	192	8.2	30	6,718	-11.4	33	196	5.2	31	6,379	-25.0	43	53	6.4	31	6,369	-26.5	52	252	3.3
400	30	7,426	-23.9		297	31.3	31	7,620	-17.7	47	212	8.9	30	7,623	-17.6		192	4.7	31	7,234	-31.6	44	57	6.6	31	7,223	-33.0	51	249	4.5
350	30	8,388	-30.6		295	33.0	31	8,607	-24.4	39	214	9.5	29	8,610	-24.4		196	2.5	31	8,164	-38.9		62	5.8	31	8,149	-40.0		238	5.2
300	30	9,465	-38.6		296	36.9	31	9,712	-32.7	38	206	10.3	29	9,715	-32.7		25	.6	31	9,205	-46.4		63	8.7	31	9,186	-46.8		195	2.1
250	30	10,696	-46.7		303	40.6	31	10,970	-42.6		208	11.3	29	10,974	-42.4		30	2.1	31	10,398	-52.5		42	10.5	31	10,383	-50.1		310	5.6
200	29	12,152	-52.7		303	42.6	31	12,441	-53.7		229	14.2	29	12,446	-53.5		351	1.7	29	11,845	-49.5		48	9.3	31	11,855	-46.0		269	5.2
175	29	13,013	-53.5		303	40.0	30	13,287	-59.6		243	12.2	29	13,295	-59.1		152	.8	29	12,725	-47.2		21	5.2	31	12,745	-45.6		265	6.2
150	29	14,002	-54.9		303	33.2	29	14,236	-65.3		224	6.6	29	14,249	-64.8		210	1.4	28	13,749	-47.3		30	5.8	31	13,772	-45.9		260	6.0
125	29	15,162	-56.6		303	26.2	28	15,334	-70.0		184	5.8	29	15,348	-69.2		158	2.3	28	14,954	-47.3		37	3.9	31	14,984	-46.6		233	5.6
100	29	16,573	-57.5		308	17.7	23	16,658	-69.7		144	5.2	29	16,678	-69.5		77	6.2	25	16,431	-47.3		45	3.1	31	16,463	-47.3		204	2.3
80	28	17,983	-56.2		342	7.0	22	17,995	-67.2		102	10.7	29	18,022	-65.6		96	12.8	23	17,905	-47.1		84	3.7	30	17,937	-48.0		169	3.5
60	26	19,823	-53.4		72	8.4	22	19,759	-60.8		99	16.9	29	19,795	-60.2		92	19.8	20	19,815	-46.5		84	6.0	29	19,831	-48.4		117	7.0
50	26	21,001	-51.9		82	12.2	21	20,897	-57.4		92	20.2	28	20,940	-56.8		92	22.7	19	21,023	-46.1		79	7.0	29	21,033	-47.8		104	7.4
40	23	22,453	-49.8		86	16.1	20	22,320	-53.8		88	21.8	27	22,364	-53.2		92	25.3	17	22,510	-45.6		83	10.5	29	22,508	-47.2		95	10.5
30	17	24,352	-46.7		87	20.4	20	24,183	-50.3		90	26.0	26	24,236	-48.6		89	25.8	6	24,459	-44.0				28	24,419	-45.3		93	13.8
25	11	25,556	-45.4				18	25,380	-48.5		87	28.8	26	25,442	-46.2		88	27.6							27	25,638	-44.0		91	15.7
20							16	26,850	-46.9		87	30.3	20	26,942	-43.1		85	29.9							26	27,142	-42.0		90	18.5
15							11	28,770	-44.8				9	28,917	-39.8										21	29,103	-39.7		91	21.0

Standard pressure surface (mb)	2/ ATHENS, GA. (988 MB.)						3/ BARROW, ALASKA (1010 MB.)						4/ BARTER IS., ALASKA (1010 MB.)						5/ BETHEL, ALASKA (1014 MB.)						6/ BISMARCK, N. DAK. (955 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	246	21.2	90	33	2.5	31	8	2.7	95	138	2.5	31	15	3.4	93	86	1.9	31	4	10.7	89	301	5.6	31	505	17.2	87	80	3.9
1,000	31	139					31	89	3.3	95	140	3.9	31	100	4.3	92	89	2.3	31	119	11.2	83	313	6.2	31	104				
950	31	588	22.2	73	56	3.5	31	510	4.8	86	219	6.6	31	523	7.3	81	206	1.6	31	547	10.0	72	322	4.1	31	546	17.9	84	94	4.1
900	31	1,056	19.7	72	70	4.3	31	950	4.6	79	240	8.5	31	966	6.9	71	242	6.6	31	995	8.0	69	299	2.3	31	1,014	21.9	58	203	4.3
850	31	1,547	16.6	73	65	3.1	31	1,415	3.0	78	243	8.2	31	1,435	4.9	66	241	10.1	31	1,466	6.4	57	297	2.3	31	1,509	19.6	53	229	3.7
800	31	2,062	14.0	64	55	2.7	31	1,905	1.0	76	244	10.3	31	1,928	2.5	63	241	12.0	31	1,961	3.7	57	313	1.9	31	2,029	16.5	50	273	5.2
750	31	2,600	11.5	53	28	1.7	31	2,423	- 1.5	76	244	11.5	31	2,447	- .4	65	244	13.6	31	2,482	1.1	55	352	1.9	31	2,569	12.7	50	291	8.0
700	31	3,179	8.5	49	347	2.7	31	2,970	- 4.4	75	246	11.5	31	2,997	- 3.4	64	248	13.2	31	3,037	- 1.6	53	359	2.1	31	3,151	8.6	51	289	11.7
650	31	3,785	5.0	46	349	3.5	31	3,548	- 7.6	66	244	13.0	31	3,577	- 6.4	61	252	13.8	31	3,620	- 5.1	49	61	1.0	31	3,755	4.2	50	289	14.6
600	31	4,439	1.9	38	339	4.7	31	4,172	-10.9	63	244	12.8	31	4,203	-10.1	58	253	15.5	31	4,248	- 8.9	45	74	2.1	31	4,406	- .2	46	282	17.9
550	31	5,128	- 2.3	40	337	6.4	31	4,830	-15.1	56	240	11.7	31	4,864	-14.4	58	253	15.5	31	4,912	-13.2	42	63	3.5	31	5,091	- 4.7	42	273	21.0
500	31	5,887	- 6.7	39	337	7.8	31	5,551	-19.9	53	253	12.6	31	5,587	-19.3	54	252	16.3	31	5,638	-18.0	42	58	4.5	31	5,842	- 9.3	40	273	22.2
450	31	6,697	-11.5	32	342	8.5	31	6,320	-25.5	48	257	14.2	31	6,353	-24.7	53	255	19.0	31	6,407	-23.6	43	52	7.4	31	6,641	-14.6	34	266	23.1
400	31	7,597	-17.6	35	341	11.3	31	7,170	-31.7	47	255	14.4	31	7,211	-31.0	51	258	18.7	31	7,269	-30.0	39	55	10.1	31	7,532	-21.0	32	268	26.8
350	31	8,583	-24.6	32	340	13.8	31	8,102	-38.5		248	14.0	31	8,144	-38.2		261	19.6	31	8,207	-37.1		58	14.2	31	8,505	-28.1		268	33.0
300	31	9,688	-32.7		341	14.2	31	9,146	-45.7		269	12.0	31	9,188	-46.0		264	22.0	31	9,256	-45.0		45	15.2	31	9,594	-35.8		262	39.1
250	31	10,947	-42.3		344	19.4	31	10,345	-50.3		265	10.9	31	10,382	-52.1		268	21.0	31	10,456	-51.6		45	15.3	31	10,839	-44.5		258	49.2
200	31	12,421	-53.2		347	23.3	31	11,808	-47.1		265	8.7	31	11,838	-47.6		272	14.0	31	11,901	-50.7		31	13.2	30	12,305	-52.3		258	57.5
175	31	13,270	-58.9		347	24.7	31	12,696	-45.6		280	7.2	31	12,724	-45.7		265	9.9	31	12,777	-48.0		5	11.1	30	13,161	-55.8		262	56.7
150	31	14,224	-64.7		354	21.8	31	13,724	-45.5		284	5.2	31	13,752	-45.4		276	6.8	31	13,796	-47.6		9	10.1	30	14,134	-59.7		263	45.7
125	30	15,324	-69.0		9	15.3	31	14,939	-45.6		284	3.5	30	14,970	-45.6		267	6.0	31	14,999	-48.0		14	6.4	30	15,268	-61.9		261	28.2
100	30	16,658	-68.4		29	12.6	30	16,424	-45.4		294	2.9	30	16,457	-45.3		257	2.1	31	16,472	-48.0		20	4.9	30	16,650	-60.9		254	15.7
80	29	18,005	-65.0		57	14.2	30	17,915	-44.7		11	.6	29	17,950	-44.8		307	.8	31	17,946	-47.5		54	5.2	30	18,043	-59.0		263	7.2
60	29	19,784	-59.0		78	19.8	30	19,844	-43.8		67	1.7	29	19,877	-44.2		61	3.3	31	19,849	-47.1		70	5.4	30	19,865	-55.2		58	3.1
50	29	20,937	-55.9		84	22.7	29	21,071	-43.1		87	5.2	29	21,101	-43.6		70	4.7	31	21,058	-46.8		79	8.5	30	21,036	-52.7		91	8.4
40	29	22,370	-52.3		92	24.5	29	22,577	-42.3		81	7.8	29	22,603	-43.0		64	6.6	31	22,539	-46.0		81	10.3	30	22,484	-50.8		86	13.4
30	28	24,249	-48.9		88	25.5	29	24,528	-41.2		77	12.8	28	24,551	-41.7		70	9.1	31	24,458	-44.8		89	13.4	30	24,369	-48.1		89	18.3
25	28	25,453	-46.5		90	29.7	29	25,768	-40.6		76	11.1	28	25,790	-40.5		65	9.9	31	25,682	-43.5		86	15.3	28	25,574	-46.4		91	21.0
20	28	26,942	-44.3		88	30.1	29	27,292	-39.3		86	12.6	26	27,317	-38.6		67	11.9	30	27,190	-41.7		87	18.1	27	27,059	-44.2		96	19.6
15	25	28,881	-41.9		84	34.0	28	29,272	-36.9		79	11.7	23	29,303	-35.8		69	13.0	25	29,141	-39.0		87	19.8	24	28,997	-41.6		87	26.4

Standard pressure surface (mb)	BOISE, IDAHO (915 MB.)						BROWNSVILLE, TEX. (1013 MB.)						7/ BUFFALO, N. Y. (993 MB.)						8/ BURRWOOD, LA. (1014 MB.)						9/ CAPE HATTERAS, N. C. (1015 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	868	15.5	54	177	3.1	31	7	24.8	91	142	5.6	31	182	17.6	85	239	3.3	31	3	26.8	88	277	4.9	31	4	24.7	78	329	0.8
1,000	31	102					31	124	25.6	84	158	10.7	31	125					31	130	26.2	89	275	4.7	31	134	24.2	74	314	1.7
950	31	546					31	575	23.1	80	176	19.0	31	563	18.1	69	275	7.8	31	579	23.7	82	258	4.7	31	576	21.3	68	302	3.3
900	31	1,009	18.2	42	235	2.5	31	1,047	21.4	63	174	19.2	31	1,026	15.5	67	295	10.5	30	1,055	20.8	79	251	4.3	31	1,049	18.4	67	299	3.3
850	31	1,499	19.4	28	311	4.9	30	1,541	19.1	48	168	15.0	31	1,510	12.5	67	298	13.2	30	1,548	18.0	72	245	3.3	31	1,538	15.1	67	305	3.5
800	31	2,017	16.4	27	302	5.2	30	2,060	16.2	47	151	11.3	31	2,016	9.9	58	292	14.6	30	2,066	14.9	64	263	2.3	31	2,049	12.4	59	299	4.3
750	31	2,562	12.8	29	248	7.2	30	2,602	13.1	42	139	8.9	31	2,549	7.4	48	296	17.1	30	2,604	11.7	59	349	1.4	31	2,584	10.1	46	295	6.4
700	31	3,137	8.5	32	231	13.0	30	3,182	9.7	43	114	8.7	31	3,116	4.6	45	301	19.4	30	3,184	8.6	55	4	2.5	31	3,160	7.5	40	290	9.9
650	31	3,742	3.6	37	230	17.9	30	3,788	6.0	41	105	9.5	31	3,715	1.2	39	302	21.4	30	3,793	5.5	52	22	4.1	31	3,760	4.4	38	291	10.9
600	31	4,389	- 1.6	42	228	23.7	30	4,446	2.3	39	105	11.7	31	4,357	- 2.5	37	305	23.3	30	4,445	2.0	43	31	5.6	31	4,415	.5	41	290	12.2
550	31	5,067	- 6.7	42	229	29.9	30	5,138	- 1.7	34	89	11.5	31	5,041	- 6.2		306	25.5	30	5,136	- 2.0	36	41	5.8	31	5,100	- 3.5	35	293	12.6
500	31	5,814	-12.1	41	231	31.3	30	5,896	- 6.2	32	84	12.0	31	5,782	-10.8		310	29.0	30	5,894	- 6.5	30	37	8.4	31	5,857	- 7.6		298	13.0
450	31	6,603	-17.7		236	33.6	30	6,706	-11.5		83	11.7	31	6,580	-16.4		309	31.9	30	6,704	-11.7		48	10.5	31	6,665	-12.6		301	14.2
400	31	7,484	-24.0		231	27.6	30	7,607	-17.6		78	12.0	31	7,460	-22.7		307	34.4	30	7,603	-17.5		47	9.5	31	7,560	-18.7		302	15.7
350	31	8,445	-31.1		233	25.1	30	8,593	-24.5		76	12.0	31	8,426	-30.3		306	36.5	30	8,589	-24.4		37	9.3	31	8,542	-25.7		301	17.1
300	31	9,520	-39.2		232	29.3	30	9,698	-32.8		76	11.9	31	9,506	-38.4		310	44.7	30	9,694	-32.8		47	11.1	31	9,641	-34.0		297	18.3
250	31	10,747	-47.6		225	33.6	30	10,956	-42.5		79	11.5	31	10,738	-46.4		311	49.4	30	10,953	-42.2		47	12.4	31	10,893	-43.6		297	21.4
200	31	12,203	-52.3		224	57.5	29	12,428	-53.6		81	13.4	31	12,197	-52.7		311	49.5	30	12,428	-53.2		46	12.2	31	12,362	-53.5		308	26.4
175	31	13,064	-53.6				29	13,276	-59.6		85	15.2	31	13,055	-55.1		314	46.8	30	13,277	-58.9		40	13.8	31	13,212	-58.2		314	25.5
150	31	14,051	-56.1				29	14,226	-65.6		89	16.9	31	14,034	-57.2		311	38.3	30	14,232	-64.5		41	13.8	30	14,173	-62.3		319	23.1
125	31	15,204	-58.4				29	15,321	-70.6		77	18.1	30	15,182	-59.1		316	28.2	30	15,335	-68.8		52	16.7	30	15,289	-65.5		329	18.8
100	26	16,600	-59.1				28	16,633	-73.0		77	23.7	30	16,581	-59.1		318	17.5	29	16,663	-69.5		61	17.9	30	16,649	-64.5		343	9.5
80	24	18,005	-57.9				28	17,951	-69.1		85	26.0	30	17,984	-58.4		328	8.9	29	18,004	-66.2		68	21.0	30	18,025	-61.2		38	9.1
60	23	19,832	-54.9				28	19,695	-63.0		85	29.9	30	19,806	-55.5		55	7.0	28	19,767	-61.3		77	25.6	30	19,827	-57.3		75	14.8
50	23	21,003	-53.1				28	20,826	-59.9		87	35.2	29	20,976	-53.6		77	8.9	28	20,907	-58.1		77	27.0	30	20,987	-54.6		85	18.1
40	23	22,448	-50.8				27	22,229	-56.6		88	38.5	28	22,418	-51.3		77	11.5	26	22,323	-54.5		84	31.5	29	22,427	-51.4		92	22.3
30	21	24,340	-47.6				26	24,069	-53.0		91	44.7	27	24,299	-48.6		87	15.5	26	24,182	-51.1		82	29.7	29	24,311	-48.1		89	25.5
25	15	25,545	-45.9				24	25,248	-50.6		93	46.2	27	25,504	-46.4		91	18.3	25	25,376	-48.9		83	31.5	27	25,519	-46.4		87	27.2
20	5	27,024	-43.7				16	26,701	-48.6		92	49.0	25	26,997	-43.3		93	22.0	22	26,858	-46.7		77	35.6	24	27,005	-44.0		88	29.7
15													24	28,951	-40.2		94	24.7	20	28,771	-43.7		82	35.2	23	28,948	-40.6		89	30.5

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

1/ 10 mb., 13 obs., 31,883 m., -36.1°C.
2/ 10 mb., 8 obs., 31,651 m., -37.2°C.
3/ 10 mb., 15 obs., 32,082 m., -33.8°C.
4/ 10 mb., 18 obs., 32,151 m., -31.7°C.
5/ 10 mb., 12 obs., 31,940 m., -34.8°C.
6/ 10 mb., 16 obs., 31,748 m., -37.5°C.
7/ 10 mb., 16 obs., 31,723 m., -36.0°C., 90 dir., 19.0 Speed
7 mb., 5 obs., 34,186 m., -32.1°C.
8/ 10 mb., 16 obs., 31,505 m., -40.1°C.
7 mb., 5 obs., 33,933 m., -36.4°C.
9/ 10 mb., 13 obs., 31,742 m., -36.3°C.

RAWINSONDE DATA

Average monthly values

JULY 1957

1/ CARIBOU, ME. (988 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	191	14.3	90	211	3.3
1,000	31	87				
950	31	521	14.4	79	245	6.4
900	31	978	12.5	75	265	8.7
850	31	1,456	9.4	74	271	10.7
800	31	1,957	6.6	72	276	12.2
750	31	2,484	3.7	70	278	12.8
700	31	3,042	.4	70	275	14.4
650	31	3,630	- 2.8	64	273	15.0
600	31	4,267	- 6.4	57	276	15.7
550	31	4,935	-10.6	50	280	16.3
500	31	5,670	-15.2	45	279	17.3
450	31	6,453	-20.8	43	282	18.8
400	31	7,320	-27.1	41	283	19.2
350	31	8,268	-34.4	38	290	22.5
300	31	9,329	-42.4		293	25.1
250	31	10,545	-47.8		293	28.0
200	31	12,012	-49.0		291	29.0
175	31	12,889	-49.2		290	23.7
150	31	13,896	-50.9		289	18.8
125	31	15,079	-52.4		289	14.2
100	31	16,519	-53.3		289	9.3
80	30	17,955	-53.0		318	3.5
60	27	19,820	-51.3		94	4.7
50	26	21,009	-50.2		93	9.9
40	26	22,471	-48.7		92	10.5
30	25	24,374	-46.0		91	17.1
25	24	25,591	-44.2		92	19.2
20	21	27,094	-42.1		94	21.8
15	18	29,060	-38.2		93	24.1

CHARLESTON, S. C. (1014 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	13	23.0	92	347	2.3
1,000	30	137	23.4	85	354	1.7
950	30	584	22.0	76	28	1.6
900	30	1,055	19.4	71	40	2.9
850	30	1,545	16.4	71	43	2.9
800	30	2,060	13.6	66	36	2.3
750	30	2,601	11.1	55	312	1.7
700	30	3,176	8.3	51	309	2.7
650	30	3,782	5.0	49	322	3.5
600	30	4,435	1.2	43	326	5.1
550	30	5,126	- 2.9	44	330	5.2
500	30	5,880	- 7.2	40	329	5.1
450	30	6,690	-11.8		333	7.2
400	30	7,590	-17.6		327	8.9
350	30	8,577	-24.6		318	8.5
300	30	9,682	-32.8		317	10.9
250	30	10,941	-42.5		331	12.0
200	30	12,414	-53.5		342	17.9
175	30	13,263	-59.1		347	19.4
150	30	14,218	-64.5		354	19.0
125	30	15,321	-68.3		5	17.7
100	30	16,662	-67.4		28	12.0
80	30	18,019	-63.5		60	15.5
60	28	19,806	-58.9		78	21.6
50	28	20,958	-55.8		90	27.2
40	26	22,385	-53.0		97	28.8
30	23	24,257	-49.2		92	29.5
25	16	25,451	-47.7		93	31.9
20	8	26,915	-45.8			
15						

COLD BAY, ALASKA (1012 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	29	8.9	93	266	2.3
1,000	31	127	8.2	93	278	2.9
950	31	547	6.7	91	293	2.5
900	31	994	5.8	84	321	1.0
850	31	1,462	4.7	76	92	1.0
800	31	1,955	2.8	70	27	2.5
750	31	2,471	.3	63	41	3.1
700	31	3,026	- 2.5	58	18	2.7
650	31	3,606	- 5.7	49	129	.6
600	31	4,235	- 9.5	48	29	1.0
550	31	4,891	-13.9	46	36	1.4
500	31	5,620	-18.9	44	78	3.1
450	31	6,389	-24.2	44	48	2.9
400	31	7,247	-30.3	47	19	4.5
350	31	8,184	-37.0		42	2.7
300	31	9,234	-43.8		331	3.3
250	31	10,442	-49.2		282	1.6
200	31	11,903	-48.4		324	5.1
175	27	12,783	-46.9		303	6.0
150	27	13,803	-47.6		302	4.9
125	27	15,006	-48.2		303	4.3
100	26	16,478	-48.9		327	2.5
80	24	17,949	-48.9		52	1.9
60	22	19,842	-48.7		72	5.6
50	20	21,045	-48.4		76	9.1
40	13	22,530	-47.6		73	9.7
30	8	24,427	-46.7			
25	5	24,514	-37.0			
20						
15						

COLUMBIA, MO. (988 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	238	21.5	89	161	3.1
1,000	31	130				
950	31	581	24.1	69	215	9.3
900	31	1,053	22.2	63	252	11.1
850	31	1,548	19.6	58	265	8.2
800	31	2,068	16.6	55	280	7.0
750	31	2,613	13.4	53	298	6.8
700	31	3,193	9.7	52	303	7.4
650	31	3,799	5.7	51	298	9.1
600	31	4,456	1.6	49	296	10.7
550	31	5,145	- 2.4	42	308	12.8
500	31	5,903	- 6.5	40	305	13.2
450	31	6,713	-11.5		305	16.5
400	31	7,615	-17.1		310	19.0
350	31	8,603	-24.0		309	22.3
300	31	9,710	-32.0		311	21.8
250	31	10,972	-41.7		310	25.5
200	31	12,448	-52.8		306	25.3
175	31	13,298	-58.7		306	25.5
150	31	14,254	-63.8		313	24.1
125	30	15,362	-67.7		321	17.5
100	30	16,705	-66.5		353	10.9
80	29	18,067	-62.9		47	9.1
60	29	19,858	-58.1		74	15.2
50	29	21,015	-54.7		87	17.3
40	29	22,455	-51.2		89	19.6
30	27	24,342	-46.8		87	23.1
25	21	25,556	-44.5		88	22.9
20	10	27,054	-42.5			
15						

2/ CURACAO, N.W.I. (1012 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	8	27.6	77	112	15.5
1,000	31	113	26.6	78	109	18.7
950	31	564	22.8	85	106	23.9
900	31	1,036	20.1	86	110	24.5
850	31	1,529	17.9	82	111	22.5
800	31	2,047	15.7	71	113	22.9
750	31	2,593	13.2	58	112	23.1
700	31	3,172	9.8	52	112	22.7
650	31	3,780	6.4	49	110	18.3
600	31	4,436	2.5	49	109	15.2
550	31	5,131	- 1.3	46	107	12.4
500	31	5,888	- 5.6	37	110	11.9
450	31	6,702	-10.7	32	105	11.1
400	31	7,603	-16.9	32	107	6.4
350	31	8,592	-24.0		137	5.1
300	31	9,697	-32.6	32	202	6.8
250	31	10,955	-42.7		238	9.7
200	31	12,423	-54.6		275	17.1
175	31	13,265	-61.0		282	21.4
150	31	14,208	-67.5		290	21.4
125	31	15,294	-71.5		296	9.1
100	31	16,607	-73.4		80	9.9
80	31	17,920	-69.9		86	19.8
60	29	19,667	-62.7		94	26.6
50	29	20,801	-59.3		95	24.9
40	28	22,214	-55.6		98	23.7
30	27	24,065	-51.9		95	22.7
25	25	25,255	-49.2		94	26.8
20	25	26,731	-45.3		97	32.4
15	18	28,650	-43.1		94	36.7

DAYTON, OHIO (981 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	297	19.2	78	220	0.6
1,000	31	135				
950	31	576	20.3	70	262	2.7
900	31	1,043	18.3	64	287	7.0
850	31	1,532	15.6	63	295	9.5
800	31	2,044	12.8	55	298	11.5
750	31	2,580	9.8	48	307	12.0
700	31	3,154	6.8	40	312	12.8
650	31	3,755	3.6	33	312	15.0
600	31	4,406	.2		305	18.5
550	31	5,090	- 3.9		306	18.5
500	31	5,845	- 8.2		309	21.2
450	31	6,651	-13.5		307	21.0
400	31	7,543	-19.6		312	24.3
350	31	8,522	-26.4		314	28.0
300	31	9,619	-34.1		318	34.2
250	31	10,872	-43.2		322	40.6
200	31	12,345	-52.7		320	45.9
175	31	13,198	-57.3		317	46.0
150	30	14,168	-61.9		321	37.7
125	30	15,287	-64.9		329	26.8
100	30	16,652	-63.4		335	16.7
80	30	18,029	-61.3		15	10.3
60	30	19,831	-57.0		67	14.0
50	30	20,994	-54.2		85	18.3
40	29	22,434	-51.1		89	17.7
30	28	24,323	-47.3		90	23.7
25	26	25,539	-44.9		91	25.6
20	24	27,044	-42.2		95	27.6
15	13	29,004	-39.5		91	32.3

3/ DENVER, COLO. (841 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	1,608	15.4	74	194	3.3
1,000	30	111				
950	30	557				
900	30	1,028				
850	30	1,521				
800	30	2,043	19.1	55	243	4.7
750	30	2,595	16.5	49	250	2.9
700	30	3,180	12.5	51	271	4.9
650	30	3,791	8.0	54	264	6.6
600	30	4,452	3.1	58	255	8.9
550	30	5,142	- 2.0	60	254	10.9
500	30	5,903	- 7.3	63	244	13.0
450	30	6,712	-12.2	53	240	15.0
400	30	7,609	-18.1	50	239	19.6
350	30	8,593	-25.3	48	242	22.9
300	30	9,695	-33.2	43	243	27.8
250	30	10,952	-42.6		242	32.1
200	30	12,424	-53.6		242	32.4
175	30	13,273	-58.8		247	31.3
150	30	14,229	-64.0		249	23.7
125	29	15,337	-67.6		250	17.3
100	29	16,683	-66.9		236	7.6
80	29	18,043	-63.2		162	3.7
60	28	19,830	-58.9		98	14.4
50	27	20,981	-56.1		93	17.1
40	27	22,411	-53.1		95	20.6
30	26	24,277	-49.8		95	22.0
25	26	25,476	-47.6		91	23.1
20	25	26,962	-45.1		91	27.4
15	20	28,900	-42.2		85	32.3

DODGE CITY, KANS. (925 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	792	21.6	73	167	4.1
1,000	31	109				
950	31	559				
900	31	1,033	24.1	58	187	7.8
850	31	1,534	23.3	49	226	13.0
800	31	2,060	20.5	44	242	12.8
750	31	2,607	16.7	45	243	9.1
700	31	3,198	12.2	51	233	5.8
650	31	3,808	7.5	53	238	5.6
600	31	4,469	2.9	49	247	7.6
550	31	5,160	- 1.5	44	261	8.4
500	31	5,922	- 6.0	39	252	9.1
450	31	6,730	-11.1	32	247	11.5
400	31	7,635	-17.3	28	244	10.1
350	31	8,622	-24.3		267	9.9
300	31	9,728	-32.5		272	9.7
250	31	10,988	-42.1		278	11.1
200	31	12,461	-53.3		271	10.7
175	30	13,308	-59.1		257	11.9
150	30	14,263	-64.4		273	12.0
125	30	15,363	-68.9		281	7.6
100	28	16,695	-68.7		310	5.2
80	28	18,046	-64.6		81	4.1
60	28	19,826	-59.1		91	20.8
50	26	20,980	-56.0		91	23.9
40	25	22,410	-53.2		93	25.3
30	22	24,281	-49.5		91	27.2
25	16	25,480	-47.0			
20						
15						

4/ EL PASO, TEX. (882 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,195	23.7	52	5	2.3
1,000	31	78				
950	31	525				
900	31	1,009				
850	31	1,516	23.9	45	141	2.5
800	31	2,045	21.5	45	155	3.1
750	31	2,595	17.8	47	155	4.3
700	31	3,188	13.3	51	159	3.7
650	31	3,797	8.4	58	145	3.5
600	31	4,464	3.3	61	111	5.8
550	31	5,151	- 1.5	56	115	8.0
500	31	5,919	- 6.0	48	125	7.6
450	30	6,729	-10.9	40	134	8.5
400	30	7,634	-16.6	37	140	8.0
350	30	8,625	-23.2	32	149	6.0
300	30	9,736	-31.5		136	3.7
250	30	11,001	-41.5		87	1.4
200	30	12,478	-53.1		88	4.3
175	30	13,328	-59.0		96	6.4
150	30	14,282	-64.7		105	8.0
125	29	15,382	-69.3		113	10.1
100	25	16,706	-71.9		111	11.9
80	24	18,032	-68.4		92	18.1
60	24	19,787	-62.0		89	25.3
50	24	20,925	-58.6		92	27.4
40	24	22,340	-54.8		98	29.9
30	24	24,198	-51.0		90	31.5
25	22	25,389	-48.7		87	32.8
20	21	26,856	-47.4		86	33.6
15	16	28,772	-45.1		88	37.3

ELY, NEV. (811 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,908	12.1	45	187	8.0
1,000	31	114				
950	31	556				
900	31	1,022				
850	31	1,515				
800	31	2,028	17.2	38	185	8.7
750	31	2,583	16.1	32	194	9.5
700	31	3,161	11.8	33	218	12.8
650	31	3,775	6.8	35	219	14.2
600	31	4,428	1.3	42	208	15.2
550	31	5,116	- 4.2	42	206	17.3
500	31	5,866	- 9.4	33	213	18.3
450	31	6,670	-14.9		219	24.1
400	31	7,554	-21.0		223	28.4
350	31	8,527	-27.9		224	33.0
300	31	9,617	-35.7		224	38.3
250	31	10,864	-43.9		218	43.9
200	31	12,337	-51.5		220	43.1
175	31	13,196	-55.8		227	43.9
150	31	14,167	-60.5			
125	31	15,293	-63.7			
100	30	16,659	-64.5			
80	30	18,029	-62.1			
60	29	19,826	-57.9			
50	29	20,980	-55.9			
40	28	22,411	-52.9			
30	26	24,284	-49.3			
25	21	25,483	-47.4			
20	7	26,945	-46.2			
15						

5/ FAIRBANKS, ALASKA (996 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	135	11.9	84	340	1.2
1,000	31	101			205	.8
950	31	530	13.5	65	260	3.9
900	31	987	10.8	64	251	5.6
850	31	1,461	7.7	66	258	7.0
800	31	1,958	4.2	64	267	7.6
750	31	2,475	.9	63	267	7.6
700	31	3,032	- 2.3	64	278	5.6
650	31	3,611	- 6.1	62	283	6.4
600	31	4,240	-10.0	57	284	5.2
550	31	4,898	-14.4	53	288	5.1
500	31	5,622	-19.3	50	286	4.5
450	31	6,388	-24.8	50	308	3.9
400	31	7,245	-31.2	47	8	2.3
350	31	8,178	-38.2		31	3.3
300	31	9,222	-45.8		47	6.6
250	31	10,415	-53.3		35	7.6
200	31	11,854	-50.3		43	5.6
175	31	12,731	-48.0		22	5.2
150	31	13,750	-47.3		38	4.9
125	31	14,957	-47.0		22	3.9
100	31	16,436	-46.7		38	3.7
80	31	17,919	-46.2		66	4.3
60	31	19,834	-45.7		77	5.6
50	31	21,051	-45.2		82	7.0
40	31	22,544	-44.4		81	9.1
30	31	24,480	-42.8		85	11.1
25	31	25,713	-42.0		81	13.6
20	30	27,231	-40.1		80	14.8
15	30	29,206	-37.7		85	17.7

FLINT, MICH. (989 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	234	16.3	92	257	1.4
1,000	31	134				
950	31	574	18.6	70	284	4.9
900	31	1,038	16.3	61	316	8.7
850	31	1,523	13.8	58	310	10.3
800	31	2,033	11.6	49	308	11.9
750	31	2,568	9.0	41	313	13.6
700	31	3,139	6.0	37	309	16.7
650	31	3,736	2.7	35	305	19.2
600	31	4,386	- .8	33	305	22.9
550	31	5,070	- 4.6		305	22.9
500	31	5,822	- 9.2		303	24.9
450	31	6,623	-14.6		305	28.2
400	31	7,512	-20.9		305	31.7
350	31	8,486	-28.0		306	36.5
300	31	9,575	-36.0		307	43.9
250	31	10,820	-44.2		310	51.7
200	31	12,290	-52.1		310	54.4
175	31	13,148	-55.9		312	49.5
150	31	14,121	-59.2		310	43.1
125	30	15,260	-61.7		313	32.8
100	29	16,644	-60.6		325	18.7
80	29	18,039	-58.8		347	9.7
60	29	19,860	-55.6		51	9.7
50	29	21,028	-53.4		71	12.6
40	28	22,473	-51.0		83	17.5
30	27	24,356	-47.9		88	20.6
25	24	25,560	-46.0		88	22.7
20	19	27,037	-43.8		85	24.1
15	8	28,989	-40.9			

6/ FORT WORTH, TEX. (994 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	178	25.6	75	184	1.7
1,000	31	123				
950	31	579	26.5	66	213	14.8
900	31	1,055	24.5	60	209	12.2
850	31	1,554	21.2	59	203	6.4
800	31	2,076	17.5	59	176	3.3
750	31	2,620	13.9	54	133	2.7
700	31	3,203	10.1	54	120	3.1
650	31	3,810	6.4	48	102	3.9
600	31	4,468	2.6	40	88	4.7
550	31	5,164	- 1.3	36	94	5.6
500	31	5,922	- 5.8	32	93	6.4
450	31	6,733	-11.3		76	8.0
400	31	7,633	-17.7	28	77	8.0
350	31	8,618	-25.0		76	9.1
300	31	9,719	-33.6		69	10.1
250	31	10,973	-43.4		67	10.5
200	31	12,440	-54.1		74	10.7
175	30	13,285	-59.8		84	10.5
150	30	14,235	-65.8		75	9.9
125	29	15,328	-69.9		74	10.9
100	28	16,650	-70.4		74	13.0
80	27	17,987	-66.4		82	18.8
60	27	19,756	-60.9		88	21.8
50	27	20,900	-57.8		89	24.9
40	27	22,321	-54.6		88	25.5
30	27	24,181	-50.3		88	29.7
25	25	25,375	-47.7		87	30.7
20	24	26,858	-44.8		90	32.3
15	20	28,793	-42.3		89	36.7

GLASGOW, MONT. (932 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	695	16.4	61	83	2.9
1,000	31	90				
950	31	530				
900	31	999	20.8	48	109	1.7
850	31	1,492	19.7	39	247	5.2
800	31	2,011	16.5	40	256	8.9
750	31	2,555	12.4	46	259	12.4
700	31	3,132	7.9	53	252	16.7
650	31	3,733	3.3	57	257	19.6
600	31	4,383	- 1.5	58	258	26.0
550	31	5,064	- 6.5	48	257	28.6
500	31	5,808	-11.6	43	253	30.5
450	31	6,599	-16.9	36	252	31.7
400	31	7,481	-23.3	37	251	35.0
350	31	8,445	-30.3	38	243	38.7
300	31	9,523	-38.7		247	45.1
250	31	10,753	-46.7		249	51.7
200	29	12,212	-52.3		243	58.7
175	29	13,073	-53.6		245	57.3
150	29	14,060	-55.6		248	49.2
125	29	15,218	-56.7		250	30.1
100	28	16,630	-57.4		246	20.4
80	28	18,043	-56.1		225	7.0
60	28	19,886	-52.8		95	7.2
50	27	21,066	-51.3		118	9.5
40	27	22,523	-48.9		98	8.4
30	19	24,425	-46.1			
25	10	25,642	-44.5			
20	5	27,138	-43.3			
15						

GRAND CAYMAN, B.W.I. (1014 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	3	26.1	86	81	4.1
1,000	31	129	26.7	81	82	6.0
950	31	577	23.5	82	89	12.8
900	31	1,053	20.7	79	98	15.5
850	31	1,546	17.9	74	103	16.7
800	31	2,063	15.2	59	109	16.1
750	31	2,603	12.3	51	107	15.3
700	31	3,184	9.1	48	109	12.8
650	31	3,791	5.3	47	105	13.2
600	31	4,444	1.8	43	103	12.0
550	31	5,134	- 2.3	38	98	8.5
500	31	5,891	- 7.1	40	89	7.4
450	31	6,697	-12.3	39	90	8.4
400	31	7,596	-18.3	37	76	7.8
350	31	8,579	-25.3	33	61	8.0
300	31	9,679	-33.6		51	9.9
250	31	10,932	-43.4		41	9.3
200	31	12,395	-55.2		33	9.7
175	31	13,236	-61.1		[illegible]	10.5
150	31	14,181	-66.6		33	13.0
125	31	15,274	-69.9		49	14.8
100	31	16,598	-71.0		66	17.1
80	31	17,925	-69.1		79	25.3
60	30	19,674	-62.6		86	35.2
50	29	20,809	-59.2		89	38.3
40	26	22,221	-56.2		92	37.7
30	22	24,069	-51.9		94	37.5
25	20	25,263	-49.1		93	36.9
20	14	26,734	-46.3		90	45.7
15	7	28,642	-41.7			

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

1/ 10 mb., 9 obs., 31,846 m., -31.1°C.
2/ 10 mb., 6 obs., 31,355 m., -40.8°C.
3/ 10 mb., 13 obs., 31,673 m., -36.1°C., 90 dir., 35.0 speed
4/ 10 mb., 11 obs., 31,510 m., -41.0°C.
5/ 10 mb., 11 obs., 32,003 m., -33.4°C.
6/ 10 mb., 7 obs., 31,509 m., -37.4°C.

RAWINSONDE DATA

Average monthly values

Standard pressure surface (mb)	GRAND JUNCTION, COLO. (854 MB.)				Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	1,474	18.7	54	102	8.2
1,000--	31	95				
950----	31	543				
900----	31	1,017				
850----	31	1,518	19.5	52	105	8.2
800----	31	2,041	19.3	48	147	8.7
750----	31	2,592	16.3	48	191	6.2
700----	31	3,177	12.2	50	242	7.8
650----	31	3,788	7.5	54	250	8.2
600----	31	4,446	2.2	58	247	9.5
550----	31	5,136	- 3.1	61	247	9.5
500----	31	5,892	- 7.8	52	237	14.0
450----	31	6,701	-12.7	48	232	17.3
400----	31	7,594	-18.5	42	232	21.8
350----	31	8,577	-25.3	37	231	26.8
300----	31	9,679	-33.2	35	229	32.4
250----	31	10,937	-42.1		227	38.7
200----	31	12,413	-52.5		228	33.2
175----	31	13,266	-57.8		233	28.6
150----	31	14,228	-62.5		227	21.0
125----	30	15,342	-66.8		221	20.2
100----	29	16,685	-66.7		217	13.6
80-----	29	18,045	-63.5		170	8.5
60-----	29	19,831	-58.5		107	11.5
50-----	28	20,988	-55.8		93	16.1
40-----	28	22,419	-52.7		91	18.3
30-----	28	24,291	-49.3		99	21.4
25-----	22	25,491	-48.0		99	24.7
20-----	10	26,943	-47.1			
15-----						

Standard pressure surface (mb)	1/ GREAT FALLS, MONT (888 MB.)				Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	1,123	15.8	49	249	7.2
1,000--	31	94				
950----	31	539				
900----	31	1,005				
850----	31	1,493	17.6	39	245	9.1
800----	31	2,009	14.7	39	249	9.5
750----	31	2,548	10.8	43	242	10.3
700----	31	3,122	6.8	48	236	13.8
650----	31	3,721	2.6	53	233	19.2
600----	31	4,369	- 2.2	58	237	25.1
550----	31	5,048	- 7.2	50	235	30.5
500----	31	5,791	-12.3	46	238	34.4
450----	31	6,584	-17.9	42	239	35.6
400----	31	7,460	-24.0	35	239	38.9
350----	31	8,421	-31.4		237	41.8
300----	31	9,494	-39.7		235	48.4
250----	31	10,719	-47.8		236	56.2
200----	31	12,175	-51.9		238	61.2
175----	31	13,039	-53.3		239	56.9
150----	31	14,028	-54.9		238	45.5
125----	31	15,189	-56.7		240	34.6
100----	30	16,601	-57.3		235	21.0
80-----	29	18,015	-56.3		221	11.1
60-----	29	19,855	-53.0		130	4.3
50-----	29	21,034	-51.6		108	7.2
40-----	27	22,486	-49.3		95	12.2
30-----	26	24,381	-46.5		94	18.5
25-----	23	25,599	-44.7		85	20.2
20-----	21	27,100	-42.6		91	21.8
15-----	21	29,053	-39.6		90	21.6

Standard pressure surface (mb)	GREEN BAY, WIS. (990 MB.)				Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	210	16.5	92	264	1.0
1,000--	31	124				
950----	31	565	19.6	69	259	5.1
900----	31	1,030	17.5	66	282	6.0
850----	31	1,518	15.0	57	287	8.4
800----	31	2,030	12.7	52	293	10.5
750----	31	2,569	9.7	47	297	12.8
700----	31	3,140	6.2	44	300	13.4
650----	31	3,739	2.5	40	298	17.3
600----	31	4,388	- 1.3	40	299	21.6
550----	31	5,068	- 5.3	37	300	24.1
500----	31	5,820	- 9.6	33	302	26.4
450----	31	6,620	-14.7		303	27.0
400----	31	7,510	-20.8		301	29.5
350----	31	8,484	-27.5		303	30.1
300----	31	9,576	-35.0		310	36.3
250----	31	10,826	-43.6		311	47.8
200----	31	12,298	-51.8		305	43.5
175----	31	13,157	-55.1		303	45.7
150----	31	14,134	-58.8		306	35.6
125----	31	15,272	-61.1		307	28.8
100----	31	16,659	-60.2		331	17.1
80-----	31	18,058	-58.2		348	11.5
60-----	31	19,880	-55.7		34	11.1
50-----	31	21,047	-53.8		64	13.4
40-----	28	22,487	-51.4		74	20.2
30-----	23	24,370	-48.3		76	18.3
25-----	19	25,582	-46.8			
20-----	11	27,050	-46.2			
15-----						

Standard pressure surface (mb)	GREENSBORO, N. C. (986 MB.)				Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	273	19.8	88	320	1.0
1,000--	31	149				
950----	31	592	22.3	69	323	2.5
900----	31	1,064	19.9	65	339	4.7
850----	31	1,554	16.9	63	344	4.9
800----	31	2,069	14.0	55	326	4.5
750----	31	2,606	11.1	49	322	5.2
700----	31	3,185	8.0	47	314	8.9
650----	31	3,790	4.5	43	311	10.5
600----	31	4,441	1.1	35	309	10.1
550----	31	5,128	- 2.8	35	306	10.1
500----	31	5,886	- 7.2	36	308	12.0
450----	31	6,695	-12.1		312	12.4
400----	31	7,592	-18.2		317	15.2
350----	31	8,575	-25.3		321	16.5
300----	31	9,677	-33.3		325	19.4
250----	31	10,933	-42.8		326	25.3
200----	31	12,406	-52.8		331	30.5
175----	31	13,259	-57.6		333	30.1
150----	31	14,221	-62.3		330	24.5
125----	31	15,337	-65.6		334	17.5
100----	31	16,695	-65.0		359	10.5
80-----	30	18,065	-62.0		35	10.5
60-----	30	19,863	-57.7		76	17.3
50-----	29	21,020	-54.9		84	19.8
40-----	25	22,455	-51.9		87	22.9
30-----	13	24,337	-48.9		85	25.5
25-----	9	25,527	-46.8			
20-----						
15-----						

Standard pressure surface (mb)	2/ GUAM, (TAGUAC) (999 MB.)				Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	111	25.1	92	90	4.1
1,000--	31	99				
950----	31	548	23.6	82	94	16.1
900----	31	1,023	20.9	79	93	16.9
850----	31	1,517	18.1	75	95	16.1
800----	31	2,035	15.3	73	94	15.5
750----	31	2,574	12.6	65	96	15.9
700----	31	3,158	9.7	55	95	16.9
650----	31	3,764	6.3	51	91	15.3
600----	31	4,424	2.4	44	93	14.8
550----	31	5,115	- 1.7	43	93	13.6
500----	31	5,876	- 6.0	47	87	12.8
450----	31	6,687	-10.6	41	80	10.7
400----	31	7,594	-16.0	35	82	9.9
350----	31	8,586	-22.9		73	6.4
300----	31	9,698	-31.0		104	1.7
250----	31	10,965	-41.0		222	2.5
200----	31	12,442	-53.3		244	5.6
175----	31	13,288	-60.3		248	6.8
150----	31	14,233	-67.8		248	5.2
125----	31	15,309	-75.0		15	.8
100----	29	16,592	-76.8		75	13.2
80-----	26	17,892	-71.8		84	23.1
60-----	25	19,611	-65.7		88	30.7
50-----	25	20,728	-62.1		88	28.4
40-----	25	22,123	-58.0		86	32.4
30-----	25	23,955	-53.1		88	29.3
25-----	25	25,136	-50.9		85	26.2
20-----	22	26,595	-49.5		83	33.0
15-----	16	28,489	-47.7		83	40.0

Standard pressure surface (mb)	HILO, T. H. (1016 MB.)				Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	[illegible]	21.4	90	245	6.0
1,000--	31	147	22.5	81	268	2.5
950----	31	595	19.8	83	71	6.0
900----	31	1,057	16.7	86	77	8.4
850----	31	1,544	13.8	87	76	8.2
800----	31	2,054	11.5	78	75	8.2
750----	31	2,596	10.4	50	83	9.9
700----	31	3,166	8.8	33	92	11.1
650----	31	3,778	5.7		98	8.5
600----	31	4,427	2.7		92	7.6
550----	31	5,121	- 1.1		100	5.4
500----	31	5,880	- 5.8		109	3.1
450----	31	6,695	-11.5		152	1.4
400----	31	7,590	-18.0		247	4.5
350----	31	8,574	-25.4		259	10.9
300----	31	9,674	-33.9		259	18.5
250----	31	10,926	-43.5		261	26.0
200----	31	12,395	-53.4		258	28.0
175----	31	13,244	-58.8		253	22.9
150----	30	14,200	-65.0		248	20.0
125----	30	15,294	-71.3		226	11.1
100----	30	16,602	-73.5		125	8.9
80-----	30	17,920	-69.5		92	20.6
60-----	30	19,660	-63.7		88	29.1
50-----	30	20,788	-60.5		87	34.0
40-----	30	22,186	-57.2		88	36.3
30-----	29	24,027	-53.5		89	38.3
25-----	16	25,203	-51.0		82	37.7
20-----	6	26,681	-48.1			
15-----						

Standard pressure surface (mb)	INTERNAT. FALLS, MINN. (971 MB.)				Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	360	15.5	84	145	1.6
1,000--	31	112				
950----	31	554	17.4	76	189	2.1
900----	31	1,013	16.7	65	246	6.4
850----	31	1,499	14.4	59	273	9.7
800----	31	2,009	11.5	55	286	13.2
750----	31	2,547	8.8	46	287	15.5
700----	31	3,114	5.4	44	287	18.5
650----	31	3,708	1.6	46	288	21.4
600----	31	4,356	- 2.2	42	286	26.6
550----	31	5,034	- 6.2	40	284	29.0
500----	31	5,783	-10.8	38	284	30.9
450----	31	6,578	-15.8	38	286	35.2
400----	31	7,466	-21.9	35	283	37.7
350----	31	8,435	-28.9	37	283	42.0
300----	31	9,520	-36.9		284	47.6
250----	31	10,761	-45.2		281	61 4
200----	31	12,226	-52.3		281	65.1
175----	31	13,086	-54.3		283	62.0
150----	31	14,069	-56.7		288	49.2
125----	31	15,220	-58.0		289	36.1
100----	31	16,626	-57.7		290	22.9
80-----	31	18,039	-56.4		308	9.3
60-----	31	19,878	-53.4		71	8.0
50-----	31	21,056	-51.8		80	13.0
40-----	31	22,510	-49.6		89	16.1
30-----	29	24,406	-46.5		86	18.1
25-----	29	25,621	-44.7		89	22.7
20-----	23	27,123	-42.5		89	21.2
15-----	19	29,071	-40.2		87	25.5

Standard pressure surface (mb)	3/ JACKSON, MISS. (1004 MB.)				Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	101	23.0	92	238	0.6
1,000--	31	138	23.2	88	255	.6
950----	31	589	23.3	72	269	2.5
900----	31	1,059	20.6	71	289	2.9
850----	31	1,552	17.9	67	304	3.3
800----	31	2,069	15.4	57	322	3.9
750----	31	2,607	12.4	53	335	4.3
700----	31	3,190	9.2	49	1	3.7
650----	31	3,798	5.9	44	14	3.1
600----	31	4,452	2.2	42	21	5.1
550----	31	5,142	- 1.6	43	30	6.4
500----	31	5,904	- 6.0	39	33	8.4
450----	31	6,714	-11.1	36	34	10.9
400----	31	7,618	-17.0		35	11.7
350----	30	8,605	-24.0		35	13.0
300----	30	9,713	-32.0		29	13.8
250----	30	10,975	-41.8		36	13.0
200----	30	12,449	-53.4		33	13.0
175----	30	13,297	-59.5		35	13.6
150----	30	14,249	-65.4		33	17.3
125----	30	15,345	-69.7		46	15.7
100----	30	16,673	-68.9		61	14.8
80-----	30	18,012	-66.2		70	19.2
60-----	29	19,788	-59.4		82	22.7
50-----	28	20,938	-56.1		88	25.1
40-----	28	22,371	-52.7		90	26.8
30-----	28	24,243	-45.1		88	29.7
25-----	28	25,448	-46.3		87	31.7
20-----	28	26,939	-43.8		87	34.4
15-----	21	28,879	-40.6		91	37.7

Standard pressure surface (mb)	JACKSONVILLE, FLA. (1016 MB.)				Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	6	24.1	94	247	2.3
1,000--	31	142	24.4	89	250	4.3
950----	31	588	22.6	84	252	5.8
900----	31	1,063	20.1	60	243	5.2
850----	31	1,555	17.3	76	241	5.6
800----	31	2,071	14.3	73	247	5.4
750----	31	2,606	11.4	66	253	5.6
700----	31	3,190	8.5	62	268	5.8
650----	31	3,790	5.2	57	286	5.2
600----	31	4,449	1.5	50	291	6.2
550----	31	5,135	- 2.4	44	292	4.5
500----	31	5,898	- 6.7	40	310	4.7
450----	31	6,702	-11.4	37	335	5.1
400----	31	7,609	-17.4		344	6.0
350----	31	8,596	-24.5		355	6.4
300----	30	9,701	-32.8		354	7.4
250----	30	10,958	-42.9		2	8.7
200----	30	12,427	-54.2		8	11.5
175----	30	13,272	-60.0		8	14.4
150----	30	14,222	-65.4		10	17.7
125----	29	15,319	-69.7		24	18.5
100----	28	16,644	-70.0		46	15.2
80-----	28	17,983	-66.7		62	18.3
60-----	26	19,745	-61.7		80	26.4
50-----	25	20,883	-58.3		86	30.5
40-----	25	22,298	-55.1		95	32.3
30-----	23	24,161	-50.7		90	32.6
25-----	20	25,360	-48.4		87	33.4
20-----	9	26,844	-46.9			
15-----						

Standard pressure surface (mb)	4/ KING SALMON, ALASKA (1013 MB.)				Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	15	9.3	93	173	2.3
1,000--	31	120	10.1	89	202	2.5
950----	31	546	10.4	80		.0
900----	31	998	8.4	75	34	2.5
850----	31	1,468	5.6	78	37	3.3
800----	31	1,963	3.1	74	47	2.7
750----	31	2,481	.1	72	61	2.9
700----	31	3,034	- 3.0	67	71	3.7
650----	31	3,614	- 6.4	59	55	4.9
600----	31	4,240	-10.2	53	48	5.4
550----	31	4,900	-14.6	52	51	5.4
500----	31	5,622	-19.7	48	59	6.0
450----	31	6,386	-25.4	45	55	7.4
400----	31	7,241	-31.9	46	48	8.0
350----	31	8,171	-39.0		46	10.5
300----	31	9,212	-46.0		44	9.7
250----	31	10,410	-51.3		46	11.9
200----	31	11,863	-49.2		16	8.4
175----	31	12,744	-47.1		1	7.2
150----	31	13,764	-47.6		359	6.2
125----	31	14,968	-47.8		351	5.2
100----	31	16,441	-48.1		5	3.3
80-----	31	17,914	-48.0		49	2.9
60-----	30	19,813	-47.5		67	4.9
50-----	30	21,020	-47.2		79	7.2
40-----	28	22,500	-46.5		86	10.5
30-----	27	24,415	-44.7		83	13.8
25-----	27	25,639	-43.5		87	14.6
20-----	25	27,144	-41.9		86	17.7
15-----	22	29,098	-39.1		88	20.6

Standard pressure surface (mb)	KOTZEBUE, ALASKA (1012 MB.)				Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	5	10.6	89	273	7.4
1,000--	31	105	10.4	82	271	8.0
950----	31	530	9.2	72	267	8.5
900----	31	979	7.3	66	253	8.7
850----	31	1,449	6.0	61	241	11.1
800----	31	1,944	3.8	57	242	11.7
750----	31	2,466	1.1	56	243	11.1
700----	31	3,018	- 2.0	56	250	11.9
650----	31	3,600	- 5.3	54	252	11.5
600----	31	4,229	- 8.6	49	251	13.4
550----	31	4,893	-12.7	44	251	12.4
500----	31	5,619	-17.6	41	260	14.0
450----	31	6,391	-22.9	36	256	13.2
400----	31	7,254	-29.2	36	268	14.8
350----	31	8,193	-36.7		274	11.9
300----	31	9,243	-44.9		273	10.9
250----	31	10,440	-52.3		283	14.2
200----	30	11,874	-50.9		288	10.3
175----	30	12,749	-48.0		304	9.3
150----	30	13,768	-47.5		279	4.3
125----	30	14,973	-47.5		290	4.5
100----	30	16,449	-47.1		72	1.0
80-----	28	17,927	-46.4		165	1.9
60-----	27	19,840	-45.5		81	3.7
50-----	27	21,058	-44.9		89	5.4
40-----	26	22,556	-43.8		95	5.1
30-----	24	24,494	-42.5		73	10.1
25-----	20	25,724	-41.5		74	7.2
20-----	9	27,249	-39.7			
15-----						

Standard pressure surface (mb)	LAKE CHARLES, LA. (1015 MB.)				Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	29	[illegible]	25.6	88	319	1.4
1,000--	29	137	25.7	84	297	2.3
950----	29	590	23.9	79	252	6.0
900----	29	1,062	21.5	73	253	4.3
850----	29	1,557	19.1	64	272	2.3
800----	29	2,076	16.0	58	320	2.7
750----	29	2,618	12.8	57	356	2.5
700----	29	3,199	9.5	52	14	3.7
650----	29	3,809	5.9	48	31	4.9
600----	29	4,463	2.3	49	32	4.7
550----	29	5,155	- 1.5	41	53	7.0
500----	29	5,917	- 5.9		44	8.2
450----	29	6,728	-11.3		50	11.5
400----	29	7,630	-17.2		56	11.9
350----	29	8,617	-24.3		57	12.0
300----	29	9,723	-32.4		63	11.3
250----	29	10,983	-42.2		64	12.6
200----	29	12,454	-54.0		61	14.8
175----	29	13,299	-60.2		55	15.2
150----	28	14,248	-66.3		61	16.3
125----	27	15,342	-71.0		63	16.9
100----	27	16,659	-71.8		68	19.4
80-----	27	17,992	-67.2		75	23.9
60-----	27	19,752	-61.5		82	27.4
50-----	25	20,897	-57.1		87	31.9
40-----	25	22,322	-53.8		90	29.9
30-----	22	24,183	-50.3		82	32.8
25-----	17	25,370	-47.9		83	38.3
20-----	10	26,823	-46.4			
15-----						

Standard pressure surface (mb)	LANDER, WYO. (832 MB.)				Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	1,696	14.8	55	219	2.7
1,000--	31	103				
950----	31	545				
900----	31	1,014				
850----	31	1,511				
800----	31	2,028	18.7	37	272	2.1
750----	31	2,573	15.8	36	237	2.5
700----	31	3,161	11.4	40	245	8.2
650----	31	3,769	6.7	43	251	13.0
600----	31	4,427	1.4	46	246	15.5
550----	31	5,113	- 4.3	49	250	17.3
500----	31	5,865	- 9.9	47	246	19.4
450----	31	6,659	-15.1	38	236	23.9
400----	31	7,551	-21.3		236	28.0
350----	31	8,524	-28.0		240	35.6
300----	31	9,613	-35.9		238	44.1
250----	31	10,858	-44.2		234	49.2
200----	30	12,326	-52.8		236	49.5
175----	30	13,179	-57.0		237	49.4
150----	29	14,145	-61.5		238	45.3
125----	26	15,263	-64.3		237	28.8
100----	25	16,626	-64.3		236	15.0
80-----	24	17,995	-61.9		246	5.8
60-----	24	19,794	-57.9		113	9.3
50-----	23	20,947	-55.8		91	15.0
40-----	23	22,377	-53.1		91	18.1
30-----	23	24,249	-49.2		84	18.3
25-----	20	25,456	-47.2		84	19.4
20-----	7	26,938	-45.0			
15-----						

Standard pressure surface (mb)	LAS VEGAS, NEV. (935 MB.)				Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	30	660	26.4	23	212	7.4
1,000--	30	62				
950----	30	517				
900----	30	1,002	29.0	19	219	6.4
850----	30	1,507	25.9	21	228	7.8
800----	30	2,036	21.9	23	215	11.1
750----	30	2,587	17.3	27	205	12.0
700----	30	3,175	12.4	34	190	11.9
650----	30	3,785	7.1	39	182	13.2
600----	30	4,443	2.1	42	192	14.6
550----	30	5,128	- 3.4	47	201	14.8
500----	30	5,886	- 8.3		212	15.9
450----	30	6,690	-13.8		215	18.7
400----	30	7,581	-19.8		215	22.0
350----	30	8,559	-26.8		215	25.3
300----	30	9,654	-34.4		209	32.4
250----	30	10,907	-42.8		210	38.7
200----	30	12,384	-51.8		214	44.3
175----	30	13,240	-57.0		217	40.2
150----	30	14,203	-62.5		220	32.4
125----	30	15,316	-67.0		220	22.3
100----	30	16,659	-67.4		197	13.8
80-----	27	18,015	-64.2		135	8.7
60-----	23	19,792	-59.8		97	13.4
50-----	22	20,937	-56.6		99	17.9
40-----	19	22,359	-53.7		93	20.4
30-----	17	24,222	-50.1		88	26.2
25-----	16	25,421	-48.0		89	26.4
20-----	11	26,896	-45.3		95	25.8
15-----	5	28,832	-42.5			

Standard pressure surface (mb)	LITTLE ROCK, ARK. (1006 MB.)				Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	79	22.8	90	205	0.8
1,000--	31	131	23.3	86	210	1.0
950----	31	580	23.3	72	218	4.3
900----	31	1,052	21.2	68	252	4.7
850----	31	1,546	19.0	62	288	4.9
800----	31	2,066	16.3	60	324	4.7
750----	31	2,611	13.1	55	344	5.1
700----	31	3,191	9.9	51	356	6.8
650----	31	3,802	5.9	50	3	7.6
600----	31	4,454	1.9	47	4	7.0
550----	31	5,146	- 1.7	38	2	6.4
500----	31	5,906	- 5.9		2	8.7
450----	31	6,717	-11.1		6	9.5
400----	31	7,620	-17.2		1	11.1
350----	31	8,608	-24.3		4	12.0
300----	31	9,714	-32.4		360	11.1
250----	31	10,974	-42.4		1	11.7
200----	31	12,446	-54.0		360	13.8
175----	31	13,292	-60.0		5	13.0
150----	31	14,241	-66.0		6	14.8
125----	31	15,335	-70.7		33	12.0
100----	31	16,659	-69.5		51	12.8
80-----	31	17,999	-65.9		73	16.9
60-----	31	19,770	-60.5		81	18.7
50-----	31	20,915	-57.7		88	21.8
40-----	31	22,335	-54.3		90	25.1
30-----	27	24,198	-50.7		90	28.2
25-----	24	25,399	-48.5		86	31.9
20-----	14	26,870	-46.7			
15-----						

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

1/ 10 mb., 15 obs., 31,854 m., -36.2°C.
2/ 10 mb., 8 obs., 31,141 m., -46.5°C.
3/ 10 mb., 7 obs., 31,676 m., -36.4°C.
4/ 10 mb., 16 obs., 31,899 m., -34.8°C., 86 dir., 24.7 speed
7 mb., 10 obs., 34,425 m., -31.2°C.

RAWINSONDE DATA

Average monthly values

Standard pressure surface (mb.)	McGRATH, ALASKA (1001 MB.)						MEDFORD, OREG. (970 MB.)						MIAMI, FLA. (1016 MB.)						MIDLAND, TEX. (917 MB.)						MONTGOMERY, ALA (1009 MB.)					
					Wind						Wind						Wind						Wind						Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	103	11.0	85	259	1.2	31	401	13.1	76	275	0.8	31	4	25.0	89	237	0.6	31	871	22.7	62	134	2.5	31	61	22.7	93	129	0.6
1,000	31	112			258	1.4	31	139					31	145	26.3	78	198	2.7	31	104					31	137	23.1	89	111	.6
950	31	539	12.5	66	298	4.9	31	577	15.0	67	287	2.3	31	595	23.5	79	196	6.6	31	559					31	588	23.3	74	50	.8
900	31	995	10.0	67	301	2.7	31	1,031	13.6	67	296	2.5	31	1,069	20.3	75	198	7.6	31	1,030	23.7	57	163	9.3	31	1,058	20.7	74	334	1.2
850	31	1,468	7.1	69	271	1.7	31	1,512	11.7	65	299	.8	31	1,562	17.2	72	198	6.8	31	1,530	22.4	50	179	15.9	31	1,551	17.7	73	326	2.5
800	31	1,964	4.0	71	282	1.4	31	2,019	10.8	50	219	1.7	31	2,078	14.2	66	202	6.0	31	2,055	19.6	45	170	9.5	31	2,068	14.9	62	311	2.3
750	31	2,481	1.0	69	228	1.0	31	2,556	8.4	44	212	6.8	31	2,612	11.3	63	199	4.7	31	2,602	15.8	44	140	6.8	31	2,609	12.1	57	314	3.1
700	31	3,039	- 2.2	63	150	.8	31	3,123	4.9	43	216	12.2	31	3,196	8.1	58	198	3.9	31	3,190	11.8	42	123	6.2	31	3,188	9.4	50	335	5.2
650	31	3,617	- 5.6	61	100	1.2	31	3,718	1.3	36	221	14.4	31	3,799	4.6	57	215	2.7	31	3,800	7.7	42	120	5.6	31	3,796	6.0	51	342	6.2
600	31	4,248	- 9.2	54	94	1.6	31	4,365	- 2.3	29	230	16.5	31	4,453	.9	54	222	1.7	31	4,461	3.3	39	119	4.5	31	4,451	2.3	48	348	6.6
550	31	4,907	-13.5	48	42	1.7	31	5,042	- 6.9	28	231	20.6	31	5,137	- 2.9	49	260	1.4	31	5,150	- 1.3	39	116	5.8	31	5,142	- 1.8	42	1	7.4
500	31	5,635	-18.3	45	62	2.3	31	5,789	-11.8		230	23.5	31	5,897	- 7.3	50	289	1.9	31	5,914	- 6.0	40	115	6.2	31	5,903	- 5.9		8	9.1
450	31	6,402	-23.8	43	55	4.5	31	6,578	-17.5		234	25.6	31	6,705	-12.1	47	322	1.9	31	6,723	-11.3	37	116	6.2	30	6,715	-10.8		[illegible]	11.5
400	31	7,264	-30.2	45	54	5.4	31	7,461	-24.0		233	27.6	31	7,604	-17.9	42	14	2.9	31	7,626	-17.5	36	108	6.6	30	7,617	-16.9		5	14.2
350	31	8,200	-37.4		60	6.2	31	8,421	-31.4		230	31.9	31	8,589	-24.8	36	25	5.6	31	8,612	-24.7	34	92	6.6	30	8,606	-23.9		3	13.6
300	31	9,247	-45.5		46	7.8	31	9,494	-39.9		232	30.7	31	9,692	-33.3	34	31	8.0	31	9,716	-32.7		73	7.2	30	9,713	-32.3		3	14.0
250	31	10,442	-52.6		13	8.9	31	10,715	-49.0		228	30.3	31	10,946	-43.3		31	10.1	31	10,975	-42.5		61	7.0	30	10,973	-42.1		10	16.7
200	29	11,885	-51.5		28	8.7	31	12,160	-53.8		231	28.8	31	12,412	-54.6		35	15.2	31	12,447	-53.5		76	8.5	30	12,447	-53.4		12	16.7
175	29	12,758	-48.5		29	5.6	31	13,019	-53.3		231	35.4	31	13,255	-60.5		32	17.3	31	13,295	-58.9		77	8.9	30	13,295	-59.5		18	18.3
150	29	13,775	-47.6		21	5.2	31	14,010	-54.6		229	36.9	31	14,204	-65.6		38	20.8	30	14,251	-64.5		93	9.5	30	14,247	-65.3		22	18.7
125	29	14,980	-47.7		32	5.2	31	15,172	-56.7		226	26.8	31	15,302	-69.3		43	21.6	29	15,352	-69.4		91	10.7	30	15,343	-69.7		32	18.8
100	29	16,453	-47.5		25	3.3	30	16,584	-58.2		226	15.9	31	16,628	-69.8		58	18.7	27	16,679	-70.4		93	14.8	30	16,672	-69.3		53	16.1
80	29	17,930	-47.1		45	3.3	29	17,989	-57.9		203	7.2	30	17,965	-66.7		73	21.2	26	18,018	-66.5		90	17.7	30	18,015	-65.8		66	18.7
60	28	19,836	-46.7		71	5.4	28	19,811	-55.9		126	7.2	30	19,725	-61.5		80	30.3	26	19,785	-60.7		88	22.0	30	19,787	-59.8		81	23.5
50	27	21,046	-46.3		77	7.2	28	20,975	-54.5		102	9.5	30	20,863	-58.3		88	36.5	25	20,932	-56.9		90	25.8	30	20,937	-56.0		87	26.4
40	26	22,530	-45.4		82	9.5	28	22,410	-52.4		91	13.6	30	22,277	-54.9		92	38.7	24	22,359	-53.2		88	27.2	30	22,369	-52.3		90	27.8
30	25	24,451	-44.3		80	11.7	25	24,280	-49.7		83	19.0	29	24,127	-51.4		92	40.6	23	24,226	-50.0		89	29.7	28	24,244	-48.9		87	29.5
25	22	25,666	-43.3		87	12.8	24	25,476	-47.9		91	19.8	28	25,318	-48.8		89	39.8	15	25,432	-48.1		87	27.2	24	25,438	-46.6		85	34.0
20	5	27,197	-40.9				19	26,966	-45.5				20	26,802	-46.0		86	39.4	6	26,911	-45.8				15	26,927	-44.7		83	33.6
15													11	28,736	-43.4										5	28,890	-40.0			

Standard pressure surface (mb.)	NANTUCKET, MASS. (1012 MB.)						1/ NASHVILLE, TENN. (996 MB.)						N.Y. INT. AP, IDLEWILD (1014 MB.)						2/ NOME, ALASKA (1014 MB.)						NORFOLK, VA. (1015 MB.)					
					Wind						Wind						Wind						Wind						Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	14	20.3	82	263	5.2	31	177	21.2	91		0.0	31	5	21.7	68	261	4.3	31	7	7.8	92	265	4.7	31	9	22.4	79	243	1.6
1,000	31	120	19.8	77	263	6.6	31	143					31	124	20.9	66	280	6.4	31	122	8.3	88	267	5.4	31	137	22.5	74	261	2.1
950	31	555	18.4	63	276	10.3	31	587	22.7	69	184	3.3	31	565	18.8	60	298	9.7	31	543	8.0	76	251	4.7	31	581	21.4	64	307	6.2
900	31	1,024	15.7	60	277	11.9	31	1,060	20.3	66	227	3.9	31	1,030	15.8	60	294	11.9	31	993	7.6	71	247	8.4	31	1,050	18.7	58	320	7.0
850	31	1,507	12.1	64	276	13.8	31	1,552	17.1	65	252	2.9	31	1,514	12.9	60	285	12.8	31	1,464	6.6	65	247	10.1	31	1,539	15.6	59	312	6.2
800	31	2,012	8.8	62	275	15.5	31	2,067	14.5	58	281	2.9	31	2,021	9.7	56	284	15.2	31	1,960	4.2	61	250	10.1	31	2,051	12.5	59	300	8.0
750	31	2,538	5.6	55	277	18.3	31	2,604	11.6	55	321	3.3	31	2,555	6.8	49	288	18.1	31	2,481	1.5	52	250	8.0	31	2,587	9.8	49	301	10.9
700	31	3,105	2.8	47	281	19.0	31	3,185	8.4	53	338	5.8	31	3,119	4.0	43	290	18.5	31	3,037	- 1.4	51	265	8.0	31	3,162	6.9	46	300	13.2
650	31	3,697	- .3	44	287	21.2	31	3,788	5.1	44	329	8.2	31	3,718	.9	41	293	21.2	31	3,620	- 4.5	50	262	8.0	31	3,764	3.5	45	297	14.8
600	31	4,339	- 3.8	42	288	22.2	31	4,444	1.7	42	331	9.3	31	4,359	- 2.6	41	297	23.7	31	4,251	- 8.2	48	262	8.4	31	4,413	.0	39	293	15.5
550	31	5,014	- 8.1	38	289	18.8	31	5,133	- 2.2	38	331	12.0	31	5,039	- 6.5	37	297	25.1	31	4,917	-12.3	44	270	8.0	31	5,099	- 3.7	34	295	17.9
500	31	5,757	-12.5		290	22.5	31	5,892	- 6.6		334	11.9	31	5,784	-11.1		300	26.2	31	5,645	-17.1	38	284	8.9	31	5,853	- 8.1		299	18.3
450	31	6,544	-17.5		293	26.6	31	6,698	-11.6		333	14.0	31	6,581	-16.6		300	26.4	30	6,423	-22.5		282	8.7	31	6,660	-13.3		301	20.8
400	31	7,428	-23.5		295	28.6	31	7,601	-17.9	32	331	17.3	31	7,462	-22.6		303	29.3	30	7,285	-28.9		305	9.7	31	7,552	-19.6		300	21.0
350	31	8,390	-30.8		299	27.6	31	8,586	-24.8		345	18.1	31	8,429	-29.4		302	32.6	30	8,227	-35.7		330	11.9	31	8,530	-27.1		305	20.8
300	31	9,467	-38.7		302	33.6	31	9,690	-32.8		341	21.8	30	9,517	-37.0		304	35.8	30	9,282	-43.7		326	14.2	31	9,622	-35.6		305	26.0
250	31	10,695	-47.3		333	35.9	31	10,949	-42.1		345	22.9	30	10,753	-46.2		308	39.4	30	10,484	-52.0		345	19.6	31	10,865	-45.1		309	27.6
200	31	12,146	-54.2		324	34.4	31	12,425	-52.9		348	26.0	30	12,210	-53.5		312	42.7	30	11,919	-52.5		333	13.2	31	12,326	-54.1		311	35.8
175	31	13,002	-54.8		315	33.2	31	13,275	-58.7		348	25.8	30	13,066	-55.3		312	41.0	28	12,790	-48.7		331	11.1	31	13,174	-58.3		313	34.2
150	31	13,984	-56.7		307	28.8	31	14,231	-63.9		351	20.0	30	14,045	-57.6		308	35.0	28	13,805	-48.2		330	8.5	31	14,135	-62.5		313	29.3
125	31	15,134	-58.6		310	20.4	31	15,336	-67.9		356	15.0	30	15,190	-59.5		309	31.3	28	15,007	-47.9		3	10.3	31	15,251	-65.1		319	23.9
100	31	16,535	-58.7		304	11.9	31	16,678	-67.1		24	13.2	30	16,587	-59.8		309	24.9	28	16,480	-47.5		17	6.4	31	16,613	-64.3		330	12.2
80	31	17,939	-57.8		22	3.3	31	18,036	-64.1		57	15.0	28	17,993	-57.7		328	12.4	28	17,959	-46.8		28	5.4	31	17,986	-61.7		27	8.9
60	30	19,764	-55.6		81	8.4	31	19,818	-59.4		79	20.0	27	19,823	-54.6		74	9.7	28	19,870	-46.0		55	6.2	31	19,783	-57.9		80	14.8
50	30	20,929	-54.4		88	11.7	31	20,969	-56.1		82	23.5	25	20,996	-52.6		94	12.4	28	21,085	-45.5		77	7.6	31	20,938	-55.5		86	18.3
40	30	22,363	-52.8		87	16.1	31	22,398	-53.1		88	23.9	24	22,444	-50.8		92	16.3	26	22,574	-44.7		72	8.7	31	22,370	-52.6		88	21.4
30	28	24,231	-50.3		90	21.2	31	24,267	-50.0		87	26.0	21	24,338	-47.0		92	21.6	25	24,504	-43.1		81	11.9	28	24,249	-49.2		85	24.9
25	24	25,417	-48.5				30	25,463	-48.1		88	28.4	15	25,567	-44.5		92	23.7	22	25,740	-42.4		89	13.8	22	25,449	-47.3		87	26.6
20	14	26,901	-46.2				28	26,940	-45.8		91	30.3	6	27,058	-42.2				21	27,253	-40.1		86	15.9	14	26,928	-45.3		87	29.5
15							23	28,866	-43.1		90	34.8							14	29,225	-38.0									

Standard pressure surface (mb.)	NORTH PLATTE, NEB. (917 MB.)						3/ OAKLAND, CALIF. (1013 MB.)						4/ OKLAHOMA CITY, OKLA. (969 MB.)						5/ OMAHA, NEBR. (967 MB.)						6/ PEORIA, ILL. (992 MB.)					
					Wind						Wind						Wind						Wind						Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	848	18.5	90	26	0.8	31	6	14.6	85	298	1.7	31	391	22.6	85	172	6.2	31	403	21.3	87	144	3.1	31	201	20.7	87	143	2.5
1,000	31	100					31	114	14.2	84	273	2.1	31	118					31	109					31	128				
950	31	544					31	553	17.4	65	265	5.2	31	573	25.5	66	190	12.8	31	555	22.7	74	174	6.4	31	577	22.1	73	213	7.2
900	31	1,014	21.0	76	143	1.4	31	1,013	20.5	32	294	6.6	31	1,045	25.0	53	210	15.7	31	1,028	22.9	60	235	11.7	31	1,045	20.0	69	251	8.7
850	31	1,512	22.2	54	247	7.0	31	1,506	19.0	25	265	5.2	31	1,545	22.2	52	220	11.7	31	1,525	20.7	52	256	8.4	31	1,538	17.8	60	284	9.3
800	31	2,038	19.5	49	255	8.7	31	2,023	16.2		227	5.1	31	2,070	18.7	52	240	6.4	31	2,047	17.7	48	253	8.5	31	2,055	15.2	52	294	9.7
750	31	2,586	15.9	46	266	8.9	31	2,564	13.1		211	8.0	31	2,613	14.9	50	250	3.1	31	2,591	13.9	49	255	9.5	31	2,597	12.0	51	303	10.7
700	31	3,173	11.5	49	269	9.3	31	3,145	9.3		210	10.1	31	3,200	10.5	51	181	1.0	31	3,174	10.0	48	258	12.6	31	3,174	8.6	50	300	12.4
650	31	3,782	7.1	49	269	10.5	31	3,745	5.1		214	12.2	31	3,806	6.4	42	155	.6	31	3,782	5.9	46	267	14.8	31	3,783	4.8	47	304	14.6
600	31	4,442	2.4	52	269	11.9	31	4,402	.5		216	12.4	31	4,464	2.3	43	29	.6	31	4,435	1.5	46	266	13.8	31	4,432	.9	43	304	17.1
550	31	5,133	- 2.0	51	273	13.8	31	5,084	- 4.6		218	14.0	31	5,156	- 1.7	35	255	.6	31	5,129	- 2.6	42	266	15.3	31	5,121	- 3.1	43	303	19.2
500	31	5,893	- 6.7	50	273	14.2	31	5,838	-10.0		226	15.2	31	5,915	- 6.0		257	2.1	31	5,885	- 7.0		272	16.7	31	5,876	- 7.0		305	20.0
450	31	6,701	-12.1	48	275	17.3	31	6,631	-16.0		233	17.7	31	6,725	-11.6		211	.6	31	6,694	-11.9		276	20.0	31	6,685	-12.4		309	21.6
400	31	7,601	-17.9	38	273	19.8	31	7,519	-22.9		231	21.0	31	7,624	-17.9		147	1.0	31	7,594	-17.8	38	281	22.2	31	7,581	-18.1		306	24.9
350	30	8,588	-24.7	37	272	20.4	31	8,483	-30.6		231	22.5	31	8,610	-24.5		126	.6	31	8,579	-24.7	38	286	27.6	31	8,566	-25.0		307	26.2
300	30	9,693	-32.7		272	25.5	31	9,560	-39.1		228	28.6	31	9,714	-32.7		12	2.5	31	9,684	-32.7		291	29.1	31	9,668	-33.3		312	30.3
250	30	10,952	-42.3		261	27.2	31	10,790	-46.6		227	37.5	31	10,974	-42.1		30	2.5	31	10,942	-42.5		289	31.5	31	10,924	-42.6		312	35.6
200	30	12,426	-53.4		259	25.1	31	12,253	-52.3		223	44.5	31	12,450	-52.3		341	2.1	31	12,413	-53.6		288	31.3	31	12,397	-53.0		310	37.9
175	30	13,275	-58.6		263	23.3	31	13,111	-55.3		224	43.5	31	13,304	-57.9		360	3.3	31	13,262	-58.8		290	29.3	30	13,255	-58.6		313	34.0
150	30	14,232	-63.6		270	21.6	31	14,087	-59.1		227	38.7	31	14,262	-64.0		16	3.3	31	14,218	-63.8		287	24.7	30	14,213	-63.4		315	30.9
125	30	15,341	-67.1		270	10.3	30	15,221	-61.7		229	27.4	31	15,365	-68.6		47	3.1	31	15,328	-66.6		291	19.0	30	15,321	-66.7		323	22.2
100	29	16,691	-65.9		258	4.1	27	16,599	-62.8		216	13.8	31	16,703	-67.6		49	7.8	30	16,677	-65.7		307	8.7	30	16,676	-65.0		334	13.4
80	29	18,058	-62.2		84	4.3	26	17,977	-61.6		162	6.0	31	18,055	-64.6		77	12.8	30	18,047	-61.9		24	4.1	29	18,045	-62.6		32	10.1
60	29	19,855	-57.4		95	16.5	25	19,774	-58.5		104	11.3	31	19,836	-58.9		85	19.4	30	19,844	-57.8		76	12.2	29	19,836	-58.2		71	15.7
50	28	21,014	-54.6		89	18.3	24	20,928	-56.4		94	14.0	31	20,990	-55.4		88	22.3	30	21,002	-54.8		83	15.7	29	20,992	-55.4		79	17.5
40	26	22,452	-51.3		99	18.8	22	22,360	-53.2		88	18.1	30	22,425	-52.0		90	24.3	30	22,439	-51.8		86	19.8	29	22,426	-52.5		86	20.4
30	23	24,331	-48.6		94	21.6	20	24,225	-50.1		89	23.7	29	24,303	-48.4		88	26.0	30	24,321	-47.8		91	21.6	28	24,297	-49.3		91	24.5
25	18	25,533	-46.9		98	20.6	20	25,424	-47.5		86	24.5	29	25,509	-46.3		88	28.6	29	25,527	-46.0		89	22.0	28	25,499	-47.0		92	26.8
20	8	27,027	-45.2				19	26,910	-45.0		82	28.4	28	26,998	-44.6		87	30.5	26	27,013	-43.8		85	24.5	27	26,984	-44.6		88	26.6
15							16	28,848	-42.1		87	32.6	26	28,936	-42.2		88	33.8	19	28,952	-41.0		88	29.0	22	28,936	-40.8		88	29.3

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

1/ 10 mb., 10 obs., 31,608 m., -39.2°C.
2/ 10 mb., 9 obs., 32,048 m., -33.5°C.
3/ 10 mb., 8 obs., 31,610 m., -38.0°C.
4/ 10 mb., 14 obs., 31,686 m., -39.3°C.
5/ 10 mb., 7 obs., 31,732 m., -36.0°C.
6/ 10 mb., 12 obs., 31,745 m., -36.6°C.

RAWINSONDE DATA

Average monthly values

JULY 1957

Standard pressure surface (mb)	PHOENIX, ARIZ. (971 MB.)						PITTSBURGH, PA. (976 MB.)						PORTLAND, ME. (1010 MB.)						1/ RAPID CITY, S. DAK. (905 MB.)						2/ ST. CLOUD, MINN. (977 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	341	27.8	52	100	2.9	31	353	18.1	83	265	1.7	31	20	17.6	82	255	4.1	31	966	17.1	74	332	1.7	31	316	18.7	91	132	1.4
1,000	31	75					31	143					31	107	17.9	74	271	5.1	31	99					31	112				
950	31	529	30.1	37	132	3.7	31	583	19.3	74	260	3.7	31	544	17.3	62	285	9.7	31	546					31	556	20.8	79	213	2.5
900	31	1,016	28.6	34	175	2.9	31	1,047	16.9	72	291	8.9	31	1,007	14.5	62	297	10.3	31	1,012	18.4	69	298	.6	31	1,024	20.0	69	252	5.4
850	31	1,521	25.4	36	222	2.3	31	1,534	14.1	68	295	10.5	31	1,488	11.3	64	294	11.3	31	1,507	20.9	52	237	4.9	31	1,516	17.6	63	275	7.8
800	31	2,051	21.4	42	228	2.5	31	2,044	11.6	57	295	13.6	31	1,992	8.3	61	287	14.0	31	2,029	18.1	49	258	6.0	31	2,032	14.8	59	281	10.5
750	31	2,603	16.9	48	194	2.1	31	2,581	8.9	47	298	15.7	31	2,522	5.2	57	284	15.7	31	2,576	14.7	46	269	5.8	31	2,569	11.6	55	283	13.4
700	31	3,190	12.0	55	156	3.1	31	3,150	5.8	42	300	17.3	31	3,083	2.3	54	280	17.7	31	3,159	10.6	44	279	8.9	31	3,151	8.4	47	283	14.0
650	31	3,802	7.5	60	183	5.2	31	3,750	2.8	39	300	18.7	31	3,675	- 1.0	54	280	19.2	31	3,767	5.9	46	281	10.1	31	3,753	4.4	48	286	14.8
600	31	4,460	2.2	63	188	7.2	31	4,397	- .9	36	303	20.6	31	4,314	- 4.4	46	281	22.2	31	4,422	1.2	50	279	13.0	31	4,407	.5	42	287	17.1
550	31	5,151	- 2.3	59	192	6.4	31	5,079	- 4.8		305	22.9	31	4,988	- 8.1	39	282	24.3	31	5,108	- 3.8	51	266	15.3	31	5,091	- 3.6	37	286	19.2
500	31	5,909	- 6.9	53	195	8.9	31	5,830	- 9.4		303	26.0	31	5,729	-12.7	37	283	27.0	31	5,863	- 8.6	45	262	18.8	31	5,847	- 8.2		284	22.3
450	31	6,720	-12.0	48	198	10.7	31	6,631	-14.6		302	29.9	31	6,517	-18.1		283	28.2	31	6,667	-14.0	39	263	23.1	31	6,652	-13.8		286	23.1
400	31	7,617	-17.7	38	200	12.8	31	7,519	-21.1		303	32.4	31	7,395	-24.3		281	28.4	31	7,557	-20.2	36	260	27.6	31	7,543	-19.8		281	27.2
350	31	8,603	-24.7	38	200	18.7	31	8,491	-28.5		305	34.8	30	8,358	-31.3		286	30.1	31	8,533	-27.1	33	260	34.6	31	8,522	-26.4		286	27.8
300	31	9,708	-32.7	39	203	24.1	31	9,576	-37.0		307	39.8	30	9,432	-39.4		286	32.8	31	9,626	-35.1		257	43.1	31	9,619	-34.2		291	34.4
250	31	10,968	-42.0		199	27.2	31	10,812	-46.3		309	44.7	30	10,659	-47.1		288	38.3	31	10,874	-43.8		256	51.9	31	10,871	-43.7		291	40.8
200	31	12,443	-53.1		209	28.4	31	12,267	-54.6		314	50.3	29	12,122	-51.0		288	37.7	31	12,343	-53.0		253	50.1	31	12,340	-52.7		290	38.3
175	31	13,292	-58.7		222	21.8	31	13,115	-57.6		317	49.2	29	12,991	-50.9		292	34.4	31	13,195	-57.6		255	45.7	31	13,193	-57.5		289	36.9
150	31	14,248	-64.2		215	13.4	31	14,079	-61.2		319	40.6	29	13,991	-52.8		292	31.1	31	14,158	-62.3		256	38.7	31	14,158	-61.5		284	33.4
125	30	15,348	-68.9		190	9.1	29	15,198	-63.7		320	29.3	29	15,161	-54.6		291	23.7	31	15,277	-64.3		256	26.8	31	15,285	-62.2		292	21.6
100	30	16,676	-69.9		151	8.9	29	16,569	-62.8		336	15.5	29	16,587	-55.2		293	14.2	31	16,644	-63.6		254	15.3	31	16,666	-61.0		298	9.1
80	30	18,015	-66.4		107	13.0	28	17,949	-61.2		359	10.1	29	18,014	-54.7		311	6.0	31	18,025	-60.4		215	4.3	31	18,061	-58.6		336	4.7
60	28	19,779	-61.3		94	19.0	25	19,751	-57.8		59	11.7	28	19,867	-52.3		72	6.0	30	19,834	-56.6		88	7.8	30	19,881	-55.5		73	9.5
50	27	20,921	-57.5		94	24.3	25	20,909	-55.3		77	15.0	28	21,050	-51.1		89	10.1	30	20,996	-54.7		91	11.3	29	21,049	-53.0		78	13.8
40	27	22,340	-54.5		95	27.4	23	22,339	-52.7		81	19.0	28	22,508	-49.3		90	13.6	30	22,433	-51.9		88	15.3	28	22,496	-50.2		82	17.7
30	26	24,197	-50.9		90	31.9	13	24,225	-48.9		85	21.2	26	24,408	-46.4		87	18.3	30	24,312	-48.3		91	16.9	26	24,390	-46.9		84	20.8
25	24	25,386	-48.8		90	33.4	7	25,431	-47.2				24	25,623	-44.3		84	20.2	30	25,518	-46.3		92	18.1	25	25,605	-44.8		92	20.0
20	9	26,856	-46.4										23	27,130	-41.9		87	24.1	30	27,009	-43.7		89	21.0	21	27,099	-42.3		87	21.6
15													16	29,094	-38.8		88	28.4	27	28,954	-40.4		89	22.7	16	29,051	-39.2		84	24.5

Standard pressure surface (mb)	ST. PAUL IS., ALASKA (1016 MB.)						3/ SALEM, OREG. (1011 MB.)						SALT LAKE CITY, UTAH (872 MB.)						SAN ANTONIO, TEX. (987 MB.)						SAN DIEGO, CALIF. (997 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	10	7.6	95	324	2.7	31	61	11.5	87	192	1.4	31	1,288	18.5	53	155	9.3	31	243	23.6	84	188	1.7	31	124	17.6	92	332	1.7
1,000	31	142	6.9	94	336	4.1	31	149	13.0	81	228	.8	31	89					31	130					31	100				
950	31	566	5.9	90	360	4.1	31	579	12.2	77	10	4.1	31	532					31	590	22.9	79	195	12.6	31	539	19.4	64	37	.6
900	31	1,006	6.4	77	10	3.5	31	1,034	10.6	73	336	3.7	31	1,009					31	1,053	22.3	60	188	16.3	31	1,010	23.9	22	280	1.2
850	31	1,475	5.6	69	13	3.7	31	1,509	8.7	68	270	4.9	31	1,506	22.6	34	159	14.4	31	1,549	20.1	51	174	12.0	31	1,508	23.0	20	251	4.3
800	31	1,970	3.6	63	11	3.7	31	2,009	6.9	54	256	6.6	31	2,033	20.7	28	178	16.3	31	2,069	17.2	49	157	9.1	31	2,033	19.9	23	215	7.4
750	31	2,491	1.1	55	13	4.3	31	2,534	5.2	42	251	10.5	31	2,585	16.8	28	199	12.6	31	2,612	14.0	45	148	7.2	31	2,576	15.9	29	196	10.3
700	31	3,045	- 1.7	53	358	6.0	31	3,099	2.5	38	244	13.6	31	3,171	12.2	31	225	11.7	31	3,196	10.4	42	130	5.4	31	3,166	11.3	35	186	12.8
650	31	3,628	- 4.9	48	360	6.4	31	3,691	- .5	35	241	18.1	31	3,783	7.0	38	237	12.6	31	3,807	6.8	39	95	6.4	31	3,771	6.7	36	183	13.6
600	31	4,256	- 8.7	42	28	5.8	31	4,330	- 4.2		241	20.4	31	4,439	1.3	45	236	13.6	31	4,462	2.9	37	92	7.6	31	4,433	1.9	37	185	14.0
550	31	4,920	-12.7	35	23	7.2	31	5,002	- 8.6		242	22.2	31	5,125	- 4.4	49	228	15.2	31	5,157	- 1.5	36	86	8.5	31	5,118	- 2.9	33	195	13.0
500	31	5,647	-17.6	35	47	8.7	31	5,743	-13.8		242	22.9	31	5,878	- 9.8	45	229	19.2	31	5,914	- 6.2	34	87	9.7	31	5,877	- 8.1		206	14.0
450	31	6,417	-22.8	33	42	11.7	31	6,521	-19.7		243	26.2	31	6,678	-14.8	38	232	23.1	31	6,725	-11.4	28	84	9.9	31	6,678	-13.5		213	15.7
400	31	7,283	-28.9		51	15.0	31	7,400	-25.9		243	29.0	31	7,566	-20.7		230	30.9	31	7,623	-17.7	32	88	10.7	31	7,574	-19.7		217	17.9
350	31	8,225	-35.8		46	16.3	31	8,353	-33.3		243	31.9	31	8,541	-27.3		228	35.2	31	8,609	-24.6		85	9.9	31	8,553	-26.1		222	18.8
300	31	9,279	-43.4		40	19.2	31	9,416	-41.7		241	36.3	31	9,633	-35.3		225	44.9	31	9,713	-32.7		81	10.3	31	9,652	-33.7		218	22.5
250	31	10,485	-51.0		38	20.0	31	10,628	-50.2		239	41.2	31	10,881	-43.6		225	54.0	31	10,971	-42.4		75	9.7	31	10,909	-42.0		211	27.6
200	31	11,931	-50.1		51	8.4	31	12,069	-53.3		236	43.9	31	12,355	-51.7		226	58.7	31	12,443	-53.5		92	12.4	31	12,391	-51.7		211	31.3
175	31	12,808	-48.4		19	3.9	31	12,931	-52.4		233	42.0	31	13,213	-56.1		227	50.5	31	13,291	-59.1		98	10.9	30	13,248	-57.6		212	30.1
150	30	13,823	-48.3		353	4.3	31	13,927	-53.0		235	39.1	30	14,181	-60.7		228	42.2	31	14,245	-64.8		82	11.9	30	14,209	-63.5		216	26.6
125	30	15,023	-48.6		14	5.6	31	15,097	-54.9		233	30.3	29	15,307	-64.3		227	29.0	31	15,344	-69.8		83	15.2	28	15,315	-68.4		214	18.7
100	30	16,490	-48.8		13	5.2	30	16,521	-56.2		229	18.8	26	16,671	-63.6		219	16.7	30	16,665	-71.5		87	17.3	27	16,648	-69.2		180	7.2
80	30	17,958	-48.7		40	3.9	28	17,938	-55.8		217	9.9	25	18,043	-61.8		176	6.2	30	17,997	-67.3		83	21.6	26	17,990	-66.1		119	10.5
60	29	19,851	-48.5		66	7.2	27	19,774	-55.0		129	7.0	25	19,843	-56.9		106	8.7	30	19,758	-61.4		85	24.9	24	19,756	-60.8		95	18.5
50	29	21,052	-48.1		85	7.8	27	20,943	-53.7		103	8.7	25	21,002	-54.8		97	12.4	29	20,899	-58.0		90	29.0	23	20,896	-57.8		95	21.8
40	27	22,527	-47.2		87	11.5	26	22,384	-51.8		90	12.2	25	22,438	-51.8		83	16.9	29	22,316	-55.0		92	33.8	22	22,313	-54.7		93	24.5
30	23	24,436	-46.0		81	15.2	25	24,259	-49.0		90	17.1	24	24,315	-48.3		90	20.4	27	24,171	-50.7		92	36.9	21	24,170	-50.7		87	27.4
25	20	25,651	-44.8		82	19.4	24	25,459	-47.4		88	18.5	23	25,518	-46.1		92	22.3	21	25,371	-48.3		96	35.2	21	25,362	-48.7		89	31.3
20	16	27,161	-42.9				23	26,942	-44.6		89	21.0	20	27,006	-43.5		91	23.5	8	26,845	-47.3				19	26,845	-45.5		90	33.2
15	7	29,118	-40.2				21	28,879	-42.0		85	23.7	13	28,964	-40.3		88	29.1							11	28,783	-42.2		89	36.9

Standard pressure surface (mb)	4/ SAN JUAN, P. R. (1017 MB.)						SANTA MARIA, CALIF. (1005 MB.)						5/ SANTA MONICA, CALIF. (1008 MB.)						S. STE. MARIE, MICH. (989 MB.)						6/ SEATTLE, WASH. (1003 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	6	26.0	81	92	6.8	31	74	13.4	87	294	1.6	31	38	18.6	82	48	0.6	31	221	13.3	91	326	0.8	31	124	12.4	88	135	2.3
1,000	31	155	25.4	78	87	12.4	31	113	13.4	86	307	1.7	31	111	18.2	82	99	.8	31	128					31	154	12.4	86	138	2.5
950	31	602	22.3	79	93	19.8	31	556	18.8	61	37	4.7	31	562	20.5	60	67	2.7	31	564	16.2	71	283	4.1	31	583	11.8	78	182	2.5
900	31	1,075	19.4	76	94	20.6	31	1,018	21.8	36	72	6.6	31	1,021	22.7	30	64	2.1	31	1,024	14.8	63	303	8.2	31	1,037	9.8	78	217	3.3
850	31	1,566	16.6	69	93	20.4	31	1,513	20.7	25	57	2.9	31	1,518	21.6	20	200	1.7	31	1,506	12.4	59	295	11.9	31	1,510	6.7	76	238	5.4
800	31	2,081	14.7	49	93	19.6	31	2,034	17.7	24		.0	31	2,041	18.6	21	208	7.2	31	2,013	10.2	53	300	14.6	31	2,008	5.2	66	247	8.4
750	31	2,617	11.6	42	97	19.4	31	2,580	14.0	24	211	4.1	31	2,591	14.9	24	208	10.7	31	2,544	7.6	48	302	17.7	31	2,532	2.7	58	253	9.7
700	31	3,198	8.1	41	100	17.1	31	3,160	10.0	25	211	8.7	31	3,170	10.8	28	206	11.7	31	3,113	4.5	48	305	20.0	31	3,088	- .1	54	256	13.6
650	31	3,800	3.9	43	103	15.7	31	3,767	5.8		212	10.7	31	3,780	6.4	29	202	12.8	31	3,707	1.1	45	306	22.9	31	3,677	- 3.0	45	249	15.0
600	31	4,452	.4	41	107	13.0	31	4,421	1.5		218	12.6	31	4,435	1.8		208	13.4	31	4,353	- 2.8	42	309	24.9	31	4,309	- 6.4	39	245	19.6
550	31	5,137	- 2.9	32	108	9.1	31	5,108	- 3.3		220	13.6	31	5,123	- 2.8		208	14.0	31	5,032	- 6.6	36	308	28.0	31	4,981	-10.4	36	245	22.5
500	31	5,896	- 7.3	31	106	8.7	31	5,864	- 8.6		223	14.4	31	5,881	- 8.1		213	15.7	31	5,777	-11.1	35	311	30.5	31	5,713	-15.4	39	245	26.6
450	31	6,702	-12.7		105	5.2	31	6,665	-14.7		227	17.5	31	6,686	-14.1		220	17.7	31	6,570	-16.6	33	311	31.5	31	6,492	-21.2	36	242	29.1
400	31	7,599	-19.1	31	138	2.7	31	7,554	-21.5		226	21.6	31	7,575	-20.4		219	19.4	31	7,455	-22.7	35	312	34.4	31	7,359	-27.7		243	31.3
350	31	8,579	-26.4		199	3.9	31	8,525	-28.4		221	27.4	31	8,551	-27.6		222	22.0	31	8,420	-29.9	33	315	40.0	31	8,306	-34.8		243	35.4
300	31	9,674	-35.0		238	9.3	31	9,613	-36.6		226	30.9	31	9,642	-35.2		222	25.6	31	9,501	-38.1		318	47.0	31	9,364	-42.5		241	38.7
250	31	10,920	-45.2		252	14.4	31	10,855	-44.4		224	32.8	31	10,890	-43.4		220	29.1	31	10,735	-46.0		317	53.8	31	10,575	-50.1		238	44.5
200	31	12,371	-56.9		256	21.8	31	12,325	-52.1		229	30.7	31	12,365	-52.0		217	34.6	28	12,207	-52.0		316	57.3	31	12,024	-51.2		235	42.4
175	31	13,207	-61.8		256	21.2	31	13,181	-56.5		227	28.6	31	13,220	-57.1		214	34.4	27	13,065	-53.6		312	55.4	30	12,895	-50.1		235	39.8
150	31	14,152	-66.3		253	16.9	31	14,148	-61.3		224	30.5	31	14,184	-62.3		216	31.3	26	14,048	-56.2		310	47.8	30	13,901	-50.7		236	34.6
125	30	15,250	-68.5		237	3.1	29	15,268	-65.3		226	20.0	30	15,296	-66.9		219	23.3	26	15,200	-58.0		311	37.3	30	15,086	-51.9		233	28.6
100	30	16,577	-71.9		79	10.9	25	16,625	-65.3		202	5.1	30	16,640	-67.6		193	8.5	25	16,604	-57.9		318	26.6	30	16,528	-53.2		227	18.8
80	29	17,904	-68.3		77	25.1	22	17,991	-63.8		114	8.7	29	17,989	-64.8		123	9.9	24	18,013	-56.8		343	13.0	29	17,966	-53.3		215	9.7
60	28	19,656	-62.3		87	33.6	21	19,774	-59.7		88	15.3	29	19,761	-60.4		95	15.5	24	19,848	-54.2		39	12.2	29	19,820	-52.7		137	5.2
50	28	20,791	-59.1		88	36.1	21	20,921	-57.1		96	20.6	27	20,909	-57.1		97	20.4	21	21,020	-52.9		76	14.6	29	21,000	-51.4		105	8.2
40	28	22,204	-55.5		88	37.3	20	22,348	-54.2		90	23.9	27	22,329	-54.4		92	22.3	21	22,467	-50.5		95	16.1	29	22,455	-49.7		90	12.4
30	26	24,059	-51.2		85	38.7	14	24,202	-52.1		84	29.3	26	24,184	-50.7		89	27.2	20	24,357	-47.3		94	18.8	29	24,349	-46.9		87	16.5
25	26	25,253	-48.5		85	39.2	10	25,386	-49.9				26	25,377	-48.5		90	29.0	18	25,571	-45.3		88	20.8	25	25,561	-44.9		85	20.6
20	21	26,714	-45.9		82	46.2							26	26,851	-46.3		89	29.9	18	27,070	-42.5		86	20.4	24	27,063	-43.0		86	22.2
15	19	28,633	-42.9		86	49.4							25	28,772	-43.2		90	34.8	11	29,025	-39.5				16	29,016	-38.9		86	25.6

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

1/ 10 mb., 10 obs., 31,725 m., -35.3°C.
2/ 10 mb., 5 obs., 31,814 m., -38.3°C.
3/ 10 mb., 16 obs., 31,647 m., -37.0°C., 91 dir., 27.4 speed.
4/ 10 mb., 6 obs., 31,387 m., -38.3°C.
5/ 10 mb., 10 obs., 31,517 m., -38.4°C., 86 dir., 43.1 speed
6/ 10 mb., 7 obs., 31,827 m., -33.3°C.

RAWINSONDE DATA

Average monthly values

JULY 1957

1/ SHREVEPORT, LA. (1007 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	76	23.7	89	180	2.7
1,000	31	134	24.2	85	191	3.7
950	31	585	23.9	72	223	6.4
900	31	1,058	21.8	65	240	4.5
850	31	1,553	19.2	60	283	2.1
800	31	2,072	16.1	58	345	2.9
750	31	2,614	12.8	54	354	3.7
700	31	3,196	9.2	52	30	4.1
650	31	3,802	5.8	46	42	5.6
600	31	4,458	2.0	44	49	5.4
550	31	5,149	- 1.6	35	43	5.4
500	31	5,910	- 6.0		38	7.6
450	31	6,719	-11.3		49	9.9
400	31	7,622	-17.5		56	11.3
350	31	8,608	-24.5		55	11.5
300	31	9,712	-32.7		58	11.5
250	31	10,969	-42.5		62	11.1
200	31	12,440	-53.9		57	9.9
175	31	13,285	-60.1		50	11.7
150	31	14,233	-66.1		53	13.8
125	31	15,325	-70.8		66	13.4
100	31	16,645	-71.4		72	15.0
80	31	17,978	-66.9		79	19.0
60	31	19,742	-61.0		84	23.3
50	31	20,887	-57.1		88	26.0
40	31	22,313	-53.2		92	26.2
30	30	24,181	-49.9		90	31.1
25	30	25,383	-47.0		90	33.6
20	28	26,870	-44.1		89	35.6
15	23	28,821	-40.4		87	35.2

2/ SPOKANE, WASH. (931 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	722	14.1	58	177	5.8
1,000	31	111				
950	31	555				
900	31	1,012	16.3	45	204	9.9
850	31	1,497	14.0	43	228	12.4
800	31	2,005	10.3	49	231	14.6
750	31	2,534	6.5	53	229	16.1
700	31	3,102	2.8	54	226	16.9
650	31	3,695	- 1.0	54	228	20.8
600	31	4,332	- 5.2	53	229	27.0
550	31	5,003	- 9.7	50	231	28.8
500	31	5,739	-14.8	38	233	31.3
450	31	6,518	-20.3	40	234	35.2
400	31	7,391	-26.5	39	236	35.9
350	31	8,342	-33.5	38	234	37.5
300	31	9,406	-41.2		234	41.6
250	31	10,625	-48.8		236	40.2
200	31	12,075	-52.1		232	40.0
175	31	12,943	-50.9		232	40.8
150	31	13,945	-51.7		232	34.6
125	31	15,122	-53.6		232	28.8
100	31	16,553	-55.0		227	17.5
80	31	17,978	-55.4		212	8.5
60	30	19,822	-53.3		134	5.8
50	30	20,999	-52.0		109	8.7
40	29	22,446	-50.6		104	11.9
30	28	24,330	-48.0		98	14.8
25	27	25,538	-46.6		96	17.9
20	24	27,024	-44.7		98	19.8
15	23	28,964	-41.4		99	20.0

3/ SWAN ISLAND, W. I. (1012 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	10	26.6	87	76	10.3
1,000	31	119	25.8	87	77	12.0
950	31	569	22.5	86	86	16.9
900	31	1,041	19.5	82	96	20.6
850	31	1,533	16.8	76	100	21.2
800	31	2,049	14.1	67	102	20.6
750	31	2,592	11.5	55	101	20.0
700	31	3,167	8.1	57	103	18.7
650	31	3,773	4.6	55	105	16.1
600	31	4,426	1.1	50	102	14.2
550	31	5,116	- 2.9	47	102	13.4
500	31	5,871	- 7.5	46	93	10.7
450	31	6,682	-12.4	40	92	8.4
400	31	7,577	-18.4	37	79	7.0
350	31	8,559	-25.3	36	54	6.4
300	31	9,660	-33.7		23	6.0
250	31	10,912	-43.8		336	5.4
200	31	12,372	-55.6		319	8.7
175	31	13,211	-61.8		320	11.7
150	29	14,154	-67.2		342	10.7
125	28	15,243	-71.3		30	10.3
100	[illegible]	16,558	-72.5		66	16.3
80	26	17,873	-71.1		78	23.9
60	24	19,608	-64.2		82	29.7
50	22	20,732	-61.3		90	34.6
40	21	22,129	-57.9		90	37.9
30	17	23,960	-53.6		90	35.2
25	13	25,139	-50.7		90	34.8
20	12	26,605	-48.4		92	35.6
15	10	28,514	-44.7			

TAMPA, FLA. (1015 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	7	25.2	89	163	2.7
1,000	31	142	25.1	84	192	4.1
950	31	592	23.0	78	231	7.8
900	31	1,063	20.1	74	230	8.7
850	31	1,555	17.0	73	229	9.5
800	31	2,071	14.0	70	228	7.8
750	31	2,607	11.0	67	231	7.6
700	31	3,187	7.9	62	239	6.4
650	31	3,795	4.6	54	249	5.2
600	31	4,444	1.0	50	270	4.1
550	31	5,130	- 3.2	49	299	2.5
500	31	5,887	- 7.5	46	349	3.3
450	31	6,696	-12.4	41	4	3.3
400	31	7,592	-18.3	36	3	4.9
350	31	8,577	-25.0	36	10	6.6
300	31	9,680	-33.4		7	6.8
250	31	10,935	-43.2		11	9.7
200	31	12,400	-54.7		17	12.6
175	31	13,243	-60.6		28	15.9
150	31	14,192	-65.7		32	20.4
125	31	15,289	-69.5		41	19.8
100	30	16,614	-69.9		63	19.2
80	29	17,957	-66.5		72	19.4
60	29	19,719	-61.0		81	29.7
50	28	20,863	-58.1		89	34.0
40	27	22,283	-55.2		93	36.9
30	27	24,136	-51.2		90	37.5
25	23	25,330	-48.7		88	38.3
20	20	26,807	-45.7		84	43.5
15	9	28,726	-43.4			

4/ TATOOSH IS., WASH (1014 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	31	11.9	92	180	4.5
1,000	31	144	12.0	86	216	4.3
950	31	572	10.2	80	249	6.4
900	31	1,023	8.4	75	250	7.8
850	31	1,494	6.3	68	244	8.2
800	31	1,990	4.0	63	248	9.9
750	31	2,508	1.8	57	253	11.7
700	31	3,068	- .8	51	239	12.4
650	31	3,651	- 4.0	47	249	15.9
600	31	4,285	- 7.7	45	253	18.3
550	31	4,948	-11.7	41	253	22.0
500	31	5,682	-16.6	43	251	24.9
450	31	6,454	-22.2	42	252	28.8
400	31	7,323	-28.4	40	250	34.2
350	31	8,267	-35.8	40	246	38.3
300	31	9,322	-43.3		248	42.2
250	31	10,530	-50.2		238	45.5
200	31	11,983	-50.4		237	41.8
175	31	12,857	-49.4		238	37.5
150	31	13,868	-49.5		237	31.5
125	31	15,058	-51.0		234	26.0
100	31	16,508	-51.8		231	16.7
80	30	17,952	-52.0		221	6.4
60	28	19,816	-52.0		127	4.1
50	28	21,000	-51.0		87	8.2
40	28	22,457	-49.4		85	9.7
30	25	24,352	-46.9		85	15.5
25	22	25,566	-45.2		81	15.9
20	21	27,065	-43.1		76	17.7
15	14	29,019	-40.0		78	20.6

TONOPAH, NEV. (836 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,650	14.8	28	360	5.8
1,000	31	94				
950	31	544				
900	31	1,013				
850	31	1,505				
800	31	2,023	19.1	29	151	.8
750	31	2,577	15.9	29	208	7.6
700	31	3,155	11.6	31	200	12.0
650	31	3,766	6.7	36	195	14.4
600	31	4,420	1.3	41	191	16.5
550	31	5,107	- 4.1	39	195	18.1
500	31	5,858	- 9.5	32	206	18.7
450	31	6,660	-14.9		221	21.0
400	31	7,545	-21.4		224	24.3
350	31	8,516	-28.4		222	30.1
300	31	9,604	-36.1		223	37.3
250	31	10,850	-43.8		220	43.7
200	31	12,326	-51.1		220	49.0
175	31	13,187	-55.1		219	47.4
150	31	14,161	-59.9		224	42.0
125	26	15,289	-63.8		225	29.3
100	24	16,653	-64.7		211	15.0
80	13	18,016	-63.0		198	6.4
60	7	19,784	-59.2			
50	6	20,929	-56.6			
40	6	22,357	-53.8			
30	5	24,233	-50.3			
25						
20						
15						

TOPEKA, KANS. (983 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	270	22.3	89	143	3.1
1,000	31	119				
950	31	570	24.2	73	205	8.7
900	31	1,044	23.3	63	236	14.6
850	31	1,541	20.6	59	253	12.8
800	31	2,063	17.6	54	268	10.1
750	31	2,608	14.1	52	272	8.0
700	31	3,192	10.4	51	269	6.6
650	31	3,800	6.5	50	275	6.4
600	31	4,457	2.0	52	282	9.1
550	31	5,147	- 2.2	47	284	10.1
500	31	5,906	- 6.4	38	282	11.5
450	31	6,718	-11.3	33	289	13.2
400	31	7,618	-17.4		293	15.2
350	31	8,605	-24.3		294	17.1
300	31	9,711	-32.4		295	19.8
250	31	10,971	-42.3		296	21.8
200	31	12,443	-53.6		300	19.4
175	31	13,291	-59.2		301	17.5
150	30	14,247	-64.4		300	16.9
125	27	15,348	-67.9		308	9.3
100	27	16,688	-67.4		329	7.6
80	27	18,045	-64.1		67	7.6
60	27	19,830	-58.7		87	15.5
50	27	20,986	-54.9		92	18.5
40	26	22,419	-52.2		91	20.2
30	22	24,290	-48.2		90	24.5
25	15	25,502	-46.3		93	26.2
20						
15						

5/ TUCSON, ARIZ. (924 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	781	25.7	55	145	4.1
1,000	31	79				
950	31	530				
900	31	1,017	26.7	44	152	5.2
850	31	1,520	24.1	42	138	1.6
800	31	2,047	20.6	44	15	1.6
750	31	2,596	16.5	47	13	1.7
700	31	3,185	12.0	55	56	1.7
650	31	3,795	7.2	63	105	4.3
600	31	4,455	2.2	71	134	7.2
550	31	5,146	- 2.4	70	150	9.1
500	31	5,904	- 6.7	64	157	8.4
450	31	6,715	-11.6	58	173	8.4
400	31	7,615	-17.2	50	183	8.5
350	31	8,603	-24.0	45	185	11.3
300	31	9,711	-32.1	39	188	14.6
250	31	10,973	-41.8		189	17.5
200	31	12,448	-53.2		206	19.2
175	30	13,297	-58.9		223	15.2
150	30	14,252	-64.7		211	8.2
125	30	15,351	-69.5		165	7.4
100	30	16,676	-70.9		132	9.5
80	30	18,010	-66.9		95	15.3
60	29	19,772	-61.3		90	20.8
50	28	20,913	-58.1		93	24.5
40	28	22,330	-54.7		92	25.6
30	26	24,187	-50.8		90	29.7
25	25	25,384	-48.5		90	31.3
20	24	26,859	-46.1		83	34.6
15	18	28,786	-42.8		89	35.4

VERA CRUZ, MEXICO (1012 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	26	13	24.8	87		
1,000	26	120	24.7	85		
950	26	563	22.6	84		
900	26	1,041	20.1	82		
850	26	1,533	17.3	78		
800	26	2,050	14.4	74		
750	26	2,597	11.3	71		
700	26	3,168	8.1	67		
650	26	3,777	4.7	66		
600	26	4,426	1.1	62		
550	26	5,117	- 2.7	59		
500	26	5,872	- 7.0	55		
450	26	6,686	-11.7	51		
400	26	7,581	-17.2	51		
350	26	8,568	-23.8	46		
300	25	9,674	-31.9			
250	23	10,939	-41.6			
200	22	12,415	-52.9			
175	21	13,263	-59.2			
150	18	14,213	-65.3			
125	15	15,306	-71.1			
100	11	16,632	-71.3			
80	6	17,967	-69.6			
60	6	19,703	-63.5			
50						
40						
30						
25						
20						
15						

6/ WASHINGTON, D. C. (1006 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	88	21.0	77	272	1.9
1,000	31	138	20.9	72	277	2.5
950	31	579	20.7	58	285	6.6
900	31	1,049	17.7	60	296	8.2
850	31	1,536	14.5	60	303	11.7
800	31	2,046	11.5	59	300	14.4
750	31	2,582	8.9	50	296	15.5
700	31	3,153	6.0	47	297	16.3
650	31	3,753	2.4	41	301	18.7
600	31	4,399	- 1.2	39	302	17.1
550	31	5,084	- 4.7		303	18.3
500	31	5,833	- 8.9		303	25.6
450	31	6,634	-14.0		306	27.8
400	31	7,527	-20.4		306	29.9
350	31	8,501	-27.6		306	32.1
300	31	9,592	-35.9		309	33.4
250	31	10,832	-45.5		309	37.1
200	31	12,291	-53.8		314	43.7
175	31	13,142	-56.9		314	43.9
150	31	14,112	-60.1		316	36.7
125	31	15,242	-62.7		321	26.8
100	30	16,620	-62.0		337	11.5
80	30	18,008	-59.8		22	10.7
60	30	19,823	-55.7		70	12.2
50	29	20,993	-53.2		84	17.3
40	28	22,440	-50.6		89	20.6
30	26	24,329	-47.1		89	24.7
25	25	25,541	-45.2		88	27.0
20	23	27,036	-42.5		92	28.4
15	17	29,008	-39.1		96	31.5

WINNEMUCCA, NEV. (870 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,310	12.2	37	137	1.4
1,000	31	112				
950	31	553				
900	31	1,018				
850	31	1,505	19.6	24	209	1.0
800	31	2,024	17.5	22	283	4.5
750	31	2,568	13.7	24	256	5.2
700	31	3,149	9.4	28	228	8.2
650	31	3,754	4.8	34	219	14.6
600	31	4,406	- .2	40	213	19.6
550	31	5,090	- 5.6	41	210	22.5
500	31	5,838	-11.1	37	216	22.3
450	31	6,634	-16.6		225	22.7
400	31	7,516	-22.6		228	25.1
350	31	8,482	-29.9		227	28.4
300	31	9,562	-38.2		226	35.4
250	31	10,796	-45.9		226	42.4
200	30	12,263	-51.3		225	52.3
175	30	13,125	-54.2		226	51.5
150	29	14,106	-57.8		227	43.1
125	28	15,250	-60.6		234	32.4
100	24	16,641	-61.5		223	21.0
80	17	18,027	-60.1		200	7.2
60	16	19,840	-57.1		110	7.6
50	15	20,998	-55.3		104	8.2
40	14	22,432	-52.9		92	15.0
30	14	24,300	-50.0		94	13.0
25	13	25,492	-47.7		89	12.4
20	11	26,960	-45.9		84	13.0
15	5	28,843	-43.5			

YAKUTAT, ALASKA (1014 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	12	10.0	89	91	1.4
1,000	31	126	11.2	85	100	1.4
950	31	553	10.4	80	118	.6
900	31	1,004	7.6	78	166	1.2
850	31	1,474	5.1	77	130	1.7
800	31	1,968	2.8	73	116	1.7
750	31	2,488	- .4	73	107	2.1
700	31	3,038	- 3.7	71	86	2.9
650	31	3,618	- 7.3	64	86	3.5
600	31	4,240	-11.0	55	89	4.3
550	31	4,900	-15.4	49	94	4.7
500	31	5,618	-20.3	44	82	5.8
450	31	6,384	-25.9	40	76	7.0
400	31	7,234	-32.4	40	56	8.9
350	31	8,162	-39.5		57	13.0
300	31	9,200	-47.4		51	15.3
250	31	10,387	-52.9		52	13.8
200	31	11,845	-47.1		53	6.4
175	31	12,733	-46.1		45	4.9
150	31	13,758	-46.1		46	4.1
125	30	14,968	-46.3			.0
100	29	16,451	-46.6		73	2.5
80	28	17,931	-46.8		94	3.3
60	28	19,838	-46.8		89	6.0
50	28	21,049	-46.4		95	8.0
40	27	22,533	-45.7		86	11.1
30	27	24,458	-43.8		91	13.8
25	27	25,687	-42.4		87	14.8
20	24	27,199	-40.6		86	16.1
15	21	29,170	-37.8		87	18.3

1/ 10 mb., 9 obs., 31,596 m., -36.2°C.
2/ 10 mb., 16 obs., 31,738 m., -37.3°C., 97 dir., 23.9 speed
7 mb., 12 obs., 34,213 m., -34.0°C.
3/ 10 mb., 9 obs., 31,255 m., -41.6°C.
7 mb., 7 obs., 33,716 m., -36.4°C.
4/ 10 mb., 9 obs., 31,820 m., -34.8°C.
5/ 10 mb., 9 obs., 31,571 m., -38.3°C.
6/ 10 mb., 10 obs., 31,790 m., -35.0°C.

Note: All observations scheduled at 1200, G.C.T. "Number of observations" refers to those of dynamic height only. Temperature, humidity or wind data may be missing for one or more pressure surfaces of some observations. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Relative humidity data are not published for standard pressure surfaces having less than 16 actual observations.

Relative humidity data beginning with October 1, 1948, were computed and expressed in these tables on the basis of vapor-pressure over water. Upper air values of relative humidity at levels with temperatures less than 0°C, have formerly been computed and expressed on the basis of the vapor-pressure over ice. All relative humidity observations are obtained by electric hygrometer and have been adjusted to compensate for the value occurring below the operating range of the humidity element.

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

SOLAR RADIATION DATA

Solar radiation intensities, tabulated in langleys per minute on a surface normal to the direction of the sun. JULY 1957

† ALBUQUERQUE, N. MEX.

Date	Sun's zenith distance								
	A. M.				0.0°	P. M.			
	78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°
	Air mass								
	4.19	3.35	2.51	1.67	0.84	1.67	2.51	3.35	4.19
July									
1------	0.64	0.71	0.83	0.97	1.16	----	----	----	----
3------	----	----	----	----	----	1.12	0.93	----	----
4------	.97	.85	.99	1.13	1.34	----	----	----	----
6------	.63	.74	.87	1.05	1.30	1.23	1.02	.85	.76
7------	.76	.83	.97	1.17	----	----	----	----	----
9------	.67	.78	.95	----	----	----	----	----	----
11-----	----	----	----	----	1.36	----	----	----	----
14-----	.83	.91	1.04	1.21	1.43	----	----	----	----
18-----	----	----	----	----	1.33	----	----	----	----
21-----	.96	1.05	1.16	1.30	1.46	1.32	1.17	1.06	.96
27-----	----	----	----	----	1.39	----	----	----	----
28-----	----	----	----	1.20	----	----	----	----	----
Averages	.75	.84	.97	1.34	1.35	1.22	1.04	.96	.86

* TUCSON, ARIZONA

Date	Sun's zenith distance								
	A. M.				0.0°	P. M.			
	78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°
	Air mass								
	4.56	3.65	2.74	1.83	0.91	1.83	2.74	3.65	4.56
July									
1------	0.78	0.88	0.92	1.15	1.35	1.14	0.95	0.84	0.75
3------	----	----	----	----	----	.94	.74	.63	.54
5------	.62	.72	.85	1.04	H1.06	----	----	----	----
20-----	----	----	----	----	1.32	1.12	.95	.89	.75
21-----	.70	.84	.95	1.23	1.33	----	----	----	----
Averages	.70	.81	.91	1.14	1.27	1.07	.88	.79	.68

MADISON, WIS.

Date	Sun's zenith distance								
	A. M.				0.0°	P. M.			
	78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°
	Air mass								
	4.84	3.87	2.90	1.94	0.97	1.94	2.90	3.87	4.84
July									
5-----	0.76	0.88	1.00	1.19	Clds	----	----	----	----
6-----	----	----	----	S1.12	Clds	S1.12	S0.95	Clds	----
9-----	.91	.98	1.08	S1.23	S1.40	S1.23	S1.05	S0.93	S0.75
10----	S.76	S.86	S.96	Clds	S1.25	----	----	----	----
15----	----	----	----	----	I 1.11	----	----	----	----
18----	M.46	M.55	M.71	M.89	I 1.06	Ci	----	----	----
19----	M.47	M.57	M.72	M.90	M1.20	Ci	----	----	----
23----	.94	1.03	Clds	----	----	----	----	----	----
30----	M.67	M.76	M.92	S1.11	----	----	----	----	----
Averages	.71	.80	.90	1.07	1.20	1.18	1.00	0.93	0.75

‡ BLUE HILL, MASS.

Date	Sun's zenith distance								
	A. M.				0.0°	P. M.			
	78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°
	Air mass								
	4.89	3.92	2.94	1.96	0.98	1.96	2.94	3.92	4.89
July									
1-----	----	----	----	----	----	1.12	0.98	0.86	0.77
3-----	0.81	0.90	1.03	1.15	----	----	----	----	----
6-----	.78	.86	.96	1.09	1.23	----	----	----	----
8-----	.51	.61	.77	.90	----	----	----	----	----
10----	.59	.73	.88	1.12	----	----	----	----	----
11----	.75	.82	.90	1.03	----	----	.80	.66	.53
16----	.72	.80	.89	1.01	----	----	----	----	----
17----	.66	.82	.92	1.06	----	----	----	----	----
18----	.87	.97	1.08	1.24	1.45	----	----	----	----
Averages	.71	.81	.93	1.08	(1.34)	(1.12)	(.89)	(.76)	(.65)

S Slight haze - indeterminable
M Moderate haze - indeterminable
I Intense haze - indeterminable
H Haze

† New pyrheliometer installed July 2, 1957, with correction of 1.07.
* Starting July 1, 1957, Pyrheliometer calibration increased 2%.
‡ Values adjusted to conform to the international scale of Pyrheliometry.

Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station listed above appears in the February 1957 issue, Vol. 8, No. 2, page 63, of this publication.

SOLAR RADIATION DATA

JULY 1957

Daily totals and average daily totals by weeks of solar and sky radiation, plus the radiation reflected from the ground, as received on a vertical surface facing south at Blue Hill, Mass. during the month

								Avg								Avg								Avg
Date------------	2	3	4	5	6	7	8		9	10	11	12	13	14	15		16	17	18	19	20	21	22	
Langleys--------	233	229	220	145	247	238	252	223	32	240	248	222	100	231	244	188	191	257	255	235	251	226	182	228
Date------------	23	24	25	26	27	28	29		30	31	1	2	3	4	5									
Langleys--------	177	274	240	201	255	283	124	222	275	195	300	298	295	55	321	249								

Daily totals and average daily totals by weeks of diffuse (sky) radiation as received on a horizontal surface at Blue Hill, Mass. during the month

								Avg								Avg								Avg
Date------------	2	3	4	5	6	7	8		9	10	11	12	13	14	15		16	17	18	19	20	21	22	
Langleys--------	213	124	182	239	127	200	166	179	60	170	183	191	195	196	314	187	193	147	116	176	245	299	---	(196)
Date------------	23	24	25	26	27	28	29		30	31	1	2	3	4	5									
Langleys--------	---	---	---	---	---	---	---	---	---	---	---	---	181	110	191	---								

Note: Langley is the unit used to denote one gram calorie per square centimeter.

NET RADIATION

Table 32.--Net radiation in langleys per day (midnight to midnight) at Raleigh, N. C., during the month

JULY 1957

Date.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langleys. . .	400	348	366	386	*412	433	404	400	377	391	397	387	370	400	*247	*418	341	205	420	388	402	387	*376	*114	364	359	328	351	390	420	387	367

* Estimated values owing to occurrence of rain during period. While rain is falling, radiation is assumed to be zero.

The measurement is made with a Beckman and Whitley net exchange radiometer over a plot of Bermuda grass. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the North Carolina State College at Raleigh. The instrument with which they were measured has not been checked by the Weather Bureau.

SOLAR RADIATION DATA

Daily totals and weekly averages of solar radiation (direct and diffuse) received on a horizontal surface, tabulated in langleys.

1957	Aklavik, MacKenzie	Albuquerque, N.Mex.	Annette, Alaska	Apalachicola, Fla.	Astoria, Oreg.	Atlanta, Ga.	Barrow, Alaska	Bethel, Alaska	Bismarck, N. Dak.	Blue Hill, Mass.	Boise, Idaho	Boston, Mass.	Brownsville, Tex.	Canton Island Pacific Area	Cape Hatteras, N.C.	Caribou, Me.	Charleston, S. C.	Cleveland, Ohio	Columbia, Mo.	Corvallis, Oreg.	Davis, Calif.	Dodge City, Kans.	E Lansing, Mich.	Edmonton, Alberta	El Paso, Tex.	Ely, Nev.	Fairbanks, Alaska	Ft. Worth, Tex.	Fresno, Calif.	Gainesville, Fla.	Glasgow, Mont.	Grand Junction, Colo.	Grand Lake, Colo.	Great Falls, Mont.	Greensboro, N. C.	Griffin, Ga.	Indianapolis, Ind.	Inyokern, Calif.	Ithaca, N. Y.	Lake Charles, La.
July 2-----	665	---	756	514	709	561	385	265	717	645	662	665	669	467	675	344	508	775	707	715	689	729	700	594	669	386	537	(689)	585	360	673	726	583	666	543	498	693	601	832	690
July 3-----	439	763	245	386	546	372	653	486	730	636	756	586	732	554	597	585	282	688	415	790	722	659	432	538	798	638	654	706	663	454	402	628	559	591	689	283	630	872	467	667
July 4-----	556	645	339	523	764	664	697	507	585	607	750	540	695	557	799	564	657	366	476	788	719	571	341	663	790	791	536	721	667	443	727	760	636	760	660	562	276	885	450	657
July 5-----	601	723	415	679	613	661	658	617	745	374	719	460	721	575	707	184	584	754	753	770	722	751	757	611	776	800	585	678	666	347	763	767	555	578	547	582	752	873	660	690
July 6-----	661	771	654	522	562	745	379	373	717	752	621	685	712	556	608	412	283	485	748	506	628	699	571	161	799	562	621	676	552	423	526	504	597	678	718	699	721	775	647	698
July 7-----	410	---	470	675	778	750	306	313	512	627	718	631	700	471	800	671	706	730	688	774	728	710	541	694	776	733	357	684	677	345	702	489	339	736	638	669	641	866	501	702
July 8-----	240	618	489	600	462	712	444	179	740	678	724	652	696	456	746	653	692	97	577	759	722	692	226	551	675	723	289	700	672	630	747	674	443	707	629	682	479	866	435	654
Average------	510	704	481	557	633	638	503	392	678	617	707	603	704	519	705	488	530	556	623	729	704	687	510	545	755	662	511	(694)	640	429	649	650	530	699	632	568	599	820	570	680
July 9-----	446	732	450	676	671	740	255	---	715	73	731	97	596	525	580	310	657	674	575	770	731	696	757	612	789	585	98	664	635	569	716	661	319	747	487	630	723	512	522	639
July 10-----	462	496	355	680	373	743	513	675	735	688	545	568	663	486	451	284	531	830	373	676	720	402	702	298	787	382	673	669	614	584	721	721	488	682	704	674	756	833	349	585
July 11-----	609	726	183	611	425	713	283	638	603	665	---	607	470	401	765	416	542	163	675	636	731	674	274	616	729	689	679	700	656	133	508	633	553	826	665	590	736	---	643	583
July 12-----	472	588	244	654	619	711	793	655	713	656	604	657	672	562	692	166	675	650	666	667	689	724	447	467	737	538	651	692	658	463	699	557	419	759	668	667	626	858	723	670
July 13-----	528	684	707	658	293	655	693	625	596	220	585	221	686	578	667	624	456	286	690	328	693	(653)	417	646	681	742	501	538	674	441	489	542	484	689	622	589	297	878	122	667
July 14-----	400	768	286	715	292	573	574	356	673	541	714	567	666	520	757	395	701	661	654	619	723	625	659	545	599	826	652	576	672	570	364	751	441	473	612	465	423	876	670	576
July 15-----	484	461	263	687	596	434	430	492	623	595	751	583	637	555	728	308	540	797	257	442	708	714	652	506	724	820	495	634	672	500	596	731	593	783	480	343	503	876	721	619
Average------	486	637	355	669	467	653	506	573	666	491	655	472	627	518	663	358	586	580	556	591	714	(641)	558	527	721	655	536	639	655	466	585	657	471	709	606	565	580	806	536	620
July 16-----	271	---	553	611	612	628	262	---	594	536	730	509	540	574	555	311	425	731	603	606	707	712	744	576	772	801	309	645	671	568	624	502	369	757	576	446	659	895	733	536
July 17-----	468	735	686	309	416	416	182	513	675	731	752	665	677	537	725	523	407	707	637	574	702	733	757	314	757	514	399	671	646	378	---	467	435	749	326	386	442	886	747	---
July 18-----	388	684	568	523	723	504	448	405	354	479	700	675	577	544	654	710	320	704	582	739	714	689	746	593	736	643	241	603	651	453	718	452	313	801	213	475	641	850	692	234
July 19-----	329	609	473	321	574	435	258	212	303	629	661	553	609	(567)	601	(474)	542	687	588	736	715	(625)	726	448	482	740	492	646	659	280	378	418	307	495	519	235	649	889	660	558
July 20-----	168	---	546	235	207	703	262	380	706	569	422	547	667	(589)	794	(667)	663	614	590	674	681	(603)	664	597	651	817	525	580	574	437	699	611	176	791	627	670	658	---	702	599
July 21-----	(60)	770	157	471	425	721	382	387	576	500	---	467	697	519	766	(697)	(620)	549	573	631	690	309	616	526	674	601	184	618	655	536	710	698	535	695	630	679	668	894	576	388
July 22-----	261	669	272	553	445	666	414	334	691	407	---	349	551	520	768	75	685	366	314	630	690	632	122	647	639	815	---	321	647	541	---	693	608	583	562	706	602	877	163	231
Average------	(278)	693	465	432	486	582	315	372	557	550	653	538	617	(550)	695	(494)	(523)	622	555	656	700	(615)	625	529	673	704	358	584	643	456	626	549	392	696	493	514	617	882	610	424
July 23-----	281	618	233	567	624	680	312	---	604	375	696	392	646	527	713	247	568	468	463	671	669	634	677	(502)	542	817	454	389	637	574	---	97	145	718	494	636	368	860	569	456
July 24-----	279	516	58	539	739	397	412	568	166	707	693	674	620	609	284	446	---	664	685	748	682	228	758	549	425	775	434	373	617	524	680	723	338	761	399	368	681	875	619	486
July 25-----	612	423	257	167	597	590	243	288	706	564	566	577	643	584	775	542	562	529	696	676	687	325	569	638	593	628	276	591	622	256	646	421	121	720	697	524	---	793	707	453
July 26-----	367	673	476	399	500	633	350	656	705	484	614	594	669	549	542	643	233	299	334	562	681	690	554	512	776	---	152	608	632	328	---	628	319	484	533	468	---	877	495	477
July 27-----	502	686	371	429	545	169	(400)	569	619	495	684	547	661	569	413	474	178	430	150	712	663	730	557	368	727	761	---	592	629	510	503	682	313	638	485	---	---	760	297	429
July 28-----	481	733	291	315	649	604	306	158	678	629	638	589	669	---	729	491	247	676	617	723	667	695	631	654	776	620	---	677	613	227	728	650	525	719	586	525	432	837	623	569
July 29-----	104	---	262	661	404	653	241	279	618	274	636	276	609	521	(739)	253	642	633	432	574	701	714	635	545	786	633	301	668	629	336	287	451	410	535	635	648	---	844	566	564
Average------	375	608	279	439	580	532	(324)	420	585	504	647	521	645	560	(599)	442	405	528	483	667	679	574	626	(538)	661	706	323	557	626	394	569	522	310	654	547	528	---	835	554	491
July 30-----	319	540	550	463	518	564	175	376	679	557	649	497	666	534	477	400	677	643	597	545	703	587	567	523	750	683	384	610	627	284	627	716	455	467	532	467	492	810	535	532
July 31-----	206	686	383	362	621	673	361	436	555	386	668	295	662	607	742	(376)	511	717	589	678	687	681	709	620	488	(703)	561	(597)	650	198	606	713	495	681	601	655	637	851	637	402
Aug. 1-----	389	680	689	398	701	662	237	455	663	592	707	551	560	547	650	437	628	727	612	719	684	696	658	127	725	750	273	608	638	402	662	697	478	701	402	645	543	839	717	297
Aug. 2-----	382	723	661	474	520	600	446	284	689	706	686	614	629	---	583	406	373	644	623	690	658	662	483	484	687	752	514	551	635	415	669	697	494	685	649	564	469	832	694	544
Aug. 3-----	486	713	652	453	191	595	445	240	560	627	670	614	658	---	618	502	600	492	529	145	677	667	415	511	748	719	442	565	613	400	392	666	420	444	580	546	499	820	520	670
Aug. 4-----	406	555	578	572	320	467	136	188	700	125	655	129	663	(616)	674	(525)	599	600	690	395	672	518	574	251	482	645	521	593	624	440	658	523	317	617	429	532	427	844	396	623
Aug. 5-----	515	603	91	413	332	626	190	124	635	598	649	553	571	566	(314)	587	310	572	712	355	671	720	782	497	692	737	428	501	621	298	638	344	363	517	556	546	---	853	587	365
Average------	386	643	515	448	458	598	284	300	640	513	669	465	630	(574)	(580)	(462)	528	628	622	504	679	647	598	430	653	(713)	446	(575)	630	348	607	622	432	588	536	565	511	836	584	490

Note.--Langley is the unit used to denote one gram calorie per square centimeter.
Values in parentheses are interpolated.

SOLAR RADIATION DATA

Daily totals and weekly averages of solar radiation (direct and diffuse) received on a horizontal surface, tabulated in langleys. - Continued

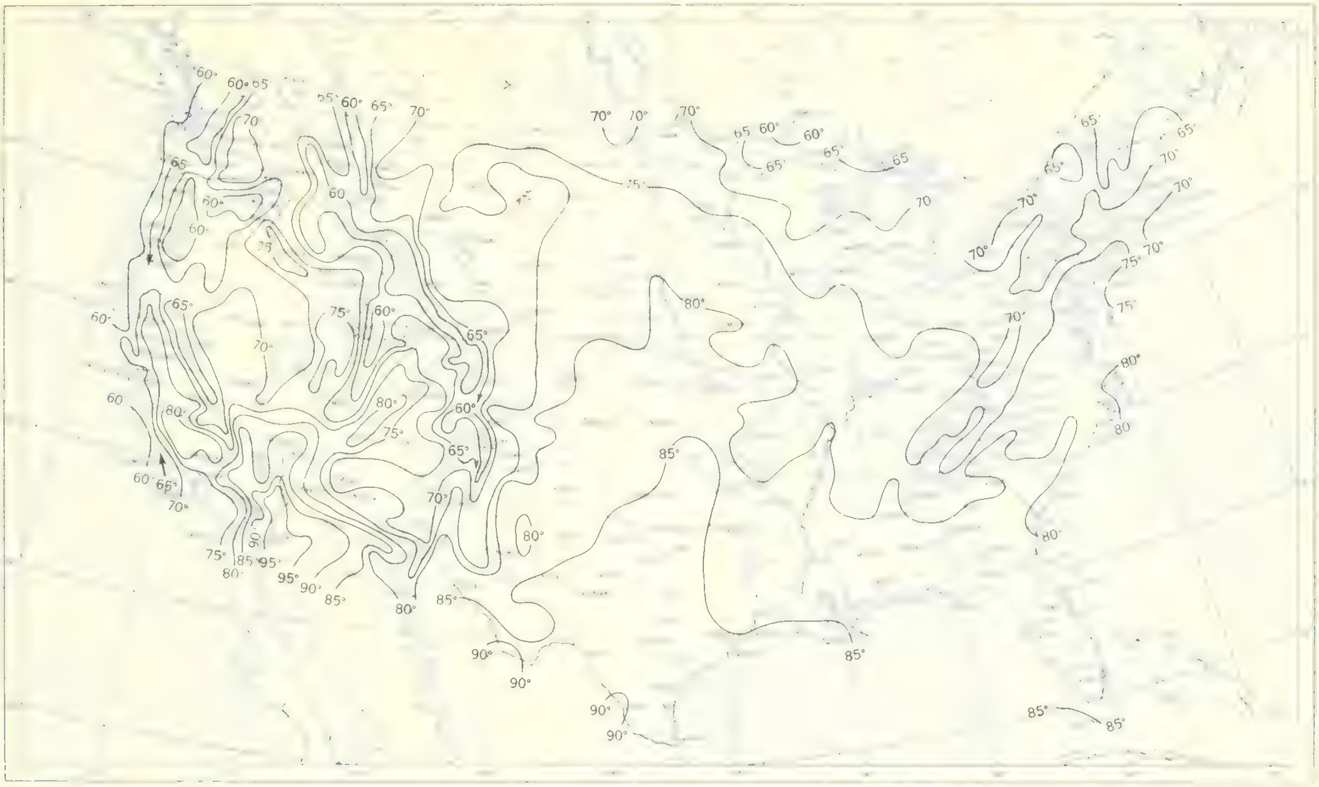
	Lander, Wyo.	Las Vegas, Nev.	Little Rock, Ark	Los Angeles, Calif. (urban)	Los Angeles, Calif.	Madison, Wis.	Matanuska, Alaska	Medford, Oreg.	Miami, Fla.	Nashville, Tenn.	* Newport, R. I.	New York, N. Y.	North Omaha, Nebr.	Oak Ridge, Tenn.	Oklahoma City, Okla.	Ottawa, Ontario	Phoenix, Ariz.	Portland, Me.	Raleigh, N. C.	Rapid City, S. Dak.	Riverside, Calif.	St. Cloud, Minn.	San Antonio, Tex.	Santa Maria, Calif.	S. Ste. Marie, Mich.	Sayville, N. Y.	Schenectady, N. Y.	Seattle-Tacoma, Wash	Shreveport, La.	Spokane, Wash.	State College, Pa.	Stillwater, Okla.	Swan Island, W. I.	Tampa, Fla.	Toronto, Ontario	Tucson, Ariz. (U. of A.)	Wake Island Pacific Area	Washington, D. C. (Silver Hill Obs.)	Winnipeg, Manitoba
1957																																							
July 2-----	684	580	311	626	614	707	340	565	556	380	710	811	534	456	---	777	632	392	605	(756)	525	682	687	710	389	852	636	554	697	624	812	793	512	132	730	---	---	765	625
July 3-----	701	756	675	715	712	380	525	727	561	725	659	715	484	725	861	399	494	505	639	(760)	760	622	706	744	(608)	787	410	542	732	521	695	---	663	621	461	656	(738)	708	642
July 4-----	747	775	696	747	735	537	584	689	519	727	545	499	693	717	824	525	702	559	679	(803)	768	---	695	778	386	604	422	750	755	773	612	762	586	329	523	---	657	554	611
July 5-----	739	764	723	725	705	777	211	690	623	759	431	541	734	714	860	587	670	345	613	(783)	727	---	637	761	314	464	394	607	688	762	694	825	691	147	541	688	---	541	496
July 6-----	426	497	716	555	540	737	313	697	494	769	730	744	697	769	763	543	595	692	692	760	537	---	716	683	753	790	585	350	766	691	616	771	698	598	666	---	685	739	515
July 7-----	404	772	711	724	670	368	162	702	479	757	533	675	683	737	809	689	429	714	660	373	772	---	717	793	337	716	548	699	768	742	519	787	669	693	555	432	630	652	727
July 8-----	735	774	711	744	676	491	317	701	690	736	626	631	679	687	808	466	624	708	639	760	733	---	706	785	234	716	535	463	746	739	179	771	661	695	257	727	547	348	742
Average------	634	703	649	691	665	571	350	682	560	693	605	659	643	687	821	569	592	559	647	(714)	689	---	695	751	(432)	704	504	566	736	693	590	785	640	459	533	626	(651)	615	623
July 9-----	677	493	683	665	669	762	644	693	681	502	82	401	610	562	792	502	724	77	592	606	681	---	613	750	773	386	384	678	632	568	664	763	720	611	729	---	684	582	685
July 10-----	541	512	620	465	478	675	682	653	(471)	776	684	679	692	684	733	383	697	384	620	718	610	---	703	751	635	770	468	486	644	743	610	689	703	663	709	---	---	741	695
July 11-----	574	501	631	715	656	716	581	685	381	775	605	660	658	756	815	490	704	476	632	697	646	---	699	763	716	735	572	415	677	692	410	715	507	589	686	586	---	611	625
July 12-----	380	730	664	701	688	116	628	618	386	744	695	686	680	710	823	706	685	638	612	669	739	---	698	772	295	768	580	665	706	672	675	771	673	525	606	666	---	611	695
July 13-----	639	776	614	774	681	474	590	248	435	529	204	159	576	582	823	651	687	603	618	516	763	---	696	765	---	192	216	212	744	401	241	751	583	---	600	666	528	329	700
July 14-----	764	776	573	751	735	696	645	697	320	243	561	609	186	434	806	555	732	633	633	508	792	---	666	737	736	426	527	273	706	389	565	755	681	---	651	669	692	548	703
July 15-----	777	770	574	726	710	703	484	706	709	649	538	625	459	372	784	462	510	699	376	732	783	---	731	778	756	583	494	646	670	635	681	753	657	568	726	625	684	583	(536)
Average------	622	651	623	685	659	592	608	614	(483)	602	481	545	552	586	797	536	677	501	583	635	716	---	687	759	652	551	463	482	683	586	549	742	646	591	672	642	647	572	(663)
July 16-----	771	719	373	725	689	121	308	621	666	690	635	703	667	644	792	615	626	575	641	654	727	---	694	785	729	768	543	385	588	712	838	776	632	633	625	595	630	716	615
July 17-----	241	424	539	453	452	619	233	704	561	667	687	740	684	438	754	588	287	661	480	741	601	---	680	576	744	788	603	592	533	467	719	749	594	657	701	494	537	504	675
July 18-----	430	642	468	664	601	695	150	691	638	456	679	597	666	563	749	647	567	689	323	510	664	---	655	619	779	719	601	711	642	756	605	773	633	505	687	585	690	366	286
July 19-----	624	768	579	704	685	696	418	667	490	586	618	584	608	553	755	663	601	656	667	387	657	291	693	718	731	---	534	701	491	683	629	743	641	545	602	491	700	674	506
July 20-----	555	776	562	720	669	609	596	655	244	618	613	658	294	585	724	539	709	520	639	(571)	742	462	684	548	475	---	478	304	606	693	683	736	688	604	612	730	681	662	705
July 21-----	668	781	448	663	647	405	587	463	405	679	530	578	360	620	725	242	---	340	654	(586)	700	342	645	702	412	---	491	544	563	723	574	717	695	422	446	731	677	611	(627)
July 22-----	567	803	285	678	707	283	374	646	419	522	464	616	519	639	581	491	459	195	616	(728)	724	677	641	659	---	---	200	289	448	645	628	554	555	573	249	653	692	500	643
Average------	551	702	465	658	636	490	381	635	489	602	604	639	543	577	726	541	542	519	574	(597)	688	443	670	658	645	---	493	504	553	668	668	721	634	563	560	611	658	576	(580)
July 23-----	393	781	438	720	685	709	320	677	434	443	296	200	690	430	673	430	700	546	564	(649)	749	709	579	707	---	---	396	531	375	708	335	643	381	549	646	577	671	204	583
July 24-----	665	765	414	706	699	700	362	657	604	410	581	695	663	666	488	652	706	565	229	(534)	731	528	671	725	---	642	459	715	182	736	638	424	164	446	667	350	553	590	384
July 25-----	535	729	667	602	590	604	161	656	555	620	572	671	583	635	508	624	658	509	630	(678)	651	196	617	676	---	637	517	645	394	656	568	353	496	232	516	477	717	580	696
July 26-----	609	373	678	677	---	318	418	594	666	659	385	488	461	556	752	617	---	685	597	(644)	595	465	603	434	233	539	532	---	646	721	469	624	541	542	351	254	688	457	674
July 27-----	655	639	547	702	---	615	509	660	709	529	316	502	532	495	780	375	687	573	519	(634)	693	465	690	705	591	715	281	322	627	708	495	753	667	636	580	718	721	488	670
July 28-----	752	506	454	714	---	527	630	647	604	253	615	217	622	496	777	405	529	406	569	(481)	716	600	669	669	639	535	218	677	638	688	598	759	(701)	399	549	---	528	460	677
July 29-----	414	709	597	724	690	608	609	603	276	381	304	387	613	525	752	543	660	249	647	(580)	719	704	665	666	---	419	262	523	594	664	589	731	764	489	415	671	645	539	698
Average------	575	643	542	692	666	583	430	642	550	471	438	451	595	544	676	521	657	505	537	(600)	693	524	642	655	---	581	381	569	494	697	527	612	(531)	471	532	508	646	474	626
July 30-----	540	717	229	692	685	609	561	570	284	227	546	417	620	431	758	492	683	551	656	(713)	712	256	682	730	687	511	428	541	475	574	455	733	676	279	442	646	673	464	546
July 31-----	533	722	451	679	685	318	605	645	558	571	396	460	611	642	626	638	695	588	596	(576)	711	549	445	751	---	438	475	515	485	696	602	---	702	169	662	516	678	444	646
Aug. 1-----	673	750	599	724	708	614	547	667	426	678	549	643	635	583	724	621	633	521	439	(648)	720	315	548	736	613	690	561	507	---	709	607	639	630	489	596	452	725	669	352
Aug. 2-----	646	726	462	696	657	343	492	644	384	659	615	687	272	613	725	580	(483)	651	545	(618)	714	585	676	677	596	730	538	628	684	519	689	699	676	235	524	680	697	659	601
Aug. 3-----	722	680	623	714	677	520	---	629	452	647	606	559	552	602	709	453	640	571	599	(434)	707	599	603	624	723	662	470	156	685	328	619	---	702	203	383	503	700	629	349
Aug. 4-----	---	657	275	695	636	484	---	626	288	486	81	209	659	315	516	582	544	115	---	(439)	707	---	659	747	619	193	176	683	672	459	324	---	630	319	499	411	727	292	670
Aug. 5-----	---	675	649	656	639	681	---	---	293	731	553	508	652	700	797	441	406	617	577	(630)	637	668	678	732	728	655	398	546	352	393	506	---	757	262	538	458	726	541	685
Average------	623	704	470	694	669	510	551	630	384	571	478	497	572	555	694	544	(584)	516	569	(580)	701	495	613	714	661	554	435	511	559	526	543	---	682	280	521	524	704	528	550

Note.--Langley is the unit used to denote one gram calorie per square centimeter.
Values in parentheses are interpolated.

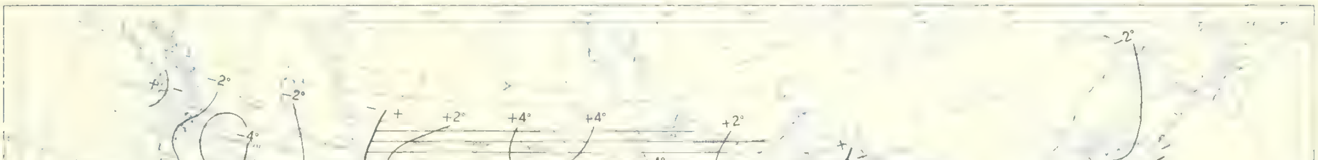
* Data after August 1, 1957, decreased by 1.5% by reason of correction of pyrheliometer constant.

NWRC, Asheville, N. C. --- 10/11/57 --- 1900

Chart I. A. Average Temperature (°F.) at Surface, July 1957.



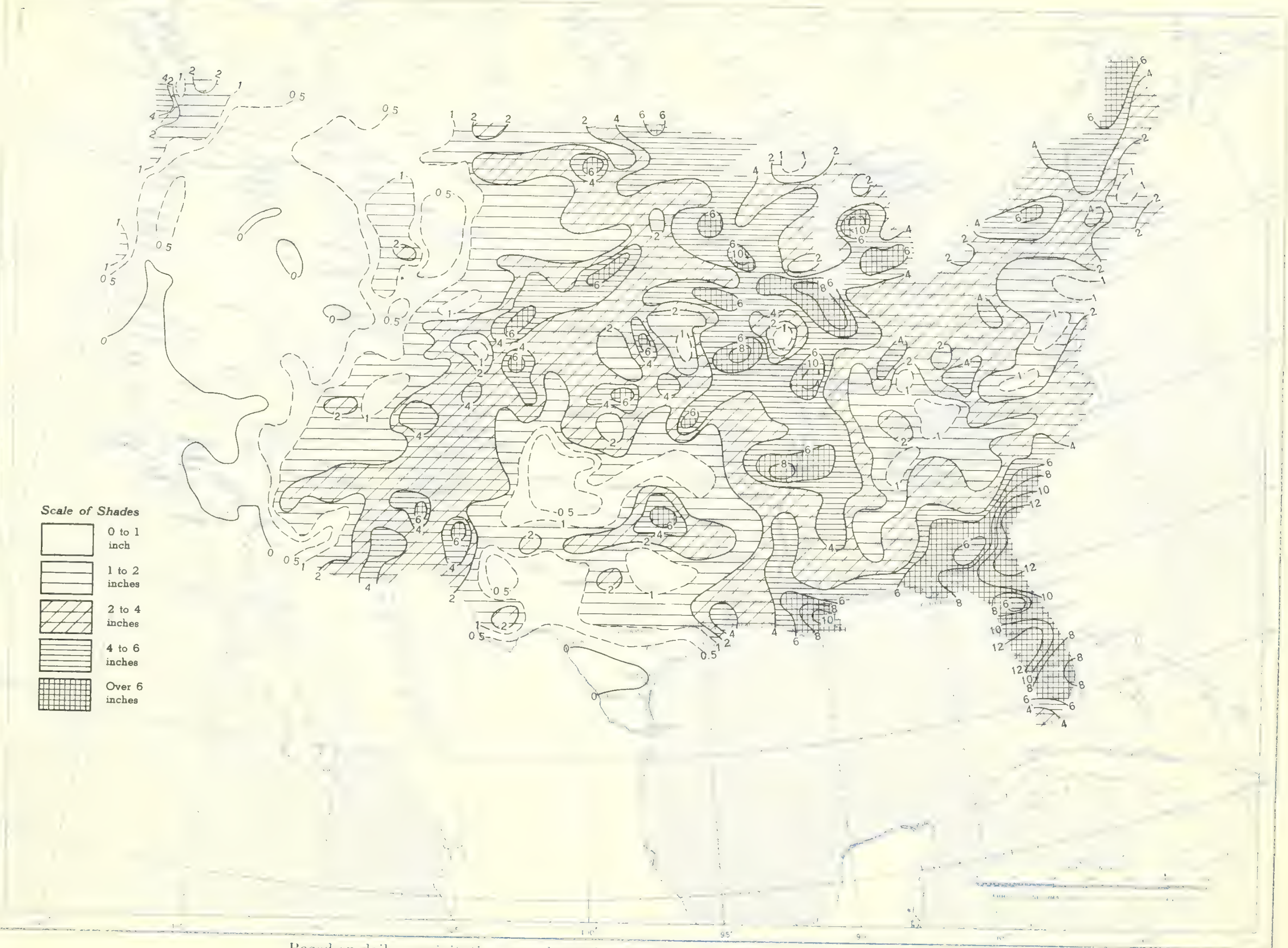
B. Departure of Average Temperature from Normal (°F.), July 1957.



A. Based on reports from over 900 Weather Bureau and cooperative stations. The monthly average is half the sum of the monthly average maximum and monthly average minimum, which are the average of the daily maxima and daily minima, respectively.

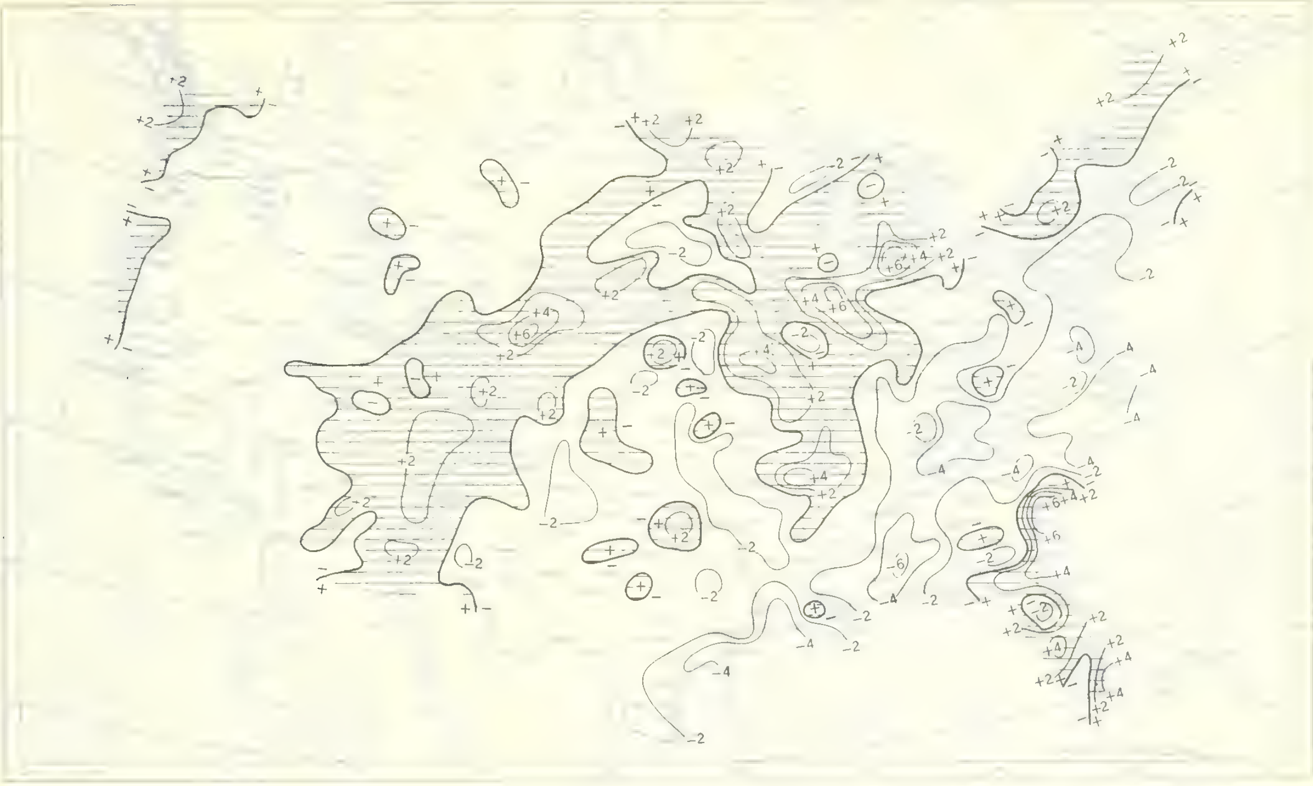
B. Departures from normal are based on the 30-yr. normals (1921-50) for Weather Bureau stations and on means of 25 years or more (mostly 1931-55) for cooperative stations.

Chart II. Total Precipitation (Inches), July 1957.

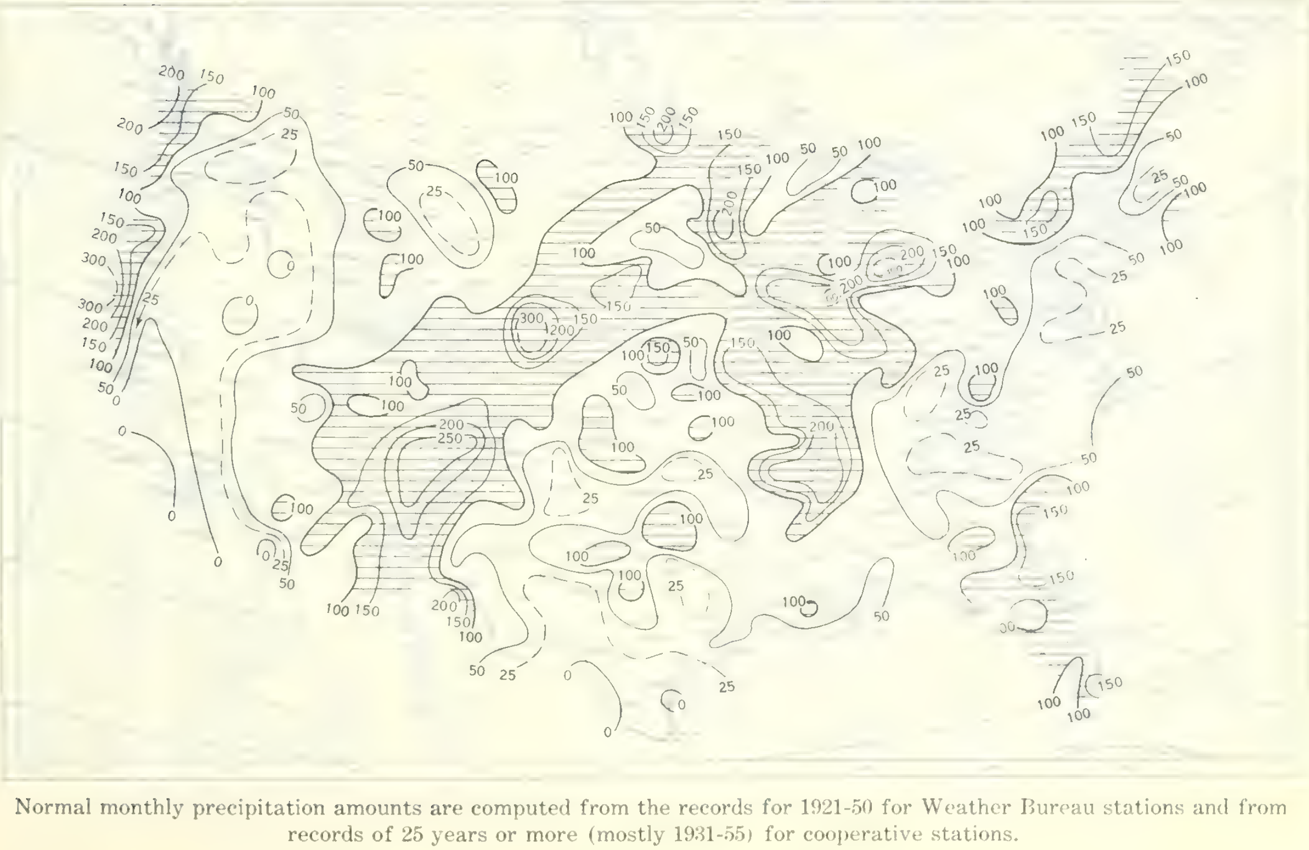


Based on daily precipitation records at about 800 Weather Bureau and cooperative stations.

Chart III. A. Departure of Precipitation from Normal (Inches), July 1957.

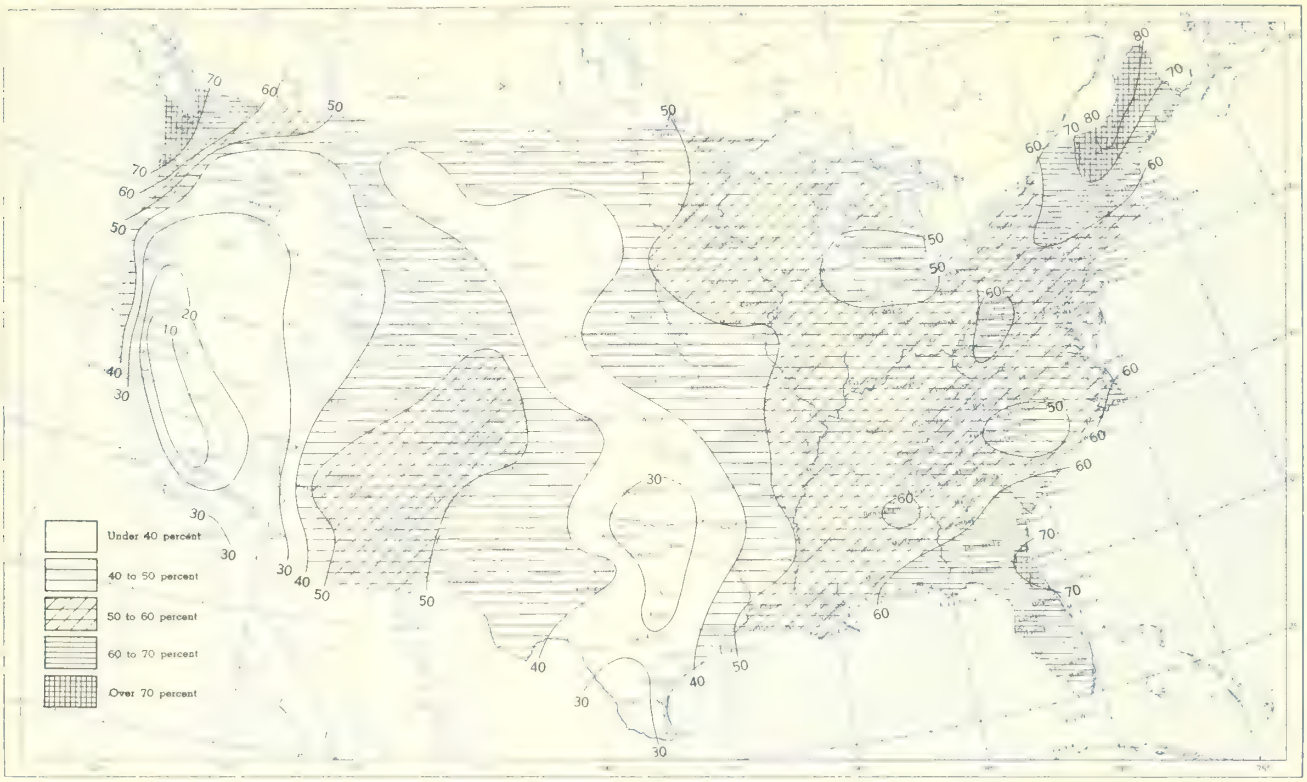


B. Percentage of Normal Precipitation, July 1957.

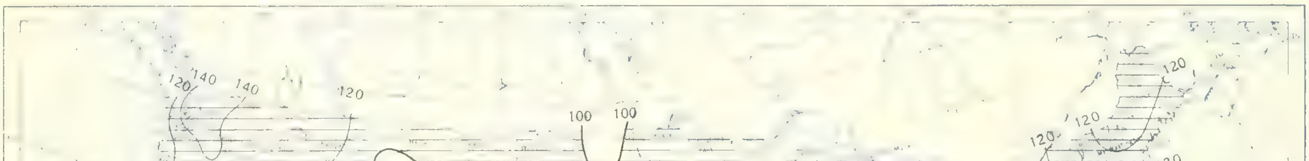


Normal monthly precipitation amounts are computed from the records for 1921-50 for Weather Bureau stations and from records of 25 years or more (mostly 1931-55) for cooperative stations.

Chart VI. A. Percentage of Sky Cover Between Sunrise and Sunset, July 1957.

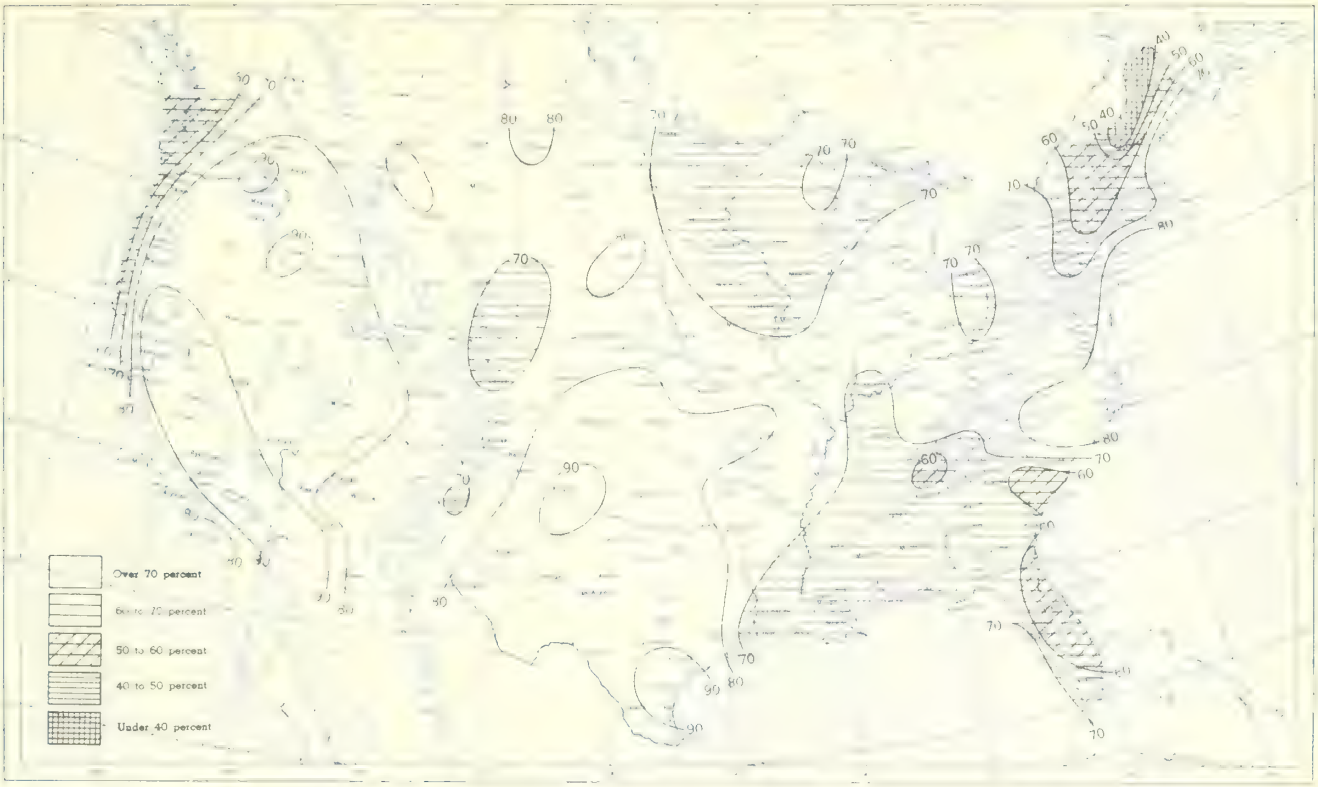


B. Percentage of Normal Sky Cover Between Sunrise and Sunset, July 1957.



A. In addition to cloudiness, sky cover includes obscuration of the sky by fog, smoke, snow, etc. Chart based on visual observations made hourly at Weather Bureau stations and averaged over the month. B. Computations of normal amount of sky cover are made for stations having at least 10 years of record.

Chart VII. A. Percentage of Possible Sunshine, July 1957.



B. Percentage of Normal Sunshine, July 1957.

A. Computed from total number of hours of observed sunshine in relation to total number of possible hours of sunshine during month. B. Normals are computed for stations having at least 10 years of record.

Chart VIII. Average Daily Values of Solar Radiation, Direct + Diffuse, July 1957. Inset: Percentage of Mean Daily Solar Radiation, July 1957. (Mean based on period 1951-55.)

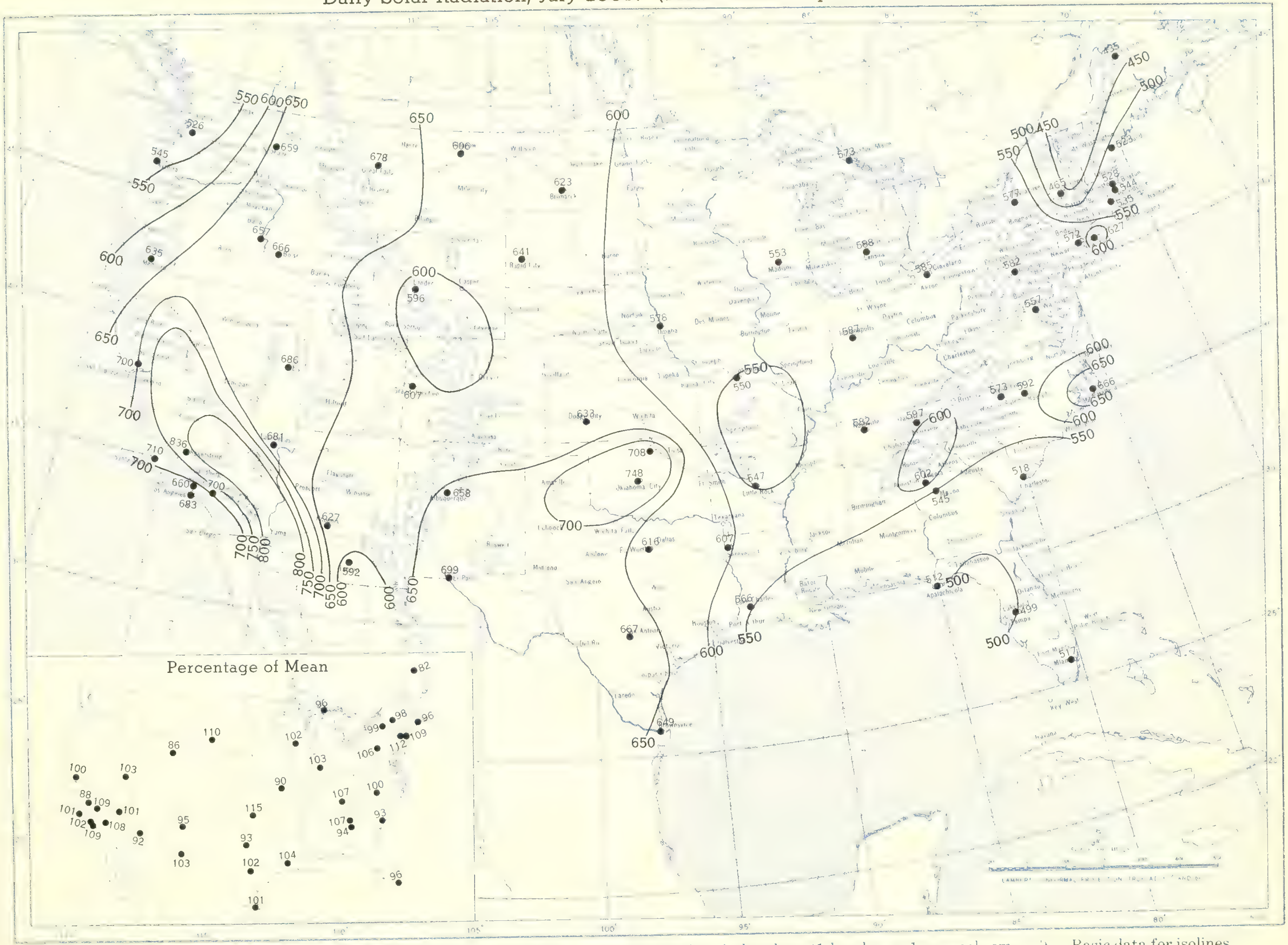
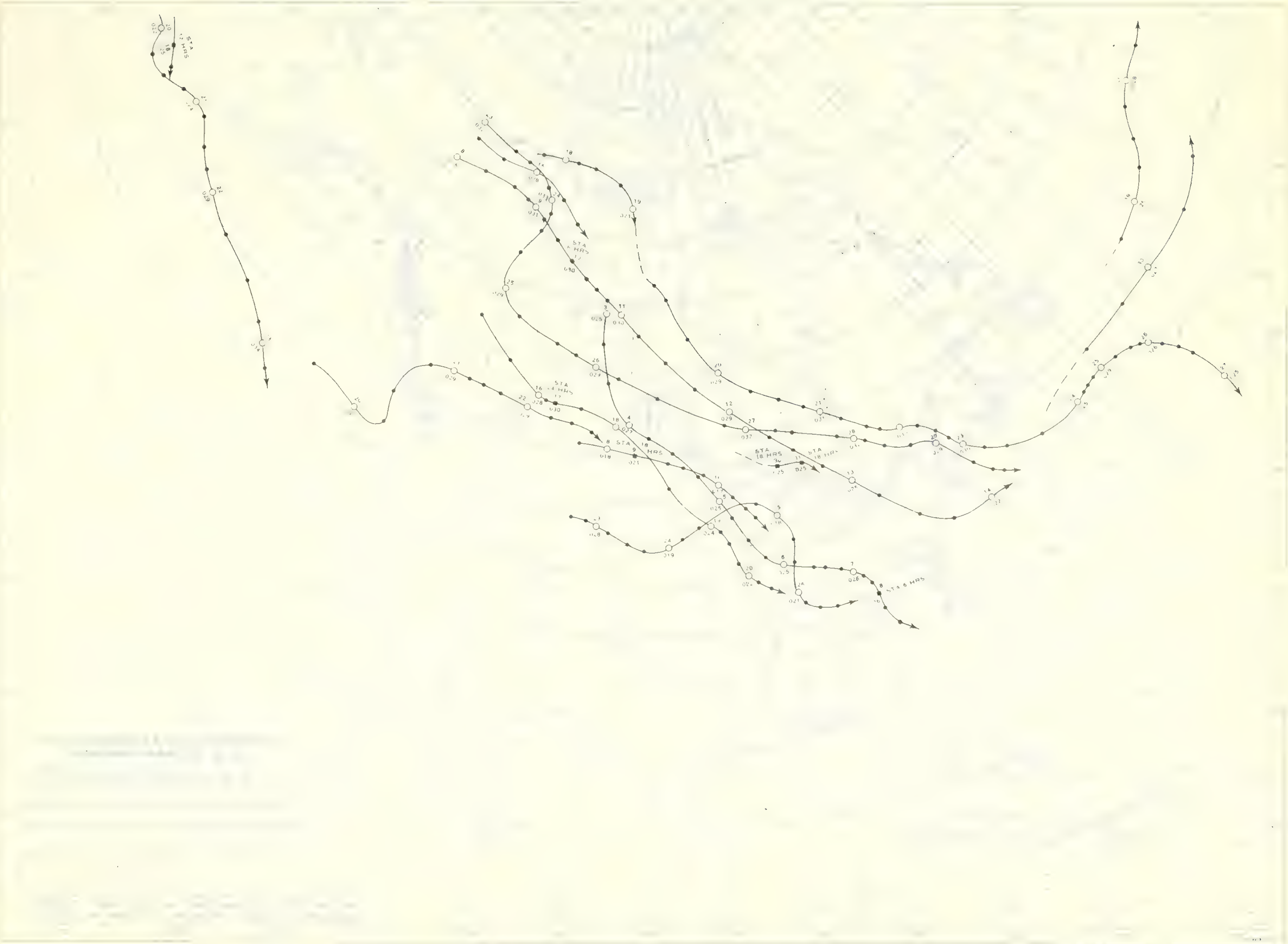


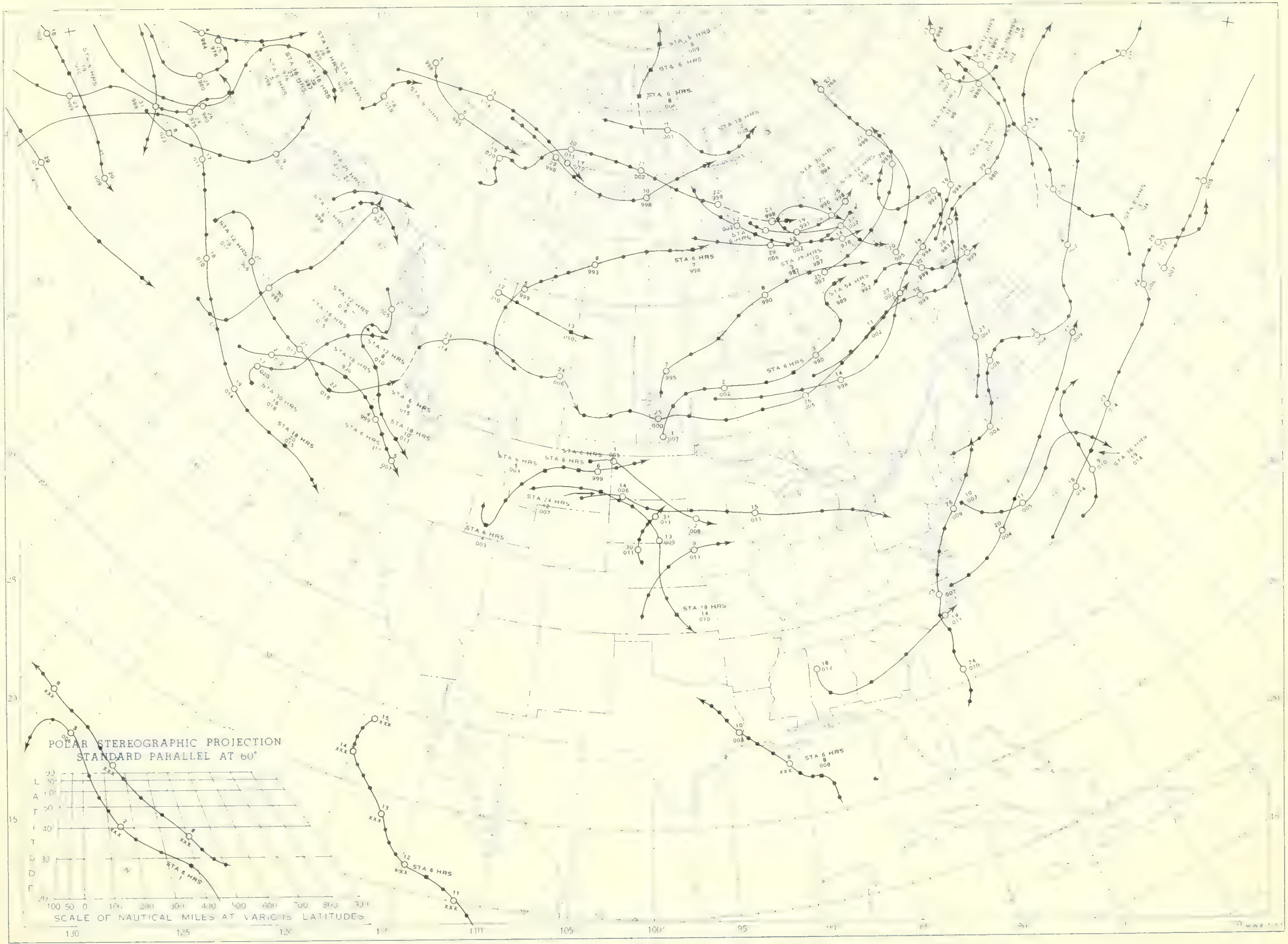
Chart shows mean daily solar radiation, direct + diffuse, received on a horizontal surface in langleys (1 langley = 1 gm. cal. cm.$^{-2}$). Basic data for isolines are shown on chart. Further estimates are obtained from supplementary data for which limits of accuracy are wider than for those data shown. The inset shows the percentage of the mean based on the period 1951-55.

Chart IX. Tracks of Centers of Anticyclones at Sea Level, July 1957.



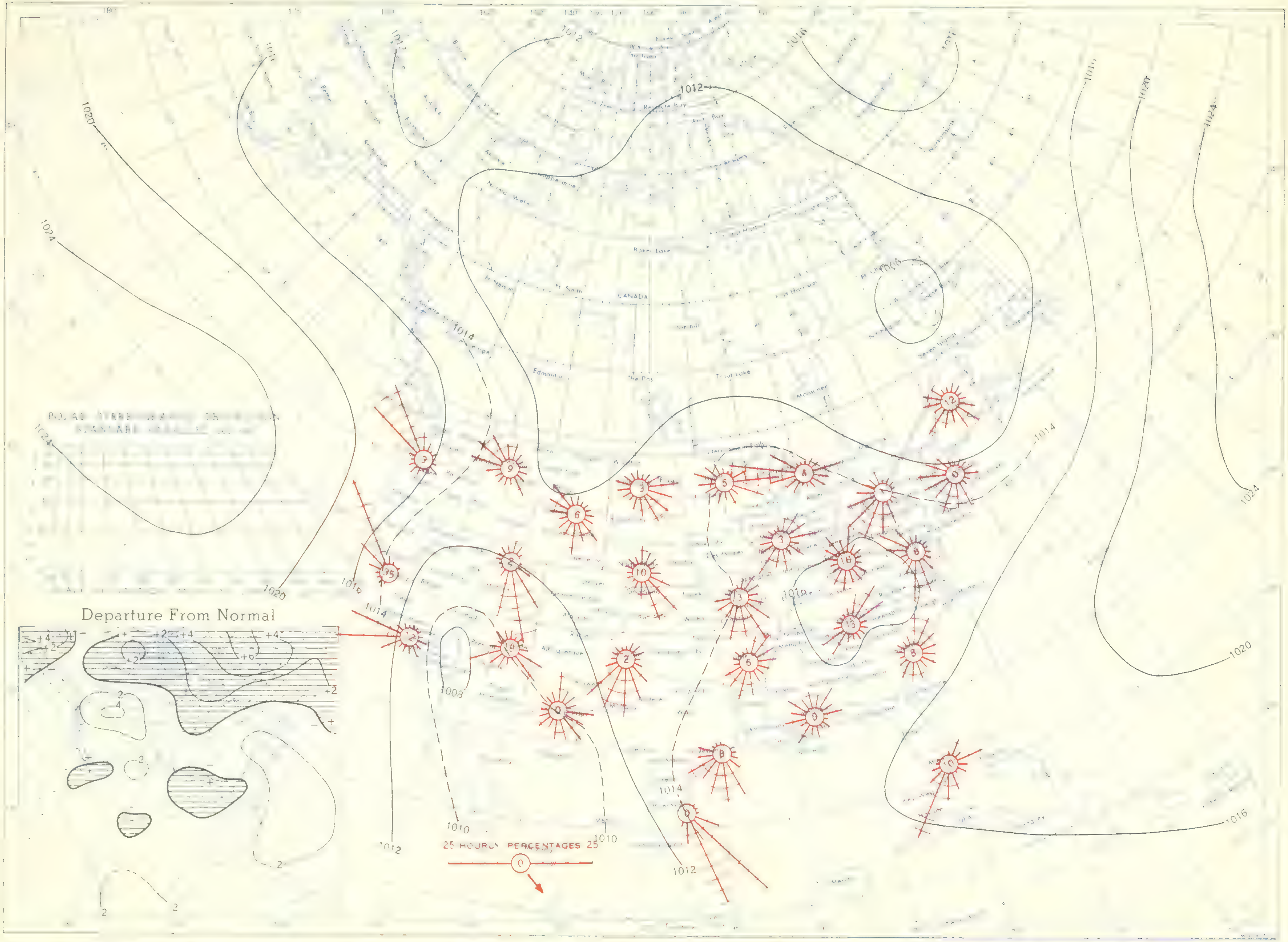
Circle indicates position of center at 7:00 a. m. E. S. T. Figure above circle indicates date, figure below, pressure to nearest millibar. Dots indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.

Chart X. Tracks of Centers of Cyclones at Sea Level, July 1957.



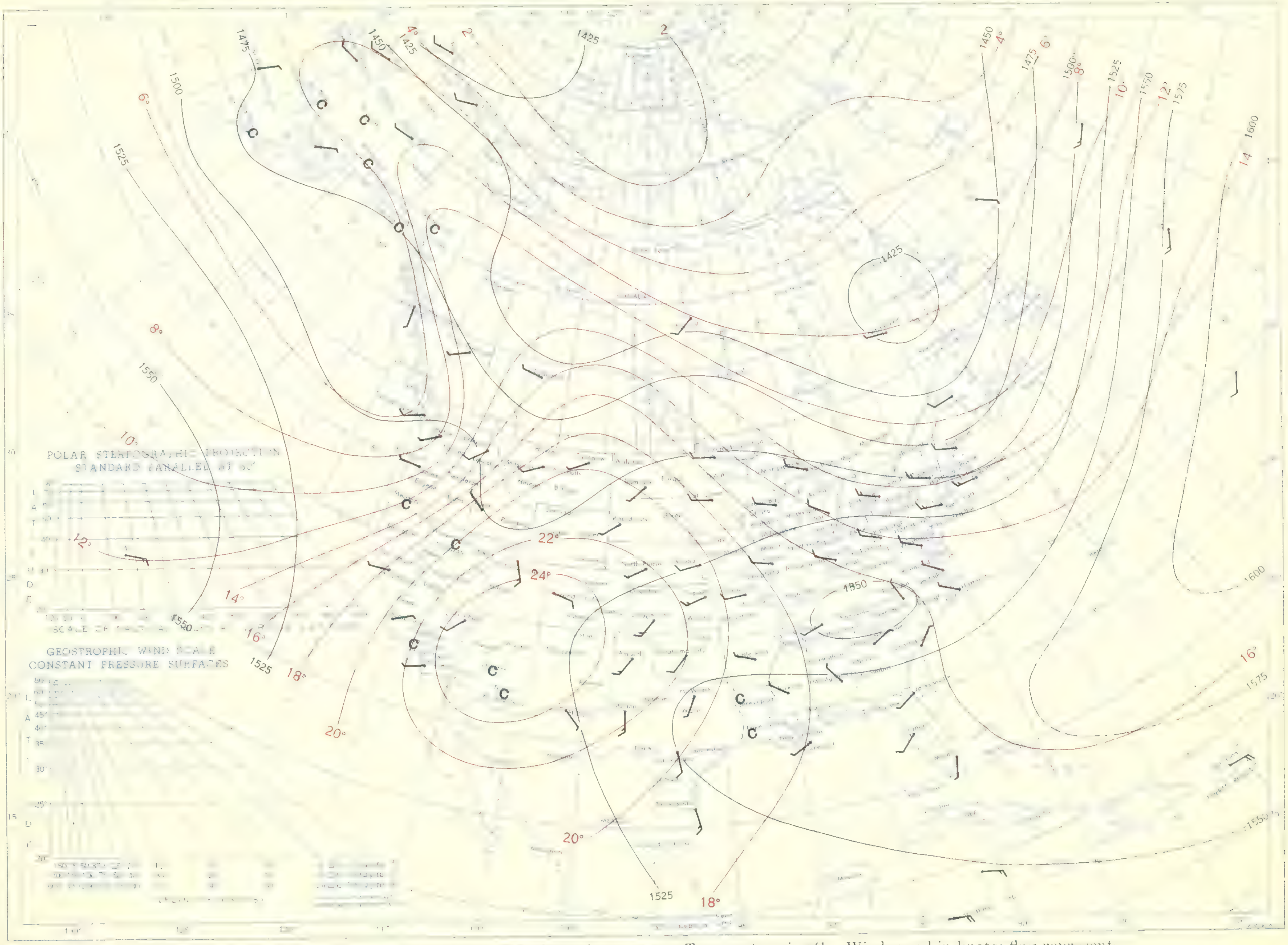
Circle indicates position of center at 7:00 a. m. E. S. T. See Chart IX for explanation of symbols.

Chart XI. Average Sea Level Pressure (mb.) and Surface Windroses, July 1957. Inset: Departure of Average Pressure (mb.) from Normal, July 1957.



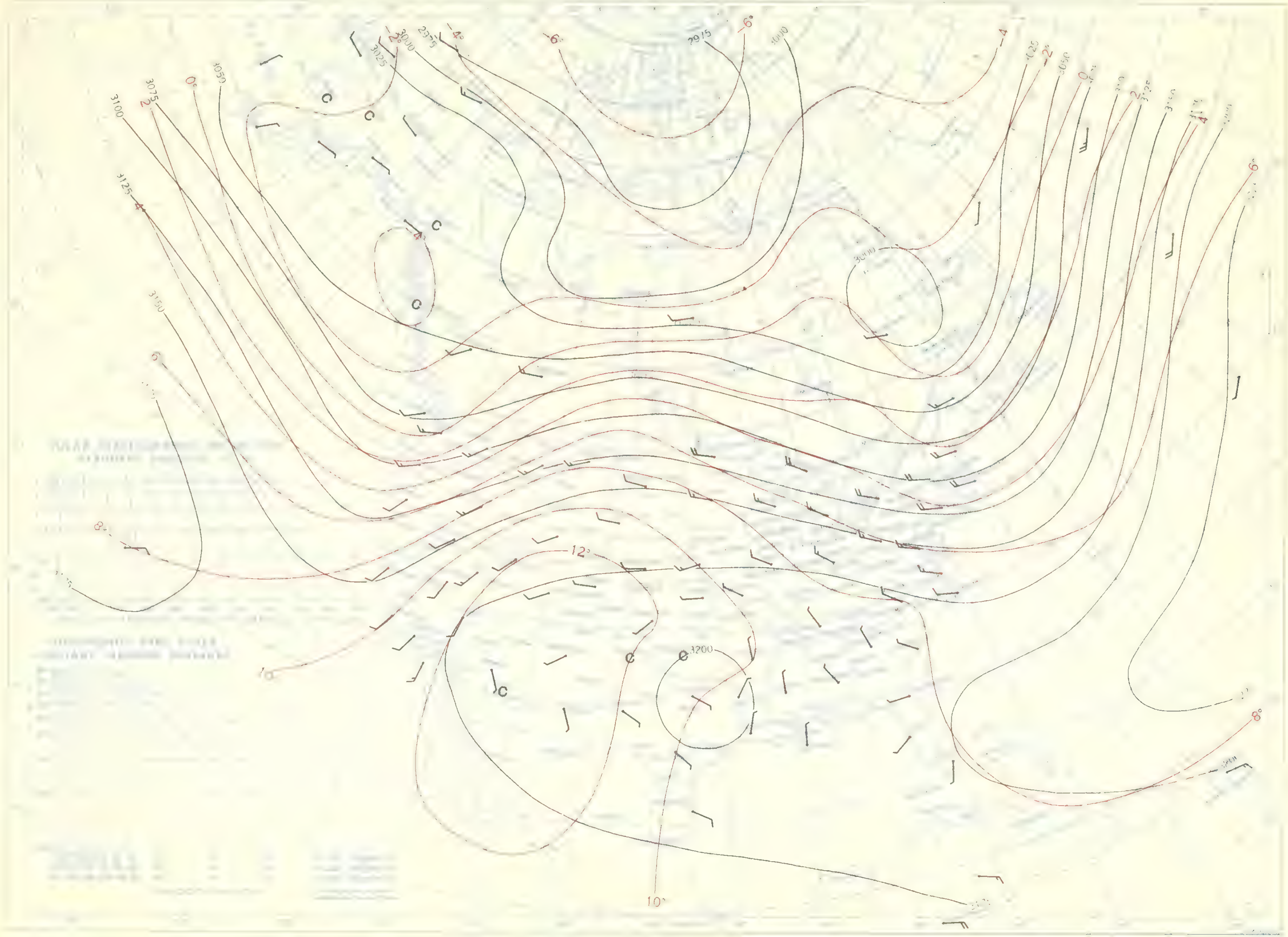
Average sea level pressures are obtained from the averages of the 7:00 a. m. and 7:00 p. m. E. S. T. readings. Windroses show percentage of time wind blew from 16 compass points or was calm during the month. Pressure normals are computed for stations having at least 10 years of record and for 10° intersections in a diamond grid based on readings from the Historical Weather Maps (1899-1939) for the 20 years of most complete data coverage prior to 1940.

Chart XII. 850-mb. Surface, 1200 GMT, July 1957. Average Height and Temperature, and Resultant Winds.



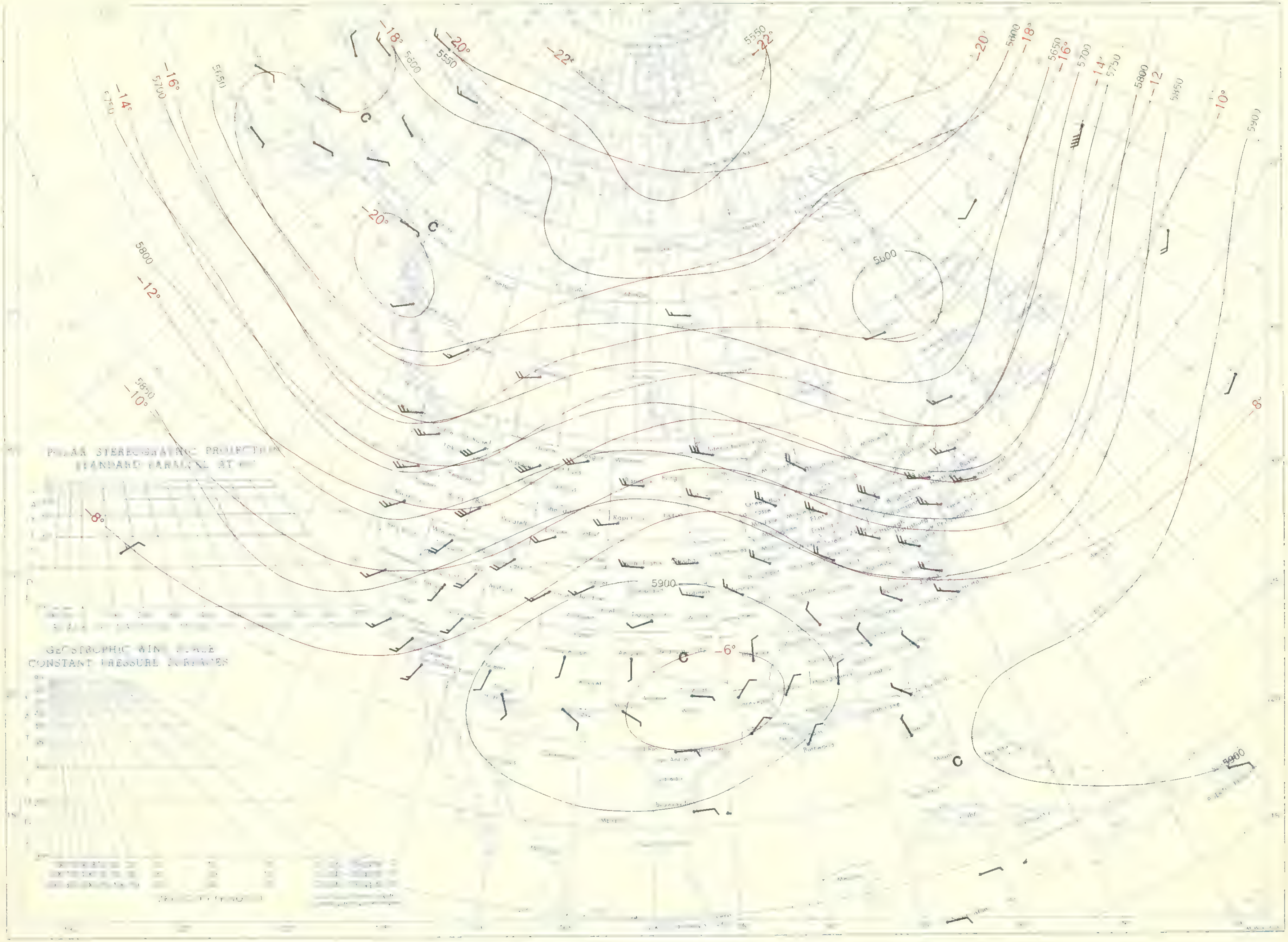
Height in geopotential meters (1 g.p.m. = 0.98 dynamic meters). Temperature in °C. Wind speed in knots; flag represents 50 knots, full feather 10 knots, and half feather 5 knots. All wind data are based on rawin observations.

Chart XIII. 700-mb. Surface, 1200 GMT, July 1957. Average Height and Temperature, and Resultant Winds.



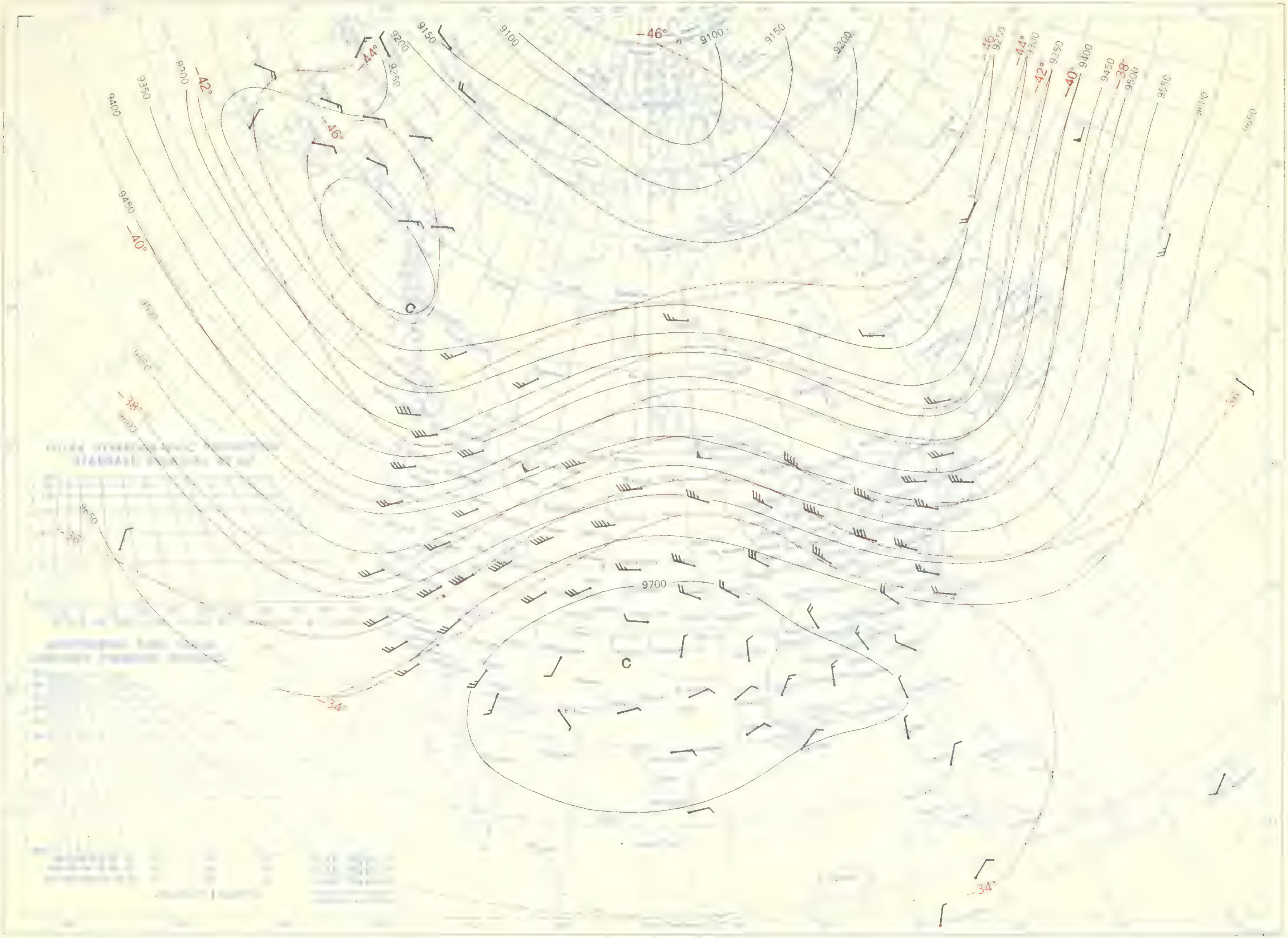
See Chart XII for explanation of map.

Chart XIV. 500-mb. Surface, 1200 GMT, July 1957. Average Height and Temperature, and Resultant Winds.



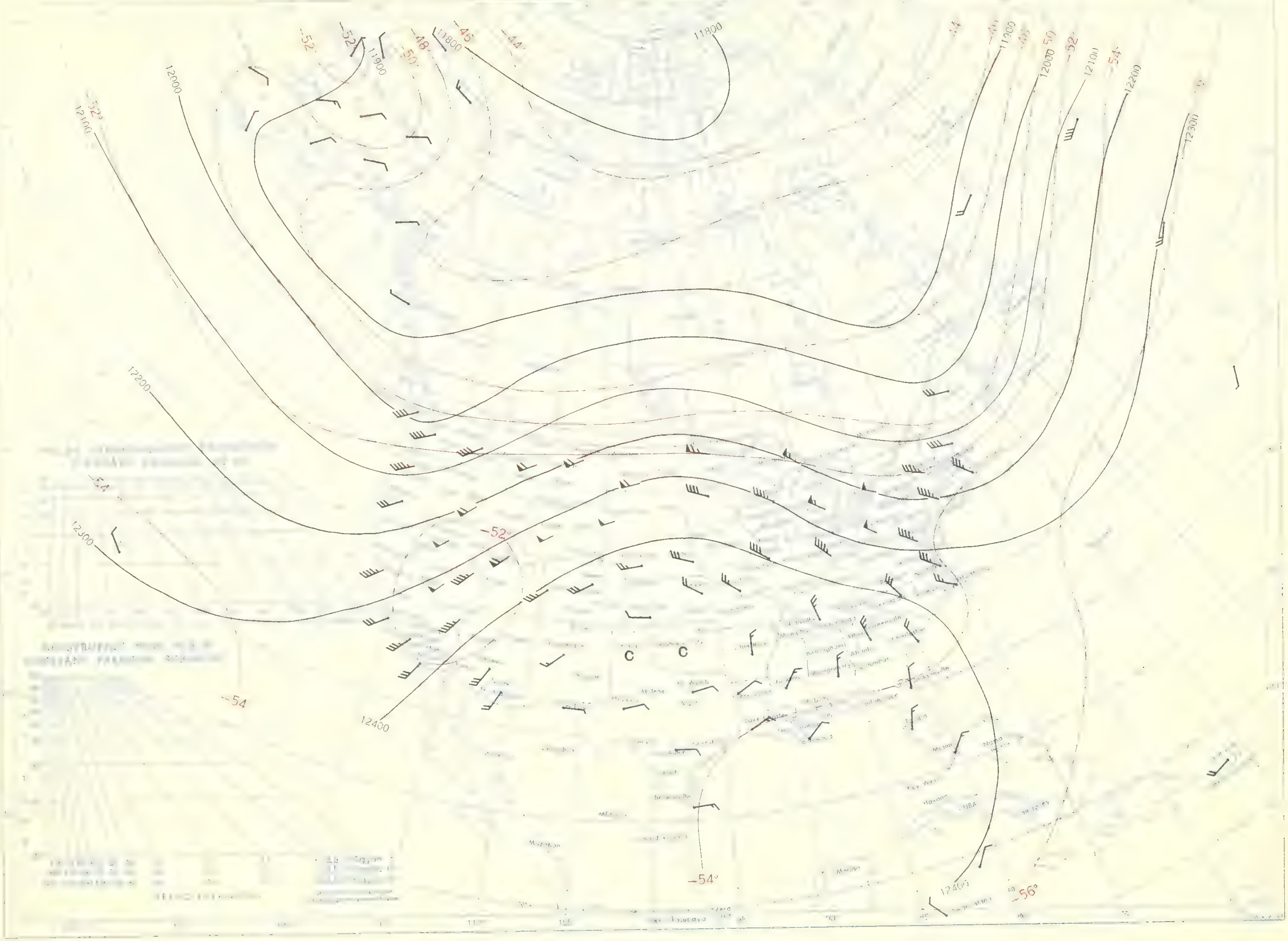
See Chart XII for explanation of map.

Chart XV. 300-mb. Surface, 1200 GMT, July 1957. Average Height and Temperature, and Resultant Winds.



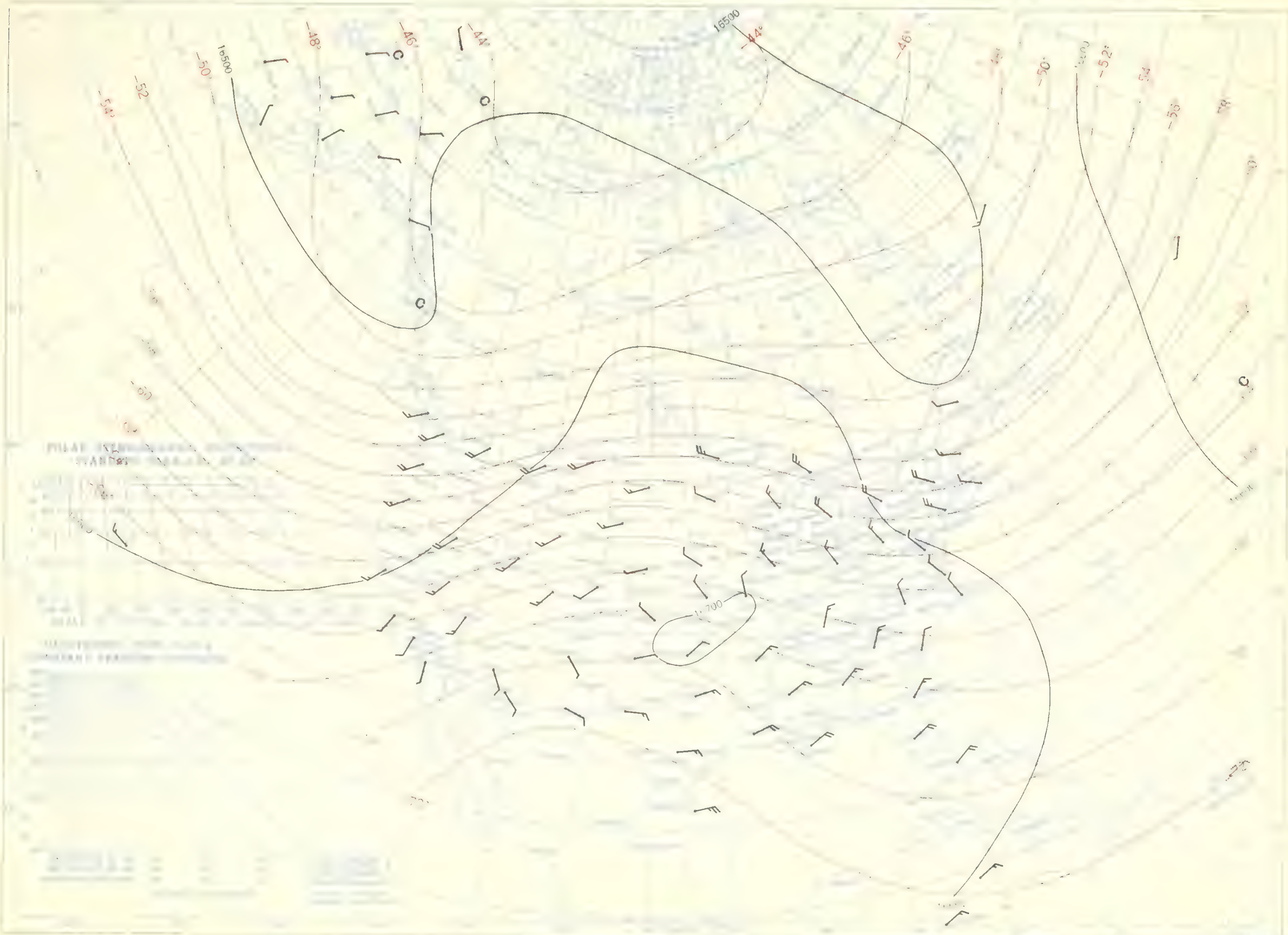
See Chart XII for explanation of map.

Chart XVI. 200-mb. Surface, 1200 GMT, July 1957. Average Height and Temperature, and Resultant Winds.



See Chart XII for explanation of map.

Chart XVII. 100-mb. Surface, 1200 GMT, July 1957. Average Height and Temperature, and Resultant Winds.



See Chart XII for explanation of map.

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AUGUST 1957
Volume 8 No. 8

ASHEVILLE: 1957

CONTENTS

SURFACE DATA

Page

General Summary of Weather Conditions---------------------- 371

Condensed Climatological Data - States--------------------- 372

Climatological Data - Stations----------------------------- 373

Monthly and Seasonal Heating Degree Days------------------- 377

Storm Data and Unusual Weather Phenomena------------------- 378

General Summary of River and Flood Conditions-------------- 398

Flood Stage Data--- 398

Tropical Storm BERTHA, August 8-11, 1957------------------- 399

UPPER AIR DATA

Rawinsonde Data-- 401

SOLAR RADIATION DATA

Solar Radiation Intensities-------------------------------- 407

Blue Hill Data--- 408

Net Radiation-- 408

Daily Totals and Average Daily Totals by Weeks------------- 409

CHARTS I-XVII

NOTE.--This publication contains all of the climatic data formerly printed in the MONTHLY WEATHER REVIEW.

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CLIMATOLOGICAL DATA

NATIONAL SUMMARY

Volume 8 No. 8

AUGUST 1957

GENERAL SUMMARY OF WEATHER CONDITIONS

Temperatures for August, although rather unseasonably cool in the Northeast and Great Basin of the Far West, were favorable for crops and agricultural activities. Unusually dry weather created a high fire hazard in large areas of the Far West, caused some crop decline in Missouri and the lower Great Plains, parts of Alabama and Georgia, and extended the northeast coastal drought over inland areas including the upper Ohio Valley and lower Appalachian region where crop prospects also declined. Beneficial rains fell along the northeast coast late in the month, particularly on the 25th and 26th, but they were too late to greatly benefit corn and other crops near maturity. Unusually heavy rainfall in the lower Rocky Mountain region where greater than usual summer thunderstorm activity occurred was very beneficial. Severe local storms caused some heavy crop damage in the North Central Interior, but for the country as a whole damaging storms were relatively few and no hurricanes entered the mainland.

TEMPERATURE.--In the Pacific Northwest and central Great Basin, temperatures remained below normal most of the month, and a high of 74° at Las Vegas, Nev., on the 21st was the lowest maximum ever recorded there in August. In these areas unseasonably cool weather in both July and August and about normal temperatures in June resulted in an abnormally cool summer.

In the Northeast, temperatures generally remained below normal after the first few days of the month, with freezing occurring at a few stations on the 6th and 7th and again near the end of the month. Lowest temperatures occurred at most stations from the Mississippi Basin eastward on the 6th, 7th, and 8th when a cool air mass moved southward to the Gulf. A low of 26° was recorded in the Cranmoor cranberry bogs of Wisconsin, and a low of 55° at Augusta, Ga., on the 8th set a record for August there for an 83-year period.

During the remainder of the month temperature fluctuations were about normal. For the week ending the 19th, temperatures of 100° were recorded as far north in the Great Plains as South Dakota on 1 or 2 days, and 110° in Kansas on the 13th was the highest temperature observed in that State during the entire summer. The last week of the month was an unusually hot one in the Ohio and middle Mississippi Valleys although extremes were not unusual. Extreme temperatures for the month ranged from 18° at Boca, Calif., on the 30th to 122° at Cow Creek, Calif., on the 17th.

PRECIPITATION.--Rainfall for August generally was less than 50 percent of normal in the Appalachian region, upper Ohio Valley and Northeast, Missouri and the lower Great Plains, and much of the Far West, and about normal to locally much above elsewhere.

In northeastern coastal districts, the dry weather of June and July continued well beyond the middle of August, further reducing crop prospects. Good rains fell later in the month, particularly on the 25th and 26th, and, although they furnished much-needed moisture for pastures and fall seeding, they were too late to greatly benefit many crops such as corn and soybeans. Rainfall for the month totaled from 2 to 6 inches in much of Virginia, and from 2 to over 4 inches along the immediate coast from southern Maryland to southern New England. In the upper Ohio Valley and most of the Appalachian region, monthly totals generally were less than an inch and in many sections less than 1/2 inch. The month was the driest August on record at a number of stations including Charleston, W. Va., 0.66 inch, and Burlington, Vt., 0.72 inch. The dry weather started later in the summer in these areas than along the coast, and crops suffered less.

In large areas of Oklahoma and Texas, rainfall was less than 50 percent of normal for both July and August, and at the end of August soil moisture was nearly depleted in Oklahoma. August rainfall was less than an inch in parts of Kansas and Missouri, and crop prospects there also declined in some areas.

In the remainder of the country, precipitation generally was adequate for most crops, with monthly totals generally ranging from 2 to 4 inches except that along the Gulf coast from southeastern Louisiana to Florida totals ranged from 6 to over 10 inches.

DESTRUCTIVE STORMS.--Destructive storms were most numerous in northern areas east of the Continental Divide, particularly in north-central areas, and several damaging storms also occurred in the Far Southwest where more than the usual number of thunderstorms occurred.

One of the worst outbreak of storms occurred during the first few days of the month as a mass of cold air overspread virtually the entire area east of the Rockies. On the 1st, hail, rain, and wind in west-central Minnesota were responsible for damage estimated at well over a million dollars. Severe thunderstorms caused several hundred thousand dollars damage in northern and central Illinois on the 2d and 3d and a like amount in New York and New England on the 3d and 4th. Hail alone damaged property to the extent of more than a million dollars in Cheyenne, Wyo., on the 2d.

CONDENSED CLIMATOLOGICAL SUMMARY

AUGUST 1957

Section	Temperature						Precipitation			
	Monthly extremes						Monthly extremes			
	Station	Highest	Date	Station	Lowest	Date	Station	Greatest	Station	Least
		°F			°F			In.		In.
Alabama	Bridgeport 2W	105	3	2 Stations	50	6+	Gulf Shores 2SSE	8.73	Fort Payne	0.16
Arizona	Yuma Citrus Sta	119	1	Fort Valley	29	31	Chiricahua NM	9.85	Gila Bend	.08
Arkansas	Siloam Springs	104	14	Fayetteville Exp Sta	47	7	Damascus	17.52	Huttig Dam	.05
California	Cow Creek	122	17	Boca	18	30	Mountain Pass	1.82	464 Stations	.00
Colorado	Holly	107	2	2 Stations	25	9+	Colorado NM	6.66	Haswell	.10
Connecticut	2 Stations	95	3+	Putnam	30	24	Cockaponset Ranger Sta	6.19	Hartford Brainard Fld	1.20
Delaware	Dover	99	4	Newark Univ Farm	47	24	Middletown 2S	5.17	Bridgeville 1NW	1.67
Florida	3 Stations	99	3+	3 Stations	58	25	Tarpon Springs	17.77	Woodruff Dam	1.08
Georgia	5 Stations	103	3+	Blairsville Exp Sta	43	27	Greenville 2W	10.19	Cartersville 3SW	.35
Idaho	Grand View	107	4	Sun Valley	24	2	Howe	3.33	3 Stations	.00
Illinois	3 Stations	100	15	Aledo 5NNE	44	[illegible]	Morrison	7.94	Hardin	.15
Indiana	Indianapolis Mon Cir	99	3+	2 Stations	42	6	La Porte	6.99	Leavenworth Dam 44	.08
Iowa	Bedford	103	15	do	41	5	Grundy Center 4NE	7.68	Albia Pasture Imp Fm	1.15
Kansas	2 Stations	110	13	Kirwin	47	24	Haddam	6.57	Kingman	.14
Kentucky	Louisville	100	30	Manchester 4SE	42	7	Brent Dam 36	7.06	Beaver Dam	.26
Louisiana	Logansport	101	14+	Converse	52	7	Slidell	10.07	3 Stations	.00
Maine	Sanford 2NNW	90	3	Squa Pan Dam	28	21	Eastport	4.60	West Buxton 2NNW	.72
Maryland	Laurel 3W	104	3	Oakland 1SE	36	6	Owings Ferry Landing	7.02	Cumberland Police Brks.	.73
Massachusetts	West Medway	98	9	West Cummington	32	28	Hyannis 3NE	6.89	Birch Hill Dam	.80
Michigan	Marquette WB City	96	2	Kenton U.S. Forest	26	5	Dowagiac	5.61	Saginaw CAA AP	.68
Minnesota	Canby	98	1	Cass Lake For Exp Sta	35	5	Milan	11.15	Island Lake Resv	1.00
Mississippi	Utica	102	28	2 Stations	52	24	Pearlington 2NNE	15.09	2 Stations	.00
Missouri	Sweet Springs	105	15	Hermitage	43	6	Kennett Radio KBOA	11.85	Elsberry	.13
Montana	Melstone	110	5	Wisdom	22	2	Hinsdale 23N	4.43	East Anaconda	.09
Nebraska	2 Stations	106	[illegible]	Harrison	41	18	Clay Center	8.48	Chadron CAA AP	.19
Nevada	Overton	113	3+	2 Stations	25	13	Boulder City	3.09	33 Stations	.00
New Hampshire	Keene	95	3	Fabyan	26	28	Blackwater Dam	3.43	Bath 2SW	.49
New Jersey	Flemington 1NE	101	3	Layton 3NW	34	24	Midland Park	3.79	Indian Mills 2W	.65
New Mexico	2 Stations	105	4+	2 Stations	32	20+	McCauley Ranch	10.88	Artesia	.47
New York	Cairo	98	3	5 Stations	30	6+	Riverhead Research	7.25	2 Stations	.02
North Carolina	3 Stations	102	3+	Transou	37	7	Sanford 4ESE	11.31	Asheville WB City	.98
North Dakota	2 Stations	104	1	2 Stations	34	24+	Sykeston	8.52	Fort Yates	.72
Ohio	3 Stations	99	14+	3 Stations	39	6+	Toledo Sewage	6.88	Miamisburg 2E	.06
Oklahoma	2 Stations	109	12+	Eufaula Dam	53	7	Heavener	9.20	4 Stations	T
Oregon	Richland	104	16	Fremont	20	1+	Tillamook	1.87	16 Stations	.00
Pennsylvania	2 Stations	99	3	2 Stations	32	18+	Wellsville	3.52	Bakerstown 3WNW	.03
Rhode Island	Greenville	95	3	Kingston	39	23+	Block Island WB AP	5.62	Greenville	1.33
South Carolina	2 Stations	104	2+	Union 7SW	46	7	Tilghman Forest Nursery	8.07	Ware Shoals	.38
South Dakota	Belle Fourche 2NE	107	10	Deerfield 5NW	28	23	Wilmot 1ENE	7.50	Dewey	.32
Tennessee	Fayetteville 1NE	103	4	Mountain City 2	39	7	Covington	7.42	Sugar Hill	.25
Texas	Possum Kingdom Dam	110	25	Albany	53	20	Long Lake	12.57	Numerous Stations	.00
Utah	St George PH	106	1	Cedar Breaks NM	25	31	Moon Lake	5.00	Corinne	.00
Vermont	2 Stations	91	1+	West Burke	30	28+	Canaan	3.00	St Albans Bay	.37
Virginia	Fredericksburg	101	4	2 Stations	37	6+	Back Bay Wildlife Rfg	11.49	Dale Enterprise	.23
Washington	2 Stations	99	17+	do	30	28+	Spruce	5.09	2 Stations	.00
West Virginia	5 Stations	99	3+	Canaan Valley	25	7	Albright	4.50	Franklin 2N	.18
Wisconsin	4 Stations	95	1+	Coddington 1E	29	5	Summit Lake Ranger S	8.31	Madeline Island	.80
Wyoming	Glenrock 5ESE	107	14	Lamar RS	24	14+	Colony	4.46	Clareton 16SW	T
Puerto Rico	2 Stations	97	2+	Garzas Dam	60	3+	Maricao	19.64	Beth Upper New Works	1.36
Hawaii	Puunene CAA AP	95	13	Mauna Loa Slope Obs.	32	28	Papaikou Mau	54.34	Waianae	.06

+ And also on a later date or dates.

Note: Dates in Table 1 apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for times of observations).

CLIMATOLOGICAL DATA

AUGUST 1957

State and station	Elevation (ground)	Pressure		Temperature											Average relative humidity	Precipitation							Wind					No. of days (sunrise to sunset)			Sky cover, tenths (sunrise to sunset)	Possible sunshine
												No. of days							No. of days		Snow, Sleet, Hail				Fastest mile							
		Ø Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F. or above	Min. 32° F. or below	Average dew point		Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max. depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy		
	Ft.	Mb	Mb.	°F	°F	°F.	°F.	°F.		°F.				°F.	%	In.	In.	In.			In.	In.	M p. h.		M. p. h.			0–3	4–7	8–10	0–10	%
ALABAMA																																
Birmingham	610	992.4	1017.3	92	69	80.3	1.2	99	15	59	24	20	0	65	66	4.19	-0.36	2.27	7	7	0.0	0	6.2	NE	40	SE	2	9	16	6	5.0	82
Mobile	211	1009.6	1017.0	90	71	80.5	-.3	94	16+	64	24	19	0	70	75	8.53	2.22	2.48	10	8	.0	0	9.3	NE	--	---	--	10	14	7	4.9	--
Montgomery	198	1008.7	1016.7	93	71	82.0	1.1	99	2+	60	24	26	0	67	66	2.14	-2.61	1.01	4	2	.0	0	6.0	E	30	W	4	9	17	5	4.8	77
ARIZONA																																
Flagstaff	6993	------	------	78	49	63.4	.0	86	1	35	31	0	0	--	--	1.65	-.95	.56	12	21	.0	0	---	---	--	---	--	4	15	12	6.3	--
Phoenix	1114	972.2	1010.7	99	77	88.0	-.3	106	1	63	31	31	0	63	47	.85	-.14	.32	5	8	.0	0	5.7	SE	*40	S	26	10	11	10	5.3	85
Prescott	5014	849.3	1013.2	85	60	72.5	-1.4	95	1	45	31	9	0	52	--	3.72	.02	1.40	17	18	.0	0	7.7	SSW	38	S	30	5	13	13	6.0	63
Tucson	2558	925.5	1011.3	96	72	84.2	.4	102	8	65	31	30	0	60	51	3.92	1.77	1.66	14	19	.0	0	6.8	SE	40	NW	3	5	15	11	5.8	69
Winslow	4880	853.4	1011.6	89	63	76.0	1.0	100	1	55	31	14	0	52	53	2.18	.56	1.38	14	11	.0	0	7.7	SE	*35	WSW	1	5	11	15	6.6	--
Yuma	199	1004.4	1009.4	105	80	92.4	-1.3	110	17	66	31	31	0	59	38	1.03	.53	.47	3	4	.0	0	8.6	SSE	43	SW	20	12	9	10	4.7	93
ARKANSAS																																
Fort Smith	458	999.7	1016.2	92	70	80.9	-1.2	100	2+	59	7	19	0	69	72	5.83	3.21	2.06	10	9	.0	0	7.3	ENE	30	W	14	14	8	9	4.7	77
Little Rock	257	1002.7	1017.0	90	71	80.2	-1.1	97	3	61	6	19	0	69	72	4.31	1.16	2.63	12	6	.0	0	7.9	ENE	38	NW	14	16	6	9	4.8	80
Texarkana	361	------	------	92	71	81.7	-1.0	97	26+	61	7	24	0	--	--	2.10	-.78	1.40	6	4	.0	0	7.1	NE	--	---	--	--	--	--	---	--
CALIFORNIA																																
Bakersfield	489	995.3	1012.9	95	65	79.8	-2.0	105	14	54	30	26	0	48	35	.00	-.01	.00	0	0	.0	0	5.7	WNW	*18	N	14+	23	5	3	2.1	--
Bishop	4108	873.0	1011.2	95	51	73.1	-.4	103	17	41	29	26	0	--	--	.00	-.14	.00	0	1	.0	0	---	---	--	---	--	23	3	5	2.6	--
Blue Canyon	5280	841.2	1013.5	74	54	64.0	-3.3	83	23	43	6+	0	0	--	--	T	-.05	T	0	0	.0	0	---	---	--	---	--	29	0	2	.9	--
Burbank	699	987.5	1013.8	89	63	75.9	2.3	96	1+	54	30	15	0	57	58	T	-.02	T	0	0	.0	0	4.7	S	*15	S	11+	24	4	3	2.5	--
Eureka (U)	43	1015.6	1018.0	63	54	58.3	1.3	66	3+	49	2	0	0	--	--	.02	-.09	.02	1	0	.0	0	5.8	---	22	NW	1	6	16	9	5.9	60
Fresno	331	1000.3	1012.2	94	59	76.4	-3.1	102	2	51	30	24	0	47	41	.00	.00	.00	0	0	.0	0	6.2	NW	20	NW	4	25	5	1	1.5	99
Los Angeles (U)	312	------	------	87	66	76.2	3.3	95	1	60	29+	13	0	59	63	T	-.02	T	0	0	.0	0	5.3	---	22	W	25	22	6	3	2.7	87
Los Angeles	99	1009.8	1013.8	81	65	72.7	4.5	86	17+	59	30	0	0	62	72	T	-.02	T	0	0	.0	0	7.1	WSW	*20	W	5+	17	10	4	3.5	--
Mt. Shasta (R)	3544	892.7	1014.9	81	45	62.9	-2.9	90	23	38	6+	1	0	--	--	T	-.13	T	0	1	.0	0	---	---	--	---	--	25	5	1	1.5	--
Oakland	3	1014.9	1015.4	73	56	64.6	1.7	88	12	53	12+	0	0	54	74	.00	-.02	.00	0	0	.0	0	8.9	W	*24	W	4	21	9	1	3.3	--
Red Bluff	341	1000.3	1012.8	93	61	77.0	-3.5	104	2	53	29	20	0	43	33	.00	-.05	.00	0	0	.0	0	7.6	SSE	23	SE	3+	28	2	1	.9	99
Sacramento	17	1011.9	1012.8	89	57	72.7	-.5	101	2	50	31	13	0	54	58	.00	.00	.00	0	0	.0	0	11.2	SSW	31	SW	4	29	1	1	.7	100
Sandberg (R)	4517	863.9	1012.5	83	61	71.8	-1.7	93	17	42	30	3	0	--	--	.00	-.10	.00	0	0	.0	0	11.6	---	*30	NNW	7	20	7	4	2.3	--
San Diego	19	1010.2	1013.3	80	67	73.3	3.0	87	26	61	7+	0	0	64	76	T	-.05	T	0	0	.0	0	6.4	SSW	17	SW	5	15	13	3	4.2	73
San Francisco(U)	52	------	------	65	54	59.5	.2	79	12	51	30+	0	0	--	--	T	-.01	T	0	0	.0	0	10.6	---	26	W	3+	--	--	--	---	80
San Francisco	8	1014.9	1015.5	72	53	62.7	2.1	85	12	48	18+	0	0	52	74	T	-.01	T	0	0	.0	0	9.8	W	35	W	9	21	7	3	2.7	--
Santa Maria	238	1006.4	1015.2	72	52	61.8	-.6	80	12	47	27	0	0	53	79	.01	-.02	.01	1	0	.0	0	6.3	WNW	*23	WNW	5+	21	8	2	2.9	--
COLORADO																																
Alamosa	7536	777.5	1018.9	78	48	62.9	1.1	84	2	42	29	0	0	--	--	.63	-.47	.14	12	13	.0	0	---	---	--	---	--	3	12	16	6.9	--
Colorado Springs	6173	814.8	1015.0	84	56	69.8	.1	91	1+	50	24	4	0	50	57	1.78	-.91	.58	10	16	.0	0	7.4	N	*24	NNW	15	6	17	8	5.7	--
Denver	5292	841.2	1014.2	86	59	72.6	1.3	95	1	53	18+	9	0	50	52	2.03	.60	.61	11	11	.0	0	10.6	SSW	34	NE	3	6	17	8	5.5	73
Grand Junction	4849	861.2	1014.5	85	61	72.9	-2.7	98	1+	52	31	11	0	49	49	3.48	2.28	.94	14	13	.0	0	9.5	ESE	56	W	8	12	10	9	5.2	70
Pueblo	4639	859.5	1014.8	89	60	74.4	1.1	96	2+	53	29	18	0	53	54	2.18	.40	1.30	9	10	.0	0	5.9	SE	42	N	9	6	16	9	6.1	80
CONNECTICUT																																
Bridgeport	7	1016.4	------	80	61	70.0	-1.7	95	3	51	24	1	0	--	--	2.92	-1.51	.90	9	3	.0	0	---	---	--	---	--	11	11	9	5.5	--
Hartford	169	1010.9	1016.8	80	55	67.5	-3.9	93	3	43	24+	2	0	56	68	1.27	-2.27	.46	9	2	.0	0	9.5	NW	28	W	12	6	16	9	5.8	59
Middletown (U)	133	1011.6	------	79	56	67.8	----	93	3	47	24+	2	0	--	--	2.62	----	1.28	10	3	.0	0	6.0	---	†28	SSW	3	--	--	--	---	--
New Haven	6	1016.1	1016.6	78	59	68.4	-1.4	90	3	48	24	1	0	--	--	2.95	-1.16	1.33	9	5	.0	0	6.2	---	20	E	21	9	13	9	5.7	66
DELAWARE																																
Wilmington	78	1013.5	1016.9	84	62	73.2	-.6	97	3	51	6	7	0	58	64	2.61	-2.67	2.36	5	3	.0	0	9.4	N	--	---	--	9	12	10	5.6	--
DIST. OF COLUMBIA																																
Washington (U)	72	------	------	85	66	75.6	-.2	99	3	57	24	10	0	--	--	2.09	-2.40	1.64	6	3	.0	0	5.7	---	21	N	4	--	--	--	---	--
Wash. Nat'l. AP	14	1012.6	1017.2	85	66	75.7	.3	98	3	58	24	9	0	60	62	2.44	-2.31	1.71	5	3	.0	0	9.4	NW	28	NE	10	12	9	10	5.2	63
FLORIDA																																
Apalachicola (U)	13	1014.9	------	87	75	81.2	-.1	92	13+	69	24	5	0	--	--	9.43	1.95	3.45	16	8	.0	0	7.2	---	29	NE	29	9	13	9	5.4	66
Daytona Beach	31	1015.0	1016.8	88	73	80.5	-.4	95	13+	65	25	11	0	73	85	4.01	-1.81	.94	14	11	.0	0	9.0	SSW	*35	NE	28	5	9	17	7.0	--
Fort Myers	15	1015.5	------	91	73	81.6	-.9	95	16	65	24	24	0	--	--	9.39	1.58	4.19	19	21	.0	0	6.7	---	*39	WSW	6	3	10	18	7.1	--
Jacksonville	24	1015.0	1016.4	91	74	82.4	.6	99	3+	67	24	18	0	72	78	7.41	.98	1.41	13	12	.0	0	9.4	SW	35	NE	17	4	12	15	6.9	58
Key West (U)	5	1014.7‡	------	93	79	85.7	1.8	95	7+	72	9	30	0	--	--	4.12	-.55	.83	18	‡15	.0	0	5.9	---	21	SE	8+	‡1	‡20	‡10	6.4	64
Lakeland (U)	214	------	------	89	73	80.8	-.9	95	12+	63	23+	17	0	--	--	10.28	3.15	1.78	20	20	.0	0	6.0	---	--	---	--	5	10	16	6.8	46
Miami (U)	8	------	------	88	76	81.7	-.4	92	3	69	3+	5	0	--	--	10.09	5.03	2.58	24	19	.0	0	9.0	---	62	SW	3	3	17	11	6.0	65
Miami	7	1014.9	1016.2	89	74	81.7	-1.2	93	20	71	2+	12	0	75	82	16.58	9.97	3.16	22	19	.0	0	6.9	E	29	SW	2	1	16	14	6.9	--
Miami Beach	5	------	------	88	78	83.0	.0	92	11	71	27	9	0	--	--	9.45	5.06	3.42	14	--	.0	0	---	---	--	---	--	4	16	11	---	--
Orlando	106	1011.9	1016.4	90	73	81.3	-1.2	96	15	64	24	18	0	73	82	9.45	2.58	3.69	16	11	.0	0	7.5	SW	*50	NW	24	4	14	13	6.5	--
Pensacola (U)	13	1014.1	------	89	75	82.1	.9	95	17	70	17+	17	0	--	--	7.33	-.10	2.64	8	5	.0	0	‡8.6	---	33	SE	17	--	--	--	---	71
Tallahassee	64	1013.7	1016.4	90	71	80.4	-.5	97	17	63	25	14	0	71	79	6.72	-.20	1.60	12	17	.0	0	5.4	NE	--	---	--	2	17	12	6.6	--
Tampa	19	1015.0	1016.7	88	74	80.9	-1.1	92	14+	67	24+	15	0	72	80	11.74	3.68	3.83	18	16	.0	0	8.1	ENE	*25	WSW	4	5	11	15	6.8	52
West Palm Beach	15	1015.1	1016.2	91	74	82.7	.5	94	13+	65	24	26	0	73	79	9.02	1.62	2.04	16	18	.0	0	8.5	E	*35	WSW	18	1	14	16	7.3	--
GEORGIA																																
Athens	798	988.3	1017.2	91	66	78.3	-1.4	99	3+	59	8+	18	0	65	68	1.60	-2.38	.94	8	6	.0	0	7.9	NE	*25	ENE	6	11	13	7	4.5	--
Atlanta	975	976.5	1017.3	90	69	79.5	.9	99	2+	62	8+	15	0	64	64	3.52	-.29	1.93	6	3	.0	0	8.5	NE	26	NW	4+	10	15	6	4.7	78
Augusta	143	1009.7	1016.3	92	67	79.1	-.7	102	12	55	8	21	0	67	72	2.54	-1.56	1.39	7	8	.0	0	5.7	NE	*22	E	12	11	12	8	5.0	--
Columbus	385	1002.8	------	92	69	80.5	.3	98	2+	60	24+	21	0	--	--	2.61	-2.32	.77	12	8	.0	0	---	---	--	---	--	10	13	8	5.0	--
Macon	356	1003.1	1016.5	93	69	80.9	-.8	100	2+	58	24	23	0	66	67	1.91	-2.73	1.00	8	9	.0	0	8.5	NNE	27	SW	13	13	13	5	4.7	78
Rome	637	994.3	------	93	64	78.3	-.5	101	3	54	24	22	0	--	--	1.32	-2.57	.41	7	5	.0	0	---	---	--	---	--	13	12	6	4.5	--
Savannah	48	1013.6	1016.1	90	70	80.0	-.4	98	13	64	25	17	0	69	75	5.82	-.43	2.89	7	7	.0	0	8.5	NE	44	N	2	9	14	8	5.7	77
Thomasville (U)	283	------	------	91	71	81.1	.5	99	2+	62	24	18	0	--	--	4.11	-1.80	1.90	11	12	.0	0	---	---	--	---	--	--	--	--	---	--
IDAHO																																
Boise	2842	917.7	1012.0	87	55	70.7	-1.8	98	3	46	2	12	0	42	38	T	-.21	T	0	0	.0	0	6.9	NW	30	NW	5	21	6	4	2.5	95
Idaho Falls 46W (R)	4933	849.3	1013.9	86	47	66.6	-.3	93	9+	39	13+	13	0	--	--	.11	-.53	.06	5	6	.0	0	8.4	---	a29	SW	1	--	--	--	---	--
Idaho Falls 42NW (R)	4790	------	------	87	45	66.0	.7	95	9	37	14	16	0	--	--	1.03	.23	.64	5	--	---	--	9.3	---	a34	SSW	6	--	--	--	---	--
Lewiston	1413	962.8	1013.5	85	55	69.7	-3.4	94	16+	47	25	7	0	--	--	.40	.02	.30	2	2	.0	0	---	---	--	---	--	17	10	4	3.4	--
Pocatello	4444	862.5	1012.1	88	55	71.2	1.1	96	9	46	7	15	0	41	38	.60	-.12	.28	5	11	.0	0	10.5	SW	38	W	25	12	17	2	3.7	83
ILLINOIS																																
Cairo (U)	314	1004.4	------	88	70	78.9	-.6	96	3	58	6	15	0	--	--	2.62	-.59	2.19	6	4	.0	0	5.8	S	23	NW	3	11	14	6	4.7	78
Chicago	610	995.6	1018.2	82	65	73.4	.7	94	31	54	6	6	0	62	71	5.36	2.17	2.25	12	5	.0	0	6.3	NE	28	W	14	12	8	11	5.3	69
Moline	589	995.6	1017.8	84	63	73.2	.2	93	2+	50	6	9	0	63	74	3.17	-.40	1.47	7	5	.0	0	5.6	ENE	33	S	22	12	8	11	5.1	63
Peoria	654	995.9	1017.9	86	64	75.2	1.5	96	15	54	5+	12	0	63	70	1.57	-1.42	1.04	7	8	.0	0	8.6	S	23	SW	23	12	7	12	5.3	69
Springfield	589	994.9	1018.0	86	66	75.9	1.9	95	15	54	6	13	0	64	70	3.07	.04	1.18	8	9	.0	0	7.1	SSW	26	W	11	15	10	6	4.4	83
INDIANA																																
Evansville	383	1002.7	1018.2	88	64	75.9	-.4	95	28+	53	7	14	0	64	71	2.12	-.92	.89	8	4	.0	0	5.7	SW	34	E	12	13	15	3	3.9	78
Fort Wayne	801	987.5	1018.4	82	60	71.1	-.3	91	2+	48	6	2	0	60	72	5.59	2.79	4.05	7	3	.0	0	7.7	N	47	N	15	11	14	6	4.8	79
Indianapolis	793	989.2	1019.0	84	63	73.4	-.6	92	3	53	6	4	0	63	73	3.89	.37	1.01	8	8	.0	0	8.2	SW	32	N	15	10	12	9	5.1	89
South Bend	768	990.5	1018.5	82	59	70.6	-.8	92	2	48	5	2	0	61	75	5.72	2.47	2.48	11	5	.0	0	8.0	N	*29	NNW	3	9	13	9	5.5	--

.See footnotes at end of table.

CLIMATOLOGICAL DATA

State and station		Pressure		Temperature												Precipitation							Wind					No of days (sunrise to sunset)				
												No. of days							No of days		Snow, Sleet, Hail				Fastest mile							
	Elevation (ground)	Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F or above	Min 32° F or below	Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max. depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy	Sky cover, tenths (sunrise to sunset)	Possible sunshine
	Ft	Mb	Mb	°F	°F	°F	°F	°F		°F				°F.	%	In.	In.	In			In.	In.	M p h		M. p h			0–3	4–7	8–10	0–10	%
IOWA																																
Burlington	694	992.9	1018.6	85	65	75.0	0.6	99	15	53	6	10	0	64	73	1.92	-1.39	0.70	8	8	0.0	0	7.8	S	23	E	27	14	10	7	4.5	79
Des Moines	948	986.8	1017.8	85	64	74.5	.7	99	1	51	5	10	0	63	72	2.93	-.83	.95	9	8	.0	0	9.6	S	45	W	13	9	9	13	5.6	64
Dubuque	1065	992.9	1018.5	80	60	69.5	-1.2	91	2	50	6	1	0	61	72	6.01	2.41	3.06	10	7	.0	0	---	---	--	---	--	9	12	10	5.9	--
Sioux City	1094	975.6	1016.6	84	64	74.1	.5	98	1	51	5	9	0	62	69	2.10	-.62	.70	12	9	.0	0	11.8	SSE	34	S	25	14	7	10	4.9	72
Waterloo	870	------	------	82	61	71.5	-.2	91	2	48	5+	2	0	--	--	4.94	1.28	1.76	9	6	.0	0	9.2	---	--	---	--	--	--	--	---	--
KANSAS																																
Concordia (U)	1375	966.5	------	92	69	80.3	1.8	103	13	58	24	21	0	--	57	1.33	-1.87	.87	8	7	.0	0	7.6	S	26	N	15	15	12	4	3.8	84
Dodge City	2594	928.5	1014.2	91	67	79.0	.4	100	13	57	24	21	0	59	54	1.87	-.81	1.30	6	6	.0	0	14.6	S	31	SW	28	11	14	6	4.5	84
Goodland	3645	889.9	1014.2	90	59	74.5	.6	99	2+	50	24	19	0	58	61	1.81	-.74	.59	8	13	.0	0	10.0	SSE	*29	N	22	15	11	5	4.4	--
Topeka	877	981.4	1016.5	91	66	78.4	.8	101	15	56	5+	16	0	64	64	1.48	-3.18	.98	7	7	.0	0	10.4	S	47	NE	13	13	9	9	4.5	73
Wichita	1321	967.5	1015.0	92	68	80.2	.3	103	13	59	19	22	0	62	58	.59	-2.37	.28	5	5	.0	0	11.4	SSE	31	S	27	15	5	11	4.9	81
KENTUCKY																																
Lexington	979	982.8	1018.4	88	63	75.4	.4	96	30+	52	6	12	0	60	65	3.02	-.35	2.30	7	4	.0	0	7.9	NE	--	---	--	17	9	5	3.8	--
Louisville	474	998.6	1017.7	87	64	75.5	-.6	96	30	55	7	12	0	62	68	1.01	-2.05	.48	6	5	.0	0	6.4	N	28	NE	11+	13	14	4	4.2	81
LOUISIANA																																
Baton Rouge	64	1013.9	1016.8	92	72	81.8	1.1	97	28	64	24	27	0	71	75	3.60	-2.27	1.57	7	7	.0	0	7.6	W	--	---	--	9	11	11	5.4	--
Lake Charles	12	1014.6	1015.9	93	75	83.9	1.6	96	16+	69	24	28	0	72	73	2.35	-2.31	1.55	5	8	.0	0	6.5	SW	*29	E	9	8	15	8	5.4	--
New Orleans (U)	9	1014.2	------	89	77	83.1	-.3	95	27	73	6+	19	0	--	--	9.03	2.62	4.66	12	8	.0	0	6.0	---	25	NW	18	9	13	9	5.3	61
New Orleans	3	1014.2	1016.3	89	75	81.8	-.4	94	27	69	24	17	0	72	77	7.57	1.93	2.48	16	10	.0	0	5.8	NE	*35	N	18	12	10	9	5.2	--
Shreveport	252	1007.1	1016.2	93	72	82.3	-1.9	98	26	62	7	24	0	68	66	1.75	-.62	.90	6	5	.0	0	7.4	S	--	---	--	15	8	8	4.6	80
MAINE																																
Caribou	624	991.4	1014.6	70	47	58.9	-2.9	82	9	37	29	0	0	51	77	.93	-2.60	.43	9	4	.0	0	8.9	W	*34	W	27	3	15	13	6.5	--
Portland	61	1012.1	1016.3	76	50	63.3	-3.1	89	3	39	23+	0	0	54	72	.80	-1.79	.38	8	1	.0	0	9.3	S	28	SW	14	9	14	8	5.4	71
MARYLAND																																
Baltimore (U)	14	------	------	86	69	77.4	1.0	100	3	60	24	10	0	--	--	1.09	-3.29	.80	5	--	---	--	---	---	--	---	--	--	--	--	---	--
Baltimore	146	1012.6	1017.5	84	63	73.1	-1.3	98	3	51	24	7	0	60	66	2.44	-1.94	1.98	5	3	.0	0	10.7	WNW	31	N	4	8	14	9	5.7	59
Frederick	294	------	------	85	59	72.1	-2.5	97	3	49	24	10	0	--	--	1.99	-2.04	1.20	5	--	.0	0	---	---	--	---	--	--	--	--	---	--
MASSACHUSETTS																																
Blue Hill Obs.(R)	629	993.5	1016.6	78	58	67.1	-.4	94	3	47	13+	1	0	--	68	1.63	-2.45	.96	9	3	.0	0	11.7	NNW	29	SSW	14	5	17	9	6.0	60
Boston	15	1011.3	1015.8	78	61	69.3	-2.2	96	3	52	28	1	0	56	66	1.71	-1.52	.93	7	2	.0	0	12.1	SW	*31	NW	12	9	15	7	5.6	70
Nantucket	43	1016.0	1016.6	73	60	66.6	-.5	82	1+	50	24+	0	0	59	78	4.19	.76	1.91	11	6	.0	0	11.1	SW	34	S	15	10	9	12	5.7	70
Pittsfield	1153	973.5	------	75	50	62.5	-3.3	87	3	40	13+	0	0	--	--	3.02	-1.29	1.70	8	2	.0	0	---	---	--	---	--	--	--	--	---	--
Worcester	986	980.8	------	76	55	65.4	-2.7	89	3	43	28	0	0	--	--	2.49	-.92	1.00	10	1	.0	0	10.1	---	*26	WSW	14	8	16	7	5.6	--
MICHIGAN																																
Alpena (U)	587	996.3	------	73	56	64.4	-1.4	88	2	45	22	0	0	--	73	1.43	-1.16	.69	9	1	.0	0	8.4	---	30	SE	13	14	7	10	5.3	62
Detroit	619	992.2	1018.7	80	61	70.2	-1.1	91	3	51	13	3	0	57	67	1.99	-.63	.60	8	2	.0	0	8.7	N	26	WSW	3	9	14	8	5.5	63
Detroit (Willow Run)	722	989.8	1018.0	81	60	70.4	-.7	92	3	49	5	4	0	57	67	1.74	-.97	.58	8	2	.0	0	8.9	SW	*27	ESE	21	6	16	9	5.5	--
East Lansing (U)	856	------	------	81	58	69.8	.8	91	2	48	5	3	0	--	--	1.29	-1.39	.70	5	1	.0	0	3.4	N	13	N	4+	--	--	--	---	70
Escanaba (U)	594	995.6	------	73	56	64.3	-.6	83	2	45	5	0	0	--	78	3.23	.34	1.80	11	3	.0	0	8.9	---	29	N	4	8	14	9	5.5	64
Flint	761	990.9	1018.7	78	54	66.0	-2.8	88	2+	42	13	0	0	57	74	1.19	-1.58	.71	6	0	.0	0	5.6	SW	*17	NNE	4	10	12	9	5.6	--
Grand Rapids	681	993.6	1018.6	80	57	68.8	-.9	89	1	47	5+	0	0	57	70	1.62	-.96	.59	9	2	.0	0	8.2	E	25	N	15+	10	10	11	5.7	72
Marquette (U)	677	991.2	------	72	57	64.3	-1.0	96	2	49	27	1	0	--	69	2.50	-.21	1.02	8	3	.0	0	6.8	---	29	SW	7	8	10	13	6.2	61
Muskegon	627	995.6	1018.3	79	57	67.9	-.5	86	1+	48	■	0	0	58	69	2.60	-.06	1.28	7	3	.0	0	---	---	--	---	--	12	10	9	4.9	--
Sault Ste.Marie	721	995.9	1018.8	72	51	61.8	-1.1	88	2	43	27	0	0	53	76	1.81	-.81	.98	8	1	.0	0	8.2	WNW	25	NW	11	10	12	9	5.2	66
MINNESOTA																																
Duluth	1409	977.3	1018.8	75	54	64.2	-.6	90	1	41	5	1	0	54	74	1.72	-1.71	1.12	6	3	.0	0	11.5	E	31	NE	11+	5	18	8	6.0	68
Intern'l. Falls	1179	977.0	1018.3	74	50	61.8	-1.0	87	1+	41	24	0	0	54	75	1.99	-1.33	.60	10	6	.0	0	9.6	W	*32	W	22	5	10	16	6.9	--
Minneapolis	830	985.4	1018.6	80	62	70.9	-.6	93	1	54	5+	4	0	60	71	5.75	2.96	2.03	11	6	.0	0	10.0	SE	39	NW	1	11	11	9	5.5	67
Rochester	1017	981.4	1018.3	78	59	68.8	-.6	91	2+	47	5	2	0	59	71	4.65	1.17	1.24	11	9	.0	0	8.1	SSE	--	---	--	12	9	10	5.5	--
St. Cloud	1034	980.0	1017.8	77	56	66.9	-1.2	88	31	44	5	0	0	59	76	6.35	3.47	1.75	11	7	.0	0	6.8	SE	*52	WNW	13	10	11	10	5.8	--
MISSISSIPPI																																
Jackson	305	1005.2	1017.1	91	69	80.2	-1.2	96	28	58	24	24	0	68	70	.93	-2.35	.68	5	6	.0	0	5.9	SE	25	SE	30	12	12	7	4.6	76
Meridian	294	1003.3	------	93	69	80.8	.3	98	3	57	24	27	0	--	--	1.98	-1.74	.95	6	5	.0	0	---	---	--	---	--	13	14	4	4.3	--
Vicksburg (U)	234	1007.7	------	90	72	80.7	-.8	96	28	61	6	20	0	--	--	1.79	-.92	.76	6	4	.0	0	7.2	---	25	SW	3	10	14	7	5.1	59
MISSOURI																																
Columbia	778	989.2	1017.5	90	66	77.7	1.5	101	15	53	6	18	0	64	68	.85	-3.04	.44	4	3	.0	0	7.2	S	33	N	3	12	13	6	4.7	75
Kansas City	741	982.7	1017.0	91	71	81.2	2.2	102	15	61	5+	17	0	62	55	.41	-3.48	.18	8	1	.0	0	10.2	S	49	N	20	14	9	8	4.6	77
St. Joseph	809	981.7	------	90	67	78.4	.3	103	15	59	25	17	0	--	--	4.21	.48	3.05	8	8	.0	0	10.2	S	*46	NNE	20	17	7	7	3.8	--
St. Louis (U)	465	------	------	88	71	79.7	1.1	96	15	62	6	16	0	--	--	2.48	-1.29	1.37	3	4	.0	0	8.1	SW	25	W	3	8	17	6	5.1	70
St. Louis	552	997.3	1017.7	89	69	79.3	1.6	98	15	58	6+	16	0	65	65	.61	-2.94	.36	2	1	.0	0	5.3	SW	--	---	--	10	15	6	5.2	--
Springfield	1265	970.2	1017.2	88	65	76.9	.4	97	2	54	7	16	0	63	67	1.33	-2.68	.76	5	5	.0	0	10.0	S	27	NE	16	12	10	9	5.3	80
MONTANA																																
Billings	3568	892.3	1013.8	84	57	70.4	-.6	101	5	50	23+	9	0	51	54	1.47	.59	.39	10	11	.0	0	11.3	NE	43	NW	24	17	7	7	3.8	81
Butte	5530	831.0	1015.4	79	43	60.8	.8	91	4	34	2+	1	0	38	--	.55	-.57	.22	7	8	.0	0	8.6	SSE	*35	SSE	4	12	14	5	4.5	--
Glasgow	2277	941.4	1014.9	82	57	69.2	.3	100	5	42	26	6	0	--	--	2.01	.66	1.22	10	13	.0	0	---	---	*63	NW	19	13	10	8	4.5	--
Great Falls	3664	889.6	1014.9	79	52	65.6	-1.5	95	4	38	26	3	0	41	46	1.11	-.09	.40	12	8	.0	0	10.7	NE	47	W	6	13	12	6	4.5	86
Havre (U)	2488	927.5	1015.6	81	55	67.9	-.1	96	5	45	27	7	0	--	--	1.29	.23	.59	9	12	.0	0	8.2	---	42	NW	1	10	11	10	5.2	64
Helena	3893	874.4	1013.9	81	51	66.2	.4	97	4	43	7+	4	0	42	47	1.23	.30	.58	8	10	.0	0	8.4	N	38	W	4	15	12	4	4.5	72
Kalispell	2965	------	------	78	48	63.0	-1.0	89	4+	34	25	0	0	--	--	.45	-.66	.33	5	6	.0	0	---	---	--	---	--	13	15	3	4.2	--
Miles City	2629	931.3	1014.4	86	58	72.3	.0	103	5	48	26	11	0	53	--	1.24	.14	.36	9	11	.0	0	11.1	SE	*46	WSW	12	11	11	9	4.6	--
Missoula	3200	902.1	1015.1	82	48	65.1	-1.0	94	4	39	25+	3	0	41	44	.92	.14	.46	5	4	.0	0	7.7	WNW	30	NE	9+	17	8	6	4.0	77
NEBRASKA																																
Grand Island	1841	950.6	1015.5	87	65	75.9	-.3	100	2	51	24	13	0	62	66	4.08	1.69	1.63	11	11	.0	0	12.6	SSE	--	---	--	16	10	5	4.1	--
Lincoln (U)	1166	------	------	88	67	77.5	.6	100	12+	56	24	13	0	--	--	4.35	1.27	1.87	14	13	.0	0	9.8	NE	56	NE	13	14	9	8	4.4	74
Norfolk	1544	961.1	1015.9	86	63	74.5	.6	99	1	49	24	11	0	62	66	2.41	-.46	.97	7	10	.0	0	---	---	--	---	--	11	10	10	5.2	--
North Platte	2779	917.4	1014.3	86	62	74.2	.5	96	1+	51	24	11	0	62	69	5.36	3.25	2.93	10	14	.0	0	10.4	ESE	48	NE	15	10	15	6	5.2	68
Omaha	978	977.3	1016.8	87	66	76.3	.6	98	1	55	24	12	0	64	70	7.25	4.13	2.41	13	14	.0	0	10.2	SSE	43	N	13	12	8	11	4.9	67
Omaha,N.Omaha AP	1323	969.2	------	84	64	73.9	.1	97	12	52	5	5	0	--	--	5.03	1.91	1.49	12	9	.0	0	---	---	--	---	--	10	9	12	5.3	--
Scottsbluff	3950	880.8	1013.8	86	59	72.0	-.4	95	10+	49	28	■	0	58	66	1.17	-.05	.85	6	11	.0	0	9.9	ESE	*32	NNW	28	8	12	11	5.7	--
Valentine (U)	2587	925.2	------	86	61	73.2	1.0	101	12	51	24	9	0	--	--	2.93	.93	.92	12	13	.0	0	10.8	---	37	SW	31	11	13	7	4.8	70
NEVADA																																
Elko	5075	844.9	1012.8	88	44	66.1	-1.5	96	18	34	13	17	0	26	25	.23	-.06	.20	2	3	.0	0	5.9	WSW	*21	S	20	19	11	1	2.8	--
Ely	6257	810.7	1013.5	85	48	66.5	.2	93	2+	32	31	6	1	29	29	.71	-.18	.69	2	4	.0	0	12.3	S	38	NW	19+	16	10	5	3.9	77
Las Vegas	2162	945.5	1009.4	99	74	86.3	-2.1	109	1+	57	31	26	0	40	25	2.59	2.06	2.59	2	2	.0	0	12.1	SW	*37	SSW	5	19	9	3	3.3	82
Reno	4397	862.5	1014.4	88	42	65.0	-2.4	96	18	33	30	16	0	32	35	.00	-.23	.00	0	0	.0	0	6.9	WNW	33	WSW	5	27	1	3	1.5	98
Winnemucca	4299	866.2	1011.5	88	43	65.7	-4.0	97	3+	34	31	17	0	23	20	T	-.18	T	0	1	.0	0	7.3	W	32	W	26	24	3	4	2.3	86

See footnotes at end of table.

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure		Temperature										Average dew point	Average relative humidity	Precipitation							Wind					No. of days (sunrise to sunset)			Sky cover, tenths (sunrise to sunset)	Possible sunshine
												No. of days							No. of days		Snow, Sleet, Hail				Fastest mile							
		Ø Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F. or above	Min. 32° F. or below			Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy		
	Ft	Mb	Mb	°F	°F	°F	°F	°F		°F				°F	%	In.	In	In			In	In	M p. h.		M p h			0–3	4–7	8–10	0–10	%
NEW HAMPSHIRE																																
Concord	339	1005.9	1016.6	78	50	64.1	-2.4	91	3	40	23	1	0	54	71	1.37	-1.73	0.61	7	2	0.0	0	6.0	NNW	22	NW	11+	6	16	7	5.3	64
Mt. Washington	6262	809.1	------	50	38	43.9	-3.8	61	3+	25	28	0	5	--	90	2.82	-3.33	1.64	8	0	T	0	23.0	W	†78	W	4	2	11	18	7.7	48
NEW JERSEY																																
Atlantic City(U)	8	1014.5	------	76	65	70.6	-2.5	86	12	56	6	0	0	--	--	3.38	-1.34	.95	9	3	.0	0	13.2	---	59	W	4	9	11	11	5.6	69
Newark	11	1015.4	1016.8	83	63	73.0	-.1	99	3	56	24+	4	0	58	62	2.64	-1.55	1.52	8	5	.0	0	9.1	NNE	*29	NNW	12	8	13	10	5.9	--
Trenton (U)	56	1009.1	------	82	62	72.1	-1.1	95	3	53	24	3	0	--	--	1.10	-3.49	1.01	6	4	.0	0	7.5	---	25	N	12	7	14	10	5.9	58
NEW MEXICO																																
Albuquerque	5310	851.7	1013.6	88	64	76.0	-.9	95	9	59	9+	11	0	54	52	1.32	-.06	.38	12	13	0	0	6.7	S	42	SE	3	9	9	13	5.8	67
Clayton	4969	849.0	1014.6	85	60	72.4	-.5	95	2	55	3+	7	0	--	--	3.34	1.33	1.98	8	10	.0	0	---	---	--	---	--	10	12	9	5.6	--
Raton	6379	811.4	1016.3	82	53	67.6	.2	90	2	48	24	1	0	--	--	3.89	1.40	1.71	16	21	.0	0	---	---	--	---	--	2	16	13	6.8	--
Roswell	3612	895.0	1013.2	94	65	79.4	1.4	103	3	57	19+	25	0	57	51	1.23	-.22	.65	10	9	.0	0	9.1	---	50	W	16	12	15	4	4.5	--
NEW YORK																																
Albany	277	1012.5	1016.5	80	55	67.3	-2.3	93	3	43	13	1	0	55	68	1.66	-1.23	.94	8	3	.0	0	6.6	S	26	W	12+	3	20	8	5.8	58
Binghamton	1601	959.2	1018.0	75	55	64.6	-2.0	90	3	45	6+	1	0	53	69	1.48	-2.18	.72	11	4	.0	0	8.5	NNW	28	SW	3+	4	16	11	6.5	65
Buffalo	693	990.0	1018.3	77	57	67.3	-1.6	87	3	46	22	0	0	55	69	1.11	-1.43	.59	9	2	.0	0	8.5	SW	31	SW	3	6	16	9	5.9	70
New York (U)	10	1015.0	------	80	65	72.6	-.6	91	2	58	6	2	0	--	--	2.91	-1.43	1.99	6	5	.0	0	10.0	---	36	NW	12	9	13	9	5.5	70
New York	19	1014.6	1016.7	82	66	74.0	-.4	94	3	57	28	3	0	59	63	2.43	-1.84	1.35	8	5	.0	0	10.5	NE	36	NW	12	7	15	9	5.8	--
Rochester	543	998.3	1017.7	78	55	66.6	-2.3	91	3	43	22	1	0	54	68	.96	-1.52	.69	4	4	.0	0	10.1	SW	37	SW	3	6	15	10	5.9	71
Schenectady	217	------	------	79	58	68.1	-2.3	91	3	46	28	1	0	--	--	1.33	-1.94	.73	6	1	.0	0	---	---	--	---	--	22	6	3	5.9	--
Syracuse	424	996.2	1018.1	78	57	67.1	-3.2	92	3	43	28	1	0	56	68	3.45	.36	2.56	9	2	.0	0	8.2	NW	27	N	3	8	10	13	5.8	67
NORTH CAROLINA																																
Asheville (U)	2203	939.8	------	84	60	72.1	-.6	94	3	51	7	6	0	--	--	.98	-2.60	.48	9	6	.0	0	5.5	---	20	N	16	15	9	7	4.2	71
Cape Hatteras(R)	9	1015.2	1015.9	83	70	76.3	-2.0	88	4+	60	7+	0	0	69	79	7.14	1.31	2.28	11	9	.0	0	11.0	NNE	35	SE	19	4	11	16	7.0	--
Charlotte	725	989.8	1017.6	90	66	78.0	.7	99	12+	57	7	16	0	63	68	3.23	-1.13	1.90	7	5	.0	0	7.8	NNE	47	SW	4	13	11	7	4.4	75
Greensboro	891	986.6	1018.3	86	64	74.6	-1.2	95	12+	53	7	11	0	63	72	3.28	-1.43	.89	9	7	.0	0	6.9	NE	42	NE	1	11	12	8	5.2	77
Raleigh	433	1003.3	1017.1	87	64	75.4	-1.8	98	12+	54	7	11	0	65	75	4.85	-.11	2.80	9	7	0	0	6.8	N	*21	NW	25	8	15	8	5.6	69
Wilmington	30	1015.0	------	87	68	77.5	-1.8	96	1	59	8	12	0	--	--	5.08	-1.32	1.92	9	8	.0	0	10.0	---	43	SW	26	13	8	10	5.0	71
Winston-Salem	967	982.9	1018.0	86	65	75.2	-1.0	96	12	56	7	11	0	63	69	3.27	-.83	1.25	6	6	.0	0	7.3	NE	*32	NW	4	13	10	8	4.9	--
NORTH DAKOTA																																
Bismarck	1650	956.7	1016.3	81	58	69.6	.3	104	1	45	26	6	0	55	66	1.58	.08	.49	11	6	.0	0	11.6	E	47	E	11	10	8	13	5.5	56
Devils Lake (U)	1471	964.4	------	76	56	66.0	-.8	92	6	41	26	3	0	--	70	4.71	2.54	1.45	12	7	.0	0	7.5	E	28	NW	12	9	11	11	5.9	58
Fargo	895	983.7	1018.1	80	58	69.0	-.1	93	8	45	26	3	0	57	70	1.68	-1.05	.66	10	8	.0	0	12.9	N	43	SE	7	8	11	12	5.8	55
Williston (U)	1877	948.9	1015.6	80	56	68.1	.0	101	6	42	26	5	0	51	58	76	-.65	.42	8	5	.0	0	7.5	SE	29	E	11	12	8	11	5.4	67
OHIO																																
Akron	1210	981.2	1019.3	81	57	69.3	-1.3	91	3+	48	6	2	0	56	68	.77	-2.49	.49	5	3	.0	0	7.9	N	--	---	--	7	13	11	6.1	--
Cincinnati Obs.	761	------	------	86	64	74.8	.0	95	30	52	6	10	0	--	--	5.03	1.65	3.18	6	3	.0	0	4.2	---	22	W	12	--	--	--	---	63
Cincinnati	869	986.0	1018.4	86	63	74.5	1.0	94	30+	49	6	11	0	60	65	3.74	.40	3.12	5	2	.0	0	6.4	NE	23	W	12	9	15	7	5.2	--
Cleveland	787	990.6	1018.4	80	60	70.2	-1.7	93	3	52	6	2	0	58	69	2.30	-.34	1.58	8	4	.0	0	10.3	S	34	W	3	6	13	12	6.2	57
Columbus (U)	724	------	------	84	64	74.2	.4	93	29	53	6	7	0	--	--	.78	-2.23	.63	5	2	.0	0	---	---	--	---	--	--	--	--	---	--
Columbus	815	988.8	1018.8	86	60	73.3	.9	95	29+	49	6	10	0	59	65	.89	-2.32	.51	6	4	.0	0	5.6	NNW	30	SW	3	5	18	8	5.5	77
Dayton	1002	982.5	1018.6	84	63	73.6	.7	92	3	51	6	8	0	58	61	.36	-2.50	.18	5	3	.0	0	8.0	NE	38	NW	3	5	20	6	5.4	74
Sandusky (U)	603	996.3	------	81	63	71.9	-.9	94	3	54	6	2	0	--	--	1.79	-1.02	.77	8	4	.0	0	5.5	---	22	SW	24	12	13	6	4.5	74
Toledo	676	993.1	1018.6	82	59	70.4	-.6	93	3	48	23	6	0	59	71	3.66	.97	1.60	9	6	.0	0	8.1	N	28	N	3	9	12	10	5.5	66
Youngstown	1178	976.8	1019.1	80	56	67.9	-2.5	91	3	48	13+	1	0	56	68	.51	-2.95	.26	6	3	.0	0	8.7	NNE	*22	SW	3	6	12	13	6.2	--
OKLAHOMA																																
Oklahoma City	1280	972.9	1015.5	92	69	80.7	-1.3	100	12+	60	7	23	0	64	62	1.08	-1.42	.45	5	5	.0	0	11.4	SSE	26	N	12+	14	12	5	4.2	80
Tulsa	672	991.9	1015.8	93	71	82.0	.1	104	13	61	7	24	0	66	63	3.79	.56	2.04	6	2	.0	0	7.0	SSE	46	N	16	11	13	7	4.6	75
OREGON																																
Astoria	8	1017.6	1018.2	69	52	60.2	-1.6	76	21	45	25	0	0	54	80	1.34	-.11	.37	9	0	.0	0	5.9	NW	*18	SE	4+	5	12	14	6.5	--
Burns (U)	4140	873.4	1013.9	82	48	65.0	-2.2	91	3	42	1+	2	0	35	36	.11	-.16	.08	2	2	.0	0	---	---	--	---	--	20	9	2	2.3	--
Eugene	361	1004.1	1017.6	79	48	63.3	-2.7	90	22	41	26	1	0	--	--	.54	.16	.40	5	0	.0	0	7.2	---	*26	WSW	9	15	8	8	4.1	--
Meacham	4050	------	------	73	47	59.7	-2.9	82	18	40	25	0	0	--	--	.22	-.29	.22	1	1	.0	0	---	---	--	---	--	17	10	4	3.5	--
Medford	1312	968.8	1016.0	85	50	67.5	-3.6	95	22	45	31	6	0	45	50	T	-.19	T	0	0	.0	0	6.1	WNW	*28	WNW	3	25	4	2	1.9	--
Pendleton	1492	962.1	1014.9	83	55	69.0	-3.7	92	18	48	2	4	0	42	40	.01	-.32	.01	1	0	.0	0	9.5	SE	*29	W	10	20	9	2	2.8	--
Portland	21	1011.9	1017.4	75	54	64.5	-2.8	86	22	47	1+	0	0	53	69	.69	.08	.36	6	2	.0	0	7.5	WNW	22	S	6	10	13	8	5.3	57
Roseburg	505	998.6	1017.3	80	48	64.4	-2.4	90	22	42	26+	1	0	--	--	.30	-.02	.28	2	0	.0	0	5.4	---	20	N	1+	13	12	6	3.8	70
Salem	195	1009.8	1017.5	78	49	63.8	-3.2	89	22	43	26+	0	0	51	67	.27	-.22	.10	5	0	.0	0	7.4	S	22	SSW	4	15	8	8	4.6	--
Sexton Summit(R)	3836	------	------	71	47	59.1	-4.6	83	22	42	26	0	0	--	--	.04	-.25	.04	2	0	.0	0	---	---	--	---	--	21	9	1	2.7	--
PENNSYLVANIA																																
Allentown	376	1003.6	1017.8	83	57	69.9	-1.9	96	3	47	6+	3	0	56	66	1.39	-3.10	1.00	6	5	.0	0	7.1	ENE	--	---	--	8	11	12	5.7	--
Erie	732	------	------	76	57	66.5	-2.5	87	3	42	22	0	0	--	--	1.43	-1.05	.72	7	2	.0	0	9.2	---	*21	NNE	21	9	11	11	5.9	--
Harrisburg	335	1003.7	1017.5	83	61	72.3	-.7	95	3	52	6	3	0	55	58	.93	-2.41	.70	6	2	.0	0	5.5	NW	21	N	21	4	16	11	6.2	72
Philadelphia(U)	26	------	------	84	66	74.8	-.4	93	3	57	28	3	0	--	--	1.32	-3.30	1.05	4	--	---	---	---	---	--	---	--	--	--	--	---	--
Philadelphia	10	1012.1	1016.6	84	63	73.2	-.8	96	3	50	24	4	0	58	62	3.38	-1.20	3.36	3	3	.0	0	8.0	NNE	37	NE	21	6	15	10	6.1	61
Pittsburgh (U)	749	------	------	84	62	72.6	-.5	95	3	53	6	4	0	--	--	.29	-2.79	.09	4	--	.0	---	---	---	--	---	--	--	--	--	---	54
Pittsburgh	1151	988.0	1018.7	81	59	70.0	-.1	93	3	50	6	3	0	57	66	.78	-2.35	.51	7	4	.0	0	7.0	WSW	*20	WSW	3+	2	22	7	6.1	70
Reading (U)	266	1005.0	1016.6	84	62	72.9	-.5	97	3	53	6+	5	0	--	--	.88	-3.00	.73	4	3	.0	0	8.0	---	47	N	21	5	13	13	6.5	55
Scranton	940	984.1	1018.4	78	54	66.2	-3.8	93	3	43	6	1	0	54	67	1.38	-2.70	.52	5	5	.0	0	7.5	ESE	26	N	21	6	14	11	6.2	50
Shippingport	736	------	------	81	56	68.5	----	91	3+	46	13	2	0	--	--	.71	----	.26	4	2	.0	0	---	---	--	---	--	--	--	--	---	--
Williamsport	527	998.5	------	82	56	69.0	-1.9	96	3	45	6	3	0	--	--	1.25	-2.36	.40	8	--	.0	0	---	---	--	---	--	6	16	9	6.0	--
RHODE ISLAND																																
Block Island	110	1011.7	1016.0	74	61	67.7	-1.3	85	1	52	24	0	0	--	--	5.62	2.16	2.79	6	3	.0	0	---	---	--	---	--	11	11	9	5.3	--
Providence	55	1010.2	1016.2	78	58	67.8	-1.6	93	3	45	23	1	0	57	70	2.51	-1.12	1.24	6	4	.0	0	10.1	SW	*28	SSW	30	10	13	8	5.4	59
SOUTH CAROLINA																																
Charleston (U)	9	------	------	86	73	79.6	-1.4	96	12	64	24+	10	0	--	--	4.76	-1.78	2.59	9	--	.0	0	9.4	---	34	NE	12	--	--	--	---	49
Charleston	41	1014.5	1016.5	89	69	78.9	-.7	98	12	61	8	13	0	70	80	5.86	-.75	3.31	9	12	.0	0	9.1	NNE	--	---	--	8	12	11	5.7	--
Columbia	217	1008.0	1016.3	91	67	79.1	-.9	102	12	57	8	19	0	66	70	4.12	-1.41	.97	11	8	.0	0	6.3	NNE	*22	NW	4	14	10	7	4.5	68
Florence	146	1011.1	------	90	68	78.5	-.8	100	1	60	25	15	0	--	--	5.68	90	1.20	10	7	.0	0	---	---	--	---	--	17	7	7	4.0	--
Greenville	1018	1014.1	1017.0	88	67	77.6	.4	100	12	60	24	15	0	62	64	3.94	-.86	2.12	7	6	.0	0	8.5	NE	35	NW	4	11	12	8	4.9	72
Spartanburg	801	------	------	88	66	77.0	-.7	98	12	57	7	13	0	--	--	1.89	-2.80	.67	7	6	0	0	6.9	---	29	WNW	25	--	--	--	---	--
SOUTH DAKOTA																																
Huron	1282	969.9	1016.3	84	60	72.3	-.6	101	1	46	24	10	0	60	70	1.54	-.44	.52	15	9	.0	0	10.9	SSE	33	S	6	9	14	8	5.3	70
Rapid City	3165	902.8	1015.0	84	59	71.6	.7	100	1+	48	27	12	0	55	60	1.03	-.53	.54	10	12	.0	0	10.0	SSE	36	NW	22	9	9	13	5.8	53
Sioux Falls	1420	966.1	1017.0	82	60	71.1	-1.3	100	1	48	24	6	0	60	71	3.76	.48	1.50	12	7	.0	0	9.5	SSE	*27	NNE	26	9	12	10	5.8	--
TENNESSEE																																
Bristol	1519	964.5	------	86	61	73.4	-.2	93	2+	53	6+	10	0	--	--	5.30	1.41	2.38	7	7	.0	0	---	---	--	---	--	13	12	6	4.3	--
Chattanooga	670	989.9	1017.1	91	65	77.7	.4	100	3	56	24	17	0	63	67	2.00	-1.70	1.00	5	5	.0	0	5.4	NNE	30	NW	1+	14	9	8	4.7	76
Knoxville	950	982.9	1017.9	90	66	77.7	.7	98	3+	56	7	15	0	63	66	4.07	.64	1.20	9	4	.0	0	5.5	NE	33	NW	16	17	7	7	4.2	77
Memphis (U)	271	------	------	87	72	79.5	-.8	94	10+	60	6	13	0	--	--	3.76	1.23	2.58	8	--	.0	0	---	---	--	---	--	--	--	--	---	--

See footnotes at end of table.

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure		Temperature										Average dew point	Average relative humidity	Precipitation							Wind					No. of days (sunrise to sunset)			Sky cover, tenths (sunrise to sunset)	Possible sunshine
												No. of days							No. of days		Snow, Sleet, Hail				Fastest mile							
		Ø Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F. or above	Min. 32° F. or below			Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max. depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy		
	Ft.	Mb.	Mb.	°F.	°F	°F.	°F.	°F.		°F.		#		°F.	%	In.	In.	In.			In.	In.	M. p. h.		M. p. h.			0–3	4–7	8–10	0–10	%
TENNESSEE (Cont'd.)																																
Memphis	263	1002.7	1017.3	89	69	79.0	-1.3	94	2+	60	6	18	0	67	70	4.31	1.37	2.17	8	8	0.0	0	7.1	NNE	35	N	14	10	15	6	4.7	76
Nashville	577	998.1	1018.0	89	66	77.5	-1.2	96	3+	57	6	17	0	65	70	2.55	-.76	1.47	5	6	.0	0	5.4	N	23	NW	12	14	12	5	4.3	78
Oak Ridge (R)	905	985.4	------	90	65	77.6	2.3	98	3+	56	7	18	0	--	--	1.82	-2.24	.94	6	6	.0	0	3.2	---	36	---	14	21	3	7	3.2	--
TEXAS																																
Abilene	1759	954.6	1013.9	96	73	84.6	1.8	103	2	65	20	30	0	61	50	.47	-.62	.31	4	3	.0	0	10.3	SE	30	SW	12	18	9	4	3.4	--
Amarillo	3590	891.6	1014.1	89	65	77.1	.5	99	3	60	14+	16	0	59	58	4.85	1.86	2.09	11	12	.0	0	10.7	S	57	E	14	12	11	8	4.7	71
Austin	615	993.9	1015.4	98	74	86.0	1.5	101	2+	70	21	31	0	67	59	T	-1.67	T	0	2	.0	0	7.8	S	24	NNE	18	13	17	1	3.9	85
Brownsville	16	1012.2	1014.8	93	76	84.7	.6	97	18	70	25	31	0	73	73	3.45	1.00	2.12	7	1	.0	0	12.4	SE	29	E	8	15	13	3	4.1	82
Corpus Christi	41	1013.9	1015.0	95	76	85.1	1.1	100	10	69	25	31	0	73	72	2.12	.04	1.34	3	1	.0	0	10.7	SSE	26	SE	1+	17	13	1	3.6	96
Dallas	487	997.3	1015.6	96	75	85.8	.0	103	25	67	7+	29	0	67	56	.62	-1.21	.46	7	3	.0	0	8.7	SE	25	S	13	14	14	3	3.9	79
Del Rio	1091	980.0	1012.8	100	75	87.1	2.0	104	1+	69	22+	31	0	62	46	T	-1.44	T	0	1	.0	0	10.8	---	42	N	18	19	10	2	3.0	89
El Paso	3920	887.2	1012.7	92	70	80.5	.7	97	8	61	31	24	0	57	48	4.11	2.79	2.00	10	16	.0	0	11.3	N	57	SE	4	11	13	7	4.6	82
Fort Worth	544	994.9	1015.3	96	74	85.1	-.3	102	13+	63	7	29	0	65	55	.12	-1.76	.08	3	3	.0	0	10.8	ESE	*22	NE	4+	15	14	2	3.5	--
Galveston (U)	7	------	------	88	79	83.7	.1	91	18	70	18	3	0	--	--	2.98	-.57	1.26	4	--	.0	0	11.0	---	40	SE	30	--	--	--	---	82
Galveston	5	1013.9	1016.2	89	79	84.2	.5	92	18	72	30	15	0	74	72	1.60	-2.02	.46	6	8	.0	0	11.1	S	--	---	--	13	11	7	4.5	--
Houston (U)	41	1010.8	------	94	76	85.0	.8	99	5	70	30	28	0	--	--	1.30	-1.79	.37	10	9	.0	0	8.0	S	26	SE	30	10	14	7	4.9	78
Houston	50	1013.2	1015.8	93	74	83.8	.9	99	18	69	30	28	0	72	73	3.23	-.89	1.05	6	9	.0	0	8.8	SSE	--	---	--	11	13	7	5.1	--
Laredo	500	998.0	1013.2	102	77	89.3	1.5	105	1+	73	25	31	0	66	53	.62	-.68	.48	3	3	.0	0	13.4	SE	*30	ENE	30	19	12	0	3.0	--
Lubbock	3243	905.2	1014.1	92	67	79.0	.6	98	2	60	20	22	0	61	58	.32	-1.47	.14	6	5	.0	0	10.5	S	*37	S	12	13	12	6	4.4	--
Midland	2854	917.0	1013.8	94	70	82.4	1.0	100	2	65	18	29	0	57	45	1.19	-.46	1.08	3	4	.0	0	9.2	SSE	*29	ENE	3	18	11	2	3.4	--
Port Arthur	16	1014.9	1016.3	91	74	82.4	.6	94	4+	69	7+	26	0	73	76	2.54	-2.60	1.48	9	10	.0	0	8.9	SSW	44	N	9	11	13	7	5.2	64
San Angelo	1903	947.9	1013.8	96	73	84.7	1.5	104	2	66	24	29	0	60	47	.53	-1.06	.53	1	0	.0	0	9.2	S	*25	ENE	5	22	6	3	2.6	--
San Antonio	792	990.2	1014.8	98	74	86.0	1.6	101	2+	69	23+	31	0	66	57	.21	-1.77	.20	3	2	.0	0	7.9	SSE	26	NE	18	12	18	1	3.8	86
Victoria	110	1010.2	1014.6	97	74	85.1	-.2	100	17+	70	18+	30	0	71	65	1.13	-1.50	.63	3	3	.0	0	9.1	SSE	†72	NW	18	10	20	1	4.2	--
Waco	500	994.2	1014.7	98	75	86.4	.9	102	2+	66	20	31	0	67	55	.50	-.88	.50	1	2	.0	0	10.4	S	*24	ESE	30	17	12	2	3.6	--
Wichita Falls	1020	980.4	1014.3	98	73	85.4	1.2	105	12	64	19	29	0	63	51	.05	-2.02	.05	2	1	.0	0	8.4	SE	*21	SSW	12	15	11	5	3.8	--
UTAH																																
Milford	5028	845.6	1013.2	90	57	73.3	1.6	99	17+	35	31	18	0	--	--	.03	-.78	.02	2	7	.0	0	---	---	--	---	--	8	10	13	5.7	--
Salt Lake City	4220	867.3	1011.5	90	63	76.5	2.1	97	3+	52	31	21	0	46	38	1.69	.72	.91	9	9	.0	0	11.5	SSE	43	S	28	11	10	10	5.3	70
VERMONT																																
Burlington	331	1001.9	1016.6	76	53	64.1	-4.0	87	3	39	28	0	0	52	67	.72	-2.29	.45	4	2	.0	0	7.0	SSW	29	NW	27	6	15	10	6.2	62
VIRGINIA																																
Lynchburg	947	983.9	------	84	64	73.6	-.6	95	30	56	6+	10	0	--	--	2.40	-1.95	1 65	7	2	.0	0	6.6	---	26	W	4	8	14	9	5.6	66
Norfolk	26	1015.1	1016.5	84	64	75.7	-.7	97	4	60	7	6	0	66	76	5.96	.88	3.07	9	3	.0	0	8.5	NNE	57	NE	19	10	11	10	5.5	74
Richmond	162	1011.3	1017.5	85	64	74.6	-1.3	97	3	54	7	10	0	63	72	7.46	2.41	4.12	8	6	.0	0	6.9	N	26	NW	4+	9	13	9	5.6	66
Roanoke	1174	976.4	1018.2	85	63	73.7	-.6	96	30	53	6+	8	0	59	66	1.20	-3.34	.62	10	3	.0	0	6.9	SE	--	---	--	7	13	11	5.8	--
WASHINGTON																																
Olympia	190	1010.2	1017.6	74	50	62.0	-.9	85	22	41	26	0	0	51	71	.87	.21	.26	8	1	.0	0	5.4	SW	*22	S	4+	3	14	14	6.7	--
Seattle (U)	14	------	------	73	56	64.6	-.6	80	22	51	26	0	0	--	--	.97	.10	.37	6	1	.0	0	7.2	---	27	SW	9	5	15	11	6.2	63
Seattle	14	1016.6	1017.6	--	--	----	----	--	--	--	--	--	--	51	65	----	----	----	--	--	---	---	6.1	S	--	---	--	--	--	--	---	--
Seattle-Tacoma	386	1003.7	1018.0	71	52	61.6	-2.0	80	22	46	26+	0	0	52	74	1.64	.76	.67	7	2	.0	0	9.8	S	*23	SW	6+	5	16	10	6.2	--
Spokane	2357	946.5	1014.9	78	53	65.6	-2.3	89	17+	44	25	0	0	41	44	.30	-.19	.08	7	4	.0	0	7.0	NE	26	SW	13	17	10	4	4.0	79
Stampede Pass (R)	3958	881.8	1019.6	61	45	52.9	-3.7	74	16+	39	24+	0	0	--	--	1.38	-.70	.36	9	1	.0	0	---	---	--	---	--	6	14	11	5.8	--
Tatoosh (R)	101	1014.6	1017.6	62	53	57.5	1.8	66	9	46	2	0	0	55	89	3.22	1.21	.84	12	0	.0	0	9.0	S	28	SW	10+	5	11	15	7.0	60
Walla Walla (U)	949	978.3	1013.9	83	60	71.1	-3.1	93	18	52	2+	4	0	--	--	.15	-.19	.15	1	1	.0	0	5.4	---	15	W	13	20	9	2	2.8	89
Yakima	1061	976.0	1014.5	82	48	65.0	-4.5	91	17+	38	25	3	0	47	52	.20	-.02	.15	4	0	.0	0	5.0	NW	*18	NW	6+	19	11	1	2.9	--
WEST VIRGINIA																																
Charleston	950	982.8	1018.0	86	61	73.4	-.2	95	14+	49	6	9	0	59	65	.66	-3.89	.51	7	2	.0	0	4.1	S	16	NNW	5	4	18	9	6.1	--
Elkins	1970	------	------	80	53	66.4	-1.8	89	14+	43	6	0	0	57	--	1.67	-2.16	.89	5	4	.0	0	2.8	NW	14	N	5	1	15	15	7.0	--
Huntington (U)	565	------	------	89	62	75.5	.1	98	29	51	6	15	0	--	--	1.83	-1.54	.95	4	--	.0	0	---	---	--	---	--	--	--	--	---	--
Parkersburg (U)	615	------	------	85	61	73.0	-1.0	96	29	49	6	9	0	--	--	.73	-3.42	.31	6	4	.0	0	4.2	---	19	SW	14	15	9	7	4.5	64
WISCONSIN																																
Green Bay	689	995.9	1018.6	77	55	65.9	-1.9	89	1+	41	5	0	0	58	77	3.46	.43	1.87	8	3	.0	0	7.4	SW	30	SW	7	8	13	10	5.6	60
La Crosse	652	993.6	1018.1	79	60	69.9	-1.5	92	2	48	5	3	0	60	70	4.18	.89	1.58	10	6	.0	0	6.1	SE	*23	NW	2	7	14	10	5.7	--
Madison	857	983.7	1018.6	82	58	69.8	-.9	92	1+	46	5	4	0	59	73	4.86	1.97	1.89	9	5	.0	0	7.6	NE	31	W	9	9	12	10	5.9	58
Milwaukee	672	993.9	1018.8	78	60	69.2	-.7	90	8	51	5	1	0	60	74	2.03	-.59	.84	9	4	.0	0	10.5	NNE	34	SW	23+	11	11	9	5.3	68
WYOMING																																
Casper	5322	839.5	1012.4	85	57	71.1	2.2	95	1+	47	23	10	0	46	47	1.13	.27	.33	8	7	.0	0	12.0	SW	*44	WNW	27	9	11	11	5.4	--
Cheyenne	6131	816.1	1015.3	80	55	67.4	.6	89	11	44	23	0	0	50	60	2.92	1.31	.52	14	18	.0	0	11.2	WNW	34	N	22+	8	12	11	5.7	70
Lander	5563	837.5	1013.4	84	55	69.9	1.5	94	10	47	23+	8	0	45	45	1.02	.42	.40	6	9	.0	0	7.3	---	45	W	28	10	16	5	4.6	72
Sheridan	3942	884.5	1013.3	86	56	70.9	2.3	100	10	44	23	10	0	48	51	1.31	.49	.47	10	13	.0	0	8.9	WNW	45	SW	19	15	6	10	4.4	75
PACIFIC AREA																																
Canton Island	9	1008.5	1008.8	89	79	84.2	.0	91	7+	74	8	12	0	76	78	3.56	1.16	2.45	13	1	.0	0	14.9	E	*32	ESE	23	2	5	24	8.6	--
Guam (Taguac) R	361	------	------	87	72	79.4	----	90	3	69	6+	1	0	--	--	13.77	----	3.43	24	--	.0	0	---	---	--	---	--	--	--	--	---	53
Hilo	31	1013.9	1015.8	83	69	75.9	.5	85	2+	66	10	0	0	70	85	26.42	14.50	9.27	31	0	.0	0	9.1	WSW	*22	NE	23	0	7	24	8.4	17
Honolulu	7	1014.9	1015.2	85	74	79.6	.2	90	11	69	10	1	0	68	69	.37	-.43	.12	9	0	.0	0	16.2	ENE	36	NE	23	9	15	7	5.4	67
Koror (R)	94	1005.1	1008.8	87	76	81.2	.5	90	19+	72	7+	2	0	76	88	21.57	6.72	6.62	26	8	.0	0	---	---	--	---	--	0	2	29	9.4	--
Lihue	115	1010.5	1015.9	85	73	78.7	.6	87	3+	66	10	0	0	69	76	2.04	-.23	.41	21	0	.0	0	11.5	NE	26	E	18+	3	15	13	7.1	62
Majuro	10	1008.8	1009.1	86	77	81.7	----	89	30	73	20	0	0	76	83	12.87	-----	2.53	24	1	.0	0	---	---	--	---	--	0	10	21	8.5	--
Ponape (R)	120	1004.1	1009.5	88	73	80.5	.5	92	29	71	18	10	0	76	88	17.57	2.20	3.66	27	0	.0	0	---	---	--	---	--	0	7	24	8.7	--
Truk, Moen Is.	5	1009.1	1009.5	87	76	81.3	1.0	89	1	73	2	0	0	77	87	9.64	-2.96	1.53	29	0	.0	0	---	---	--	---	--	0	1	30	9.6	--
Wake Island	11	1011.9	1012.2	89	77	83.3	.8	92	17	72	10	16	0	75	77	8.71	-.19	1.90	19	4	.0	0	9.4	E	*23	ESE	30	13	10	8	5.1	--
Yap (R)	53	1006.4	1008.1	88	76	81.8	.2	93	18	70	23	13	0	77	86	11.80	-4.13	1.96	23	1	.0	0	---	---	--	---	--	0	1	30	9.9	--
WEST INDIES																																
San Juan, P.R. (U)	47	------	------	85	76	80.5	.0	89	14+	72	5	0	0	--	--	8.26	2.00	2.37	20	9	.0	0	---	---	--	---	--	--	--	--	---	--
San Juan, P.R.	15	1012.8	1015.4	88	75	81.2	----	90	1+	72	6+	4	0	73	82	7.68	----	2.19	21	6	.0	0	9.2	ENE	27	E	6	3	18	10	6.4	55
Swan Island	31	1011.6	------	88	79	83.6	.8	91	26	75	16	3	0	--	--	1.39	-3.21	.42	12	10	.0	0	---	---	--	---	--	2	20	9	6.4	--
ALASKA																																
Anchorage	92	1009.8	1014.6	67	51	58.5	2.9	77	8+	42	3	10	0	52	77	2.02	-.54	.71	13	0	.0	0	6.0	WNW	*20	S	27	7	5	19	7.1	54
Annette	110	1013.2	1017.1	66	53	59.1	1.1	81	3+	47	1+	5	0	53	83	6.05	.79	2.97	8	0	.0	0	8.6	SSE	*28	S	4	5	7	19	7.1	--
Barrow	22	1011.9	1012.3	48	36	42.1	3.7	64	8	27	30+	0	5	40	93	1.39	.59	.42	15	0	.3	T	11.1	WSW	28	SE	21	2	2	27	9.0	--
Barter Island	39	1011.2	1013.0	53	40	46.0	----	72	16	32	29	2	1	43	90	1.61	-----	.50	17	0	.0	0	8.2	E	*22	ENE	31	0	5	26	8.6	--
Bethel	10	1011.2	1012.4	61	49	55.0	2.3	75	24	42	21	2	0	50	86	3.95	-.07	.90	17	0	.0	0	9.8	SSW	*26	SE	27	2	2	27	9.0	--
Cold Bay	90	1010.8	1014.2	57	48	52.3	.2	63	13+	42	22+	0	0	50	90	3.33	-.64	.93	19	0	.0	0	17.4	SE	*46	SSE	26	0	1	30	9.5	--
Cordova	40	1013.9	1015.2	65	46	55.4	2.0	80	7	39	3	8	0	49	78	6.57	-3.15	2.41	10	0	.0	0	4.8	E	*23	ESE	27	9	5	17	6.5	--
Fairbanks	436	997.0	1014.0	72	47	59.1	3.5	83	16	40	20	18	0	50	72	.40	-1.86	.13	9	3	.0	0	3.4	N	*21	WNW	10	3	9	19	7.7	--
Juneau	15	1015.2	1016.0	68	47	57.6	3.4	83	9	41	25	13	0	49	77	1.50	-3.66	.42	12	0	.0	0	6.4	N	27	SE	31	7	5	19	7.0	37
King Salmon	44	1012.5	1014.1	67	49	57.6	3.0	82	15	41	24	10	0	50	79	2.05	-1.96	.49	13	0	.0	0	10.4	S	*33	ESE	26	1	6	24	8.4	--
Kotzebue	10	1011.5	1011.8	58	48	52.9	2.2	70	25	42	6	1	0	48	85	2.21	.26	.56	16	0	.0	0	11.7	WNW	*29	SW	12	3	2	26	8.6	--
McGrath	334	1001.4	1013.7	67	48	57.7	4.2	80	9	38	7	12	0	49	75	1.21	2.42	.27	14	1	.0	0	5.0	S	*20	SW	18	1	8	22	8.5	--
Nome	13	1011.5	1012.1	55	45	50.0	.9	68	24	34	23	0	0	47	87	2.78	-.98	.64	14	0	.0	0	10.6	SW	*26	SW	11+	1	4	26	9.0	20
St. Paul Island	22	1010.5	1011.5	53	46	49.6	1.6	57	17	39	16+	0	0	48	94	1.32	-1.67	.45	10	0	.0	0	---	---	--	---	--	0	2	29	9.4	--
Yakutat	28	1014.9	1016.1	63	48	56.5	3.7	86	8	40	14	5	0	52	84	8.10	-2.44	2.55	12	0	.0	0	6.1	ESE	*43	ESE	31	7	4	20	7.2	--

Data from airport unless otherwise specified. U indicates Urban, R indicates Rural, sites.

* Data entered in column "Fastest Mile" is the fastest mile observed. This station is not equipped with automatic recording wind instrument.

+ And also on a later date or dates.

a Maximum hourly average † Peak gust ‡ Airport Data

# Number of days maximum 70° or above for Alaskan stations.

Ø Station pressures apply to elevation shown in Table 10b of the annual issue of this publication.

HEATING DEGREE DAYS

(Base 65°F.)

AUGUST 1957

State and station	Current season		Normals
	This month	Period July through this month	July through this month
ALABAMA			
Birmingham	0	0	0
Mobile	0	0	0
Montgomery	0	0	0
ARIZONA			
Flagstaff	73	120	127
Phoenix (U)	0	0	0
Phoenix	0	0	0
Prescott	3	3	0
Tucson	0	0	0
Winslow	0	0	0
Yuma	0	0	0
ARKANSAS			
Ft. Smith	0	0	0
Little Rock	0	0	0
Texarkana	0	0	0
CALIFORNIA			
Bakersfield	0	0	0
Bishop	3	3	0
Blue Canyon	86	107	77
Burbank	0	0	0
Eureka (U)	200	454	515
Fresno	0	0	0
Los Angeles (U)	0	0	0
Los Angeles	0	0	53
Mt. Shasta (R)	91	120	83
Oakland	34	48	161
Red Bluff	0	0	0
Sacramento (U)	0	0	0
Sacramento	1	1	0
Sandberg (R)	25	25	0
San Diego	0	0	18
San Francisco (U)	165	327	366
San Francisco	74	119	280
San Jose	6	6	18
Santa Maria	90	145	192
COLORADO			
Alamosa	72	93	185
Colorado Springs	3	4	29
Denver	0	0	16
Grand Junction	11	11	0
Pueblo	0	0	0
CONNECTICUT			
Bridgeport	8	8	0
Hartford	28	28	14
New Haven	12	12	18
DELAWARE			
Wilmington	0	0	0
DIST. OF COLUMBIA			
Washington (U)	0	0	0
Washington	0	0	0
FLORIDA			
Apalachicola (U)	0	0	0
Daytona Beach	0	0	0
Fort Myers	0	0	0
Jacksonville	0	0	0
Key West (U)	0	0	0
Miami (U)	0	0	0
Miami	0	0	0
Miami Beach	0	0	0
Orlando	0	0	0
Pensacola (U)	0	0	0
Tallahassee	0	0	0
Tampa	0	0	0
West Palm Beach	0	0	0
GEORGIA			
Athens	0	0	0
Atlanta	0	0	0
Augusta	0	0	0
Columbus	0	0	0
Macon	0	0	0
Rome	0	0	0
Savannah	0	0	0
IDAHO			
Boise	5	10	0
Lewiston	1	2	0
Pocatello	11	13	0
ILLINOIS			
Cairo (U)	0	0	0
Chicago	0	0	0
Chicago University	1	1	
Moline	2	2	8
Peoria	0	0	11
Springfield	0	0	6
INDIANA			
Evansville	0	0	0
Ft. Wayne	5	5	17
Indianapolis	2	2	0
South Bend	7	7	18
IOWA			
Burlington	0	0	0
Des Moines	2	2	17
Dubuque	18	19	36
Keokuk (U)	0	0	
Sioux City	1	1	25
KANSAS			
Concordia (U)	0	0	0
Dodge City	0	0	0
Goodland	0	0	0
Topeka (U)	0	0	0
Topeka	0	0	8
Wichita	0	0	0
KENTUCKY			
Lexington	0	0	0
Louisville	0	0	0
Pikeville (U)	0	0	
LOUISIANA			
Baton Rouge	0	0	0
Lake Charles	0	0	0
New Orleans (U)	0	0	0
New Orleans	0	0	0
Shreveport	0	0	0
MAINE			
Caribou	192	294	218
Greenville (U)	181	264	
Portland	86	109	71
MARYLAND			
Baltimore (U)	0	0	0
Baltimore	2	2	0
Frederick	3	3	0
MASSACHUSETTS			
Blue Hill Obs. (R)	33	37	
Boston	7	7	7
Nantucket	28	30	56
Pittsfield	107	147	88
MICHIGAN			
Alpena (U)	81	118	135
Detroit	7	7	8
Detroit (Willow Run)	11	11	10
East Lansing (U)	14	14	
Escanaba (U)	70	100	157
Grand Rapids	19	20	43
Marquette (U)	89	151	156
Muskegon	21	25	74
S. Ste. Marie	121	211	235
MINNESOTA			
Duluth (U)	77	128	157
Duluth	79	114	147
Internat. Falls	131	152	188
Minneapolis	13	13	25
Rochester	24	24	62
St. Cloud	37	37	85
MISSISSIPPI			
Jackson	0	0	0
Meridian	0	0	0
Vicksburg (U)	0	0	0
MISSOURI			
Columbia	0	0	5
Kansas City	0	0	0
St. Joseph	0	0	5
St. Louis (U)	0	0	0
St. Louis	0	0	0
Springfield	0	0	5
MONTANA			
Billings	25	28	28
Glasgow	42	46	44
Great Falls	69	76	74
Havre (U)	35	38	58
Helena	57	64	102
Kalispell	101	161	130
Miles City	13	13	17
Missoula	58	84	79
NEBRASKA			
Grand Island	0	0	6
Lincoln (U)	0	0	7
Norfolk	0	0	17
North Platte	0	0	18
Omaha	0	0	5
Scottsbluff	2	2	0
Valentine	7	7	21
NEVADA			
Elko	31	35	34
Ely	33	45	66
Las Vegas	0	0	0
Reno	45	46	88
Tonopah	20	20	5
Winnemucca	39	40	17
NEW HAMPSHIRE			
Concord	67	84	68
Mt. Washington Obs.	646	1224	
NEW JERSEY			
Atlantic City (U)	1	1	0
Newark	0	0	0
Trenton (U)	0	0	0
NEW MEXICO			
Albuquerque	0	0	0
Clayton	0	0	0
Roswell	0	0	0
NEW YORK			
Albany	30	33	24
Binghamton	68	110	79
Buffalo	26	39	46
New York (U)	0	0	0
New York	0	0	0
Rochester	49	66	43
Schenectady	14	14	
Syracuse	38	48	29
NORTH CAROLINA			
Asheville (U)	0	0	0
Cape Hatteras (R)	0	0	0
Charlotte	0	0	0
Greensboro	1	1	0
Raleigh	1	1	0
Wilmington	0	0	0
Winston-Salem	1	1	0
NORTH DAKOTA			
Bismarck	44	44	66
Devils Lake (U)	70	71	108
Fargo	35	35	66
Grand Forks	51	53	
Pembina	38	43	
Williston (U)	59	59	71
OHIO			
Akron	12	23	17
Cincinnati (U)	0	0	0
Cincinnati	1	1	6
Cleveland	6	6	10
Columbus	0	0	8
Dayton	0	0	5
Sandusky (U)	1	1	0
Toledo	9	9	12
Youngstown	19	31	19
OKLAHOMA			
Oklahoma City	0	0	0
Tulsa	0	0	0
OREGON			
Astoria	145	326	249
Burns (U)	45	69	47
Eugene	58	100	67
Meacham	172	295	190
Medford	12	18	0
Pendleton	4	4	0
Portland (U)	13	27	27
Portland	35	60	47
Roseburg	41	65	
Salem	45	84	44
Sexton Summit (R)	184	341	157
PENNSYLVANIA			
Allentown	8	8	9
Harrisburg	0	0	0
Philadelphia (U)	0	0	0
Philadelphia	0	0	0
Pittsburgh (U)	0	0	0
Pittsburgh	10	14	20
Reading (U)	0	0	5
Scranton	37	48	18
Williamsport	11	11	16
RHODE ISLAND			
Block Island	14	17	27
Providence	22	22	26
SOUTH CAROLINA			
Charleston (U)	0	0	0
Charleston	0	0	0
Columbia	0	0	0
Florence	0	0	0
Greenville	0	0	0
Spartanburg	0	0	0
SOUTH DAKOTA			
Huron	18	18	26
Pierre	20	20	
Rapid City	22	22	56
Sioux Falls	13	13	37
TENNESSEE			
Bristol	0	0	0
Chattanooga	0	0	0
Knoxville	0	0	0
Memphis	0	0	0
Nashville	0	0	0
TEXAS			
Abilene	0	0	0
Amarillo	0	0	0
Austin	0	0	0
Brownsville	0	0	0
Corpus Christi	0	0	0
Dallas	0	0	0
Del Rio	0	0	0
El Paso	0	0	0
Ft. Worth	0	0	0
Galveston (U)	0	0	0
Galveston	0	0	0
Houston (U)	0	0	0
Houston	0	0	0
Laredo	0	0	0
Lubbock	0	0	0
Midland	0	0	
TEXAS (Cont'd.)			
Port Arthur	0	0	0
San Angelo	0	0	0
San Antonio	0	0	0
Victoria	0	0	0
Waco	0	0	0
Wichita Falls	0	0	0
UTAH			
Milford	9	9	0
Salt Lake City	1	1	0
VERMONT			
Burlington	82	99	66
VIRGINIA			
Lynchburg	6	6	0
Norfolk	0	0	0
Richmond	0	0	0
Roanoke	3	3	0
WASHINGTON			
Olympia	91	196	174
Seattle (U)	21	68	94
Seattle-Tacoma	95	192	145
Spokane	39	69	45
Stampede Pass (R)	368	761	511
Tatoosh Island (R)	222	509	583
Walla Walla (U)	0	0	0
Yakima	43	71	7
WEST VIRGINIA			
Charleston	0	0	0
Elkins	39	52	40
Huntington (U)	0	0	0
Parkersburg (U)	2	2	0
WISCONSIN			
Green Bay	50	64	90
La Crosse	21	21	31
Madison (U)	12	12	40
Madison	17	18	44
Milwaukee	8	16	52
WYOMING			
Casper	14	19	37
Cheyenne	23	31	72
Lander	24	30	30
Sheridan	14	17	68
ALASKA			
Anchorage	191	397	530
Annette	188	461	479
Barrow	705	1493	1609
Barter Island	582	1328	
Bethel	305	579	707
Cold Bay	388	838	
Cordova	289	628	723
Fairbanks	178	328	445
Juneau	225	513	654
King Salmon	225	486	
Kotzebue	367	736	827
McGrath	225	415	563
Nome	460	981	970
St. Paul	471	1006	1119
Yakutat	260	581	759

Data from airport unless otherwise specified.
U indicates Urban, R indicates Rural, sites.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path miles	Width of path yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
NORTH CAROLINA Forsyth, Guilford, and Stokes Counties	1	1 p.m.						5	Hail	Several hundred acres of tobacco destroyed in fields by heavy fall of marble-sized hailstones.
VIRGINIA Moorefield area, Patrick County	1	1 p.m.	10	3520			1	4	Hail	Hail literally covered ground; size averaged 1/2 inch, with largest exceeding 1 inch. Tobacco plants were main target, stripping stalks. About 50 farmers affected. Storm moved eastward.
TEXAS Baytown (10 miles east-northeast of), Harris County	1	2 p.m.			0	0			Waterspout	Moved northeastward.
FLORIDA Pierson, Volusia County	1	4 p.m.			1				Electrical	
NORTH DAKOTA Towner, Cavalier, Ward, and Rolette Counties	1	5-7 p.m.			0	0	4	4	Funnel aloft, hail, wind, and rain	Funnel cloud observed at Bisbee. Considerable hail loss occurred and wind demolished some granaries and barns, uprooted trees, and blew away swaths of cut grain. Heavy rain also caused damage, flooding basements in Rolla. Storm moved southeastward.
MINNESOTA West-central portion	1	7 p.m.			0	0	5	6	Hail, rain, and funnels aloft	Severe damage reported in 13 counties. Heaviest in Lac qui Parle County where 4 funnel clouds sighted. Crop damage light to complete loss, with hail as large as 1-1/2 inches in diameter. Many barns downed, also airport hangar at Montevideo. Trees uprooted and utilities interrupted. Storm moved southeastward.
MONTANA Worden, Yellowstone County	1	7 p.m.	10	*3			3	5	Hail	Average diameter of hailstones 3/4 inch, largest stones 2 inches in diameter. Storm moved eastward.
SOUTH DAKOTA Buffalo to Hutchinson Counties	1	7-10 p.m.					4	4	Electrical, wind, and hail	Most hail losses from 5 miles south of Gannvalley to Parkston. Lightning killed livestock on 5 farms. Wind destroyed barn and buildings near Gannvalley. Storm moved southeastward.
	1									Minor storms also reported at Lincoln, Ill.; and near Wilmot, S. Dak.
SOUTH DAKOTA Harding and Perkins Counties	2	1-2 a.m.	100	*4-6					Hail	Storm started near Ralph and moved just north of South Grand River. Crops and grass pounded into ground, giving prairie appearance of having been plowed. Sheep and lambs bruised, crippled, and killed. Hide stripped from backs of cattle and horses. Rabbits and birds strewed about on fields. In Bison, hundreds of windows broken. Sides and roofs of buildings battered. Hens'-egg-sized stones dented cars, broke windshields, and wrecked exposed radiators. Storm moved east-southeastward.
NEBRASKA Tekamah (8 miles northeast of), Burt County	2	6 a.m.	Short	Narrow	0	0	3	1	Tornado (suspected)	Storm moved northeastward.
NEBRASKA Lyons (north of), Burt County	2	A.m.					3	3	Tornado (suspected), hail, and wind	Property damage by wind, crop by hail.
ILLINOIS Waukegan and Chicago, Cook and Lake Counties	2	2:30 p.m.					4		Wind	Local thundersqualls damaged trees and overhead wires in southern portion of Waukegan and parts of Chicago. Wind gusts to 65 m.p.h., on Chicago lake front. Many sailboats upset.
KANSAS Cheyenne County	2	3-4:30 p.m.							Wind and hail	Farmstead northeast of St. Francis suffered minor damages from wind, 2 buildings moved off their foundations, and numerous articles turned over. Neighboring areas unaffected by local wind. Numerous spots of hail caused minor damage over central and eastern parts of County. Storm moved westward.
NEBRASKA Stromsburg (south of), Polk County	2	4 p.m.			0	0	2	3	Funnel aloft, hail, and wind	Tornado funnel observed, but did not touch ground.
INDIANA Edinburg (south of), Bartholomew County	2	4:50 p.m.				5	4	1	Wind and electrical	5 homes damaged and skating rink tent and barn near Camp Atterbury blown down by severe winds of thunderstorm. $12,000 property damage by wind, $2,000 by lightning.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
NEBRASKA York (1 mile west of), York County	2	5:30 p.m.					4	1	Electrical	Dairy barn struck and burned, with feed and equipment. Cows saved.
NEBRASKA Chapman (east of), Merrick County	2	Late afternoon	20	*15			3	4	Wind	Widespread light damage. Corn blown down Storm moved eastward.
WYOMING Cheyenne, Laramie County	2	8 p.m.	20	*5			6	3	Hail	Most to automobiles and homes, although there was also sizeable loss from broken neon signs and large windows in business district. Reliable reports received of hailstones to at least 3 inches in diameter and these reports were borne out by examples of hail making holes in car roofs and windshields as well as house roofs. Very little crop damage occurred with this storm since it was over almost no crop land. Storm moved southeastward.
	2									Minor storms also reported near Blue Ridge and at Rensselaer, Ind.; near Geneva, Lorenzo, Loup City, Osceola, O'Neill, and Stockville, and at Wakefield and in York County, Nebr.; and at Gage, Okla.
COLORADO Loveland, Larimer County	2-3	Before midnight							Hail, Rain, and wind	Flash thunderstorm, lasting about 20 minutes, did much damage to crops, especially sugar beets, cherries, and grain. 2 to 4 inches of hail fell. Storm accompanied by winds up to 75 m.p.h. Many trees blown down, hitting homes and cars. Power out and many roofs and windows damaged. Storm moved southwestward
ILLINOIS Extreme northern portion	3	10:30 a.m.				1	6		Wind, rain, and electrical	Southward moving cold front caused heavy showers and lightning and wind damage in narrow band extending from Morrison eastward through Rochelle, and Aurora to Chicago. Heavy damage to county fair tents at Aurora; 3.50 inches of rain in 15 minutes at Morrison; basements and underpasses flooded at Chicago.
KANSAS Fort Scott area, Bourbon County	3	12:25 p.m.							Electrical	Lightning struck tree and house in southeastern Ft. Scott. Limb fell on back porch and wiring and appliances in house damaged.
INDIANA Elkhart and St. Joseph Counties	3	1-5 p.m.					3	1	Wind, electrical, and rain	Lightning damaged home in Roseland and basement of home near South Bend. Wind blew over concrete-block wall in Elkhart, also numerous trees and antennas. At South Bend Airport, wind reached 70 m.p.h., in gusts at 2:25 p.m. Rainfall 1.81 inches in 150 minutes; 1.55 inches fell in 30 minutes. $2,500 property damage by wind, $500 by lightning.
INDIANA Cedar Lake, Lake County	3	1:30 p.m.			2	2	1	1	Electrical	2 golfers killed and 2 injured as they sought shelter under tree during thunderstorm.
MICHIGAN Lower south-central portion	3	3-5 p.m.					4	4	Wind, electrical, and hail	High winds caused scattered damage lightning-set fires destroyed 2 barns. Hail damaged crops in a few areas. Affected area extended from Kalamazoo and St. Joseph Counties eastward through Jackson and Hillsdale Counties.
FLORIDA Miami Springs, Dade County	3	Afternoon							Wind and electrical	Winds estimated at 70 m.p.h. blew down trees, toppled TV antennas, and caused other minor damages.
INDIANA Whiting, Lake County	3	4 p.m.					5	1	Wind	High winds blew down at least 50 trees, damaged 4 garages and 3 automobiles. Residents without electricity or water for 3 hours after gusts hit and had to boil water because of danger of pollution.
MISSOURI Pleasant Hill, Cass County	3	4:30-5:30 p.m.							Rain and wind	4.40 inches of rain fell in less than 1 hour. Local flooding. Trees and barns blown down on 1 farm.
COLORADO Eastern portion	3	Afternoon-evening							Hail and rain	Series of thunderstorms from Weld County to Pueblo County, caused heavy damage to crops, roads, and bridges. Area east of Colorado Springs received from 3 to 4 inches of rain, causing floods which washed away bridges and damaged roads. In Weld County, hail battered crops. At Brighton and vicinity and west of Colorado Springs, hailstones 3/4 to 1 inch fell. $100,000 crop damage in Weld County.

See footnotes at end of table

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
ILLINOIS South-central portion	3	Afternoon -evening				4	5		Wind, rain, and electrical	During afternoon and early evening, numerous thunderstorms caused scattered wind damage, heavy local showers, and lightning damage at scattered locations from Danville-Lincoln-LaHarpe line southward to Flora and Marissa. County fair grounds damaged at Jacksonville. Storms especially active in St. Clair County.
INDIANA Columbus, Bartholomew County	3	7 p.m.			0	0			Funnel aloft	Funnel cloud reported east of Columbus and moving eastward.
VERMONT Southern portion, and MASSACHUSETTS, Northwestern portion	3	9 p.m. - midnight					4	3	Wind	In area from Rutland, Vt., to Greenfield, Mass., most severe in Windham County, Vt., winds toppled trees, blocking roads and breaking power- and phone lines. Falling trees damaged house at West Dummerston, flattened barn at Stratton, and caused 2 automobile crashes at Rutland, Vt. Twisting and rotary motion observed in trees in Brattleboro, Vt., vicinity. No rain fell. Several woodsfires set by fallen wires were fanned by winds.
MISSOURI St. Louis	3	Evening			1				Electrical and rain	Golfer killed when hit by lightning.
MISSOURI Cape Girardeau, Cape Girardeau County	3	Evening				2			Wind and rain	Large tent badly damaged and several large trees blown over.
MISSOURI Dexter, Stoddard County	3	Night					5		Electrical and rain	Lightning set grain elevator on fire.
PENNSYLVANIA Northwestern counties	3	Night				1	4	1	Electrical and wind	Several homes and barns partially destroyed by fire, resulting from lightning strikes and trees downed by accompanying high winds. Storm moved southeastward.
ALABAMA Abernant, Tuscaloosa County	3					3	3	1	Electrical	Lightning hit room in which 5 children were playing. 2 children burned considerably and hospitalized, with 1 knocked unconscious. Another home in area hit, and woman suffered facial burns.
ALABAMA Mobile, Mobile County	3					1	1	1	Electrical	At Mobile Yacht Club, man knocked from sailboat by lightning. Hair singed from arms and chest, but otherwise unhurt.
MISSOURI Hannibal area, Marion County	3								Rain	3.00 inches of rain in 2 hours along Bear Creek caused flooding in and near Hannibal. Many homes and businesses damaged.
TEXAS Lipscomb County	3				0	0			Funnel aloft	Observed moving north-northeastward.
	3									Minor storms also reported at Charleston, Ark.; near Marion, Kans.; at Centralia, Lanes Prairie, Mapaville, and St. James, Mo.; near Springview, Nebr.; and at Buena Vista, Tex.
NEW YORK Central and eastern portions	3-4	Afternoon 3d - morning 4th			2				Wind, rain, electrical, and hail	Series of violent thunderstorms, with heavy rains swept through area as cold front and squall lines moved eastward. Up to 7 inches of rain near Syracuse caused flash flooding which resulted in 2 deaths (1 man swept over dam and boy swept into overflowing creek). 2 lightning strikes on power stations disrupted electric power over 14-county area from western Catskills to eastern southern tier of counties northward to Utica area. Damage estimated at $300,000 in Oneida and Madison Counties alone, with equal damage in several other counties. Lightning strike on lumberyard at Rotterdam (near Schenectady) caused fire with $1/2 million estimated damage. Many trees downed and unoccupied house blown apart. Some areas of hail reported. In Richford-Center Lisle area, considerable wind damage - Binghamton WBAS investigated possibility of tornadic activity which was not confirmed. Usual crop damage from winds, but no estimate of money value available.
MICHIGAN South Haven (7 miles north of), Allegan County	4	9:25 a.m.			0	0			Waterspout	Waterspout in Lake Michigan dissipated upon reaching land.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

AUGUST 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MICHIGAN Saginaw (15 miles northeast of), Bay County	4	10:50 a.m.			0	0			Waterspout	Waterspout in Saginaw Bay dissipated upon reaching land.
RHODE ISLAND Newport County	4	Late a.m. - p.m.					3	1	Electrical and rain	Moderately heavy rain and lightning damage centered in southeastern part of State. Pump houses at 2 Newport reservoirs struck by lightning in late morning. Switch boards and large pump motor badly damaged. 2 houses struck in late afternoon in Middletown area, with minor structural damage resulting. Rainfall up to 1.50 inches caused some street washouts and miring of 2 automobiles, but was very beneficial to parched farms in vicinity.
NORTH CAROLINA Cabarrus, Rowan, and Iredell Counties	4	2 p.m.					4		Wind and electrical	Trees blown down and several buildings destroyed or damaged by wind; power and telephone facilities knocked out by lightning. Most damage in vicinity of Kannapolis and Statesville.
SOUTH CAROLINA Central and eastern portions	4	Afternoon			1		5	1	Wind and electrical	Scattered severe local thunderstorm accompanied passage of squall line across central and east. Scattered damage included: Richland Co., Columbia, -$55,000 lightning damage; Lexington County, Lexington - 1 fatality from lightning; Lancaster County, Lancaster, - minor wind damage; York County, Rock Hill, - minor lightning damage. Storm moved southeastward.
FLORIDA Miami, Dade County	4	3-4 p.m.				1			Wind, electrical, and hail	Strong, gusty winds caused considerable minor damage in Miami area; lightning injured 1 person. Strong winds along waterfront damaged numerous small boats. Some hail reported in area.
INDIANA Evansville (southwest of), Vanderburgh County	4	3:25 p.m.			0	0			Funnel aloft	Funnel cloud not reaching ground reported.
ARIZONA Sentinel, Maricopa County	4	6 p.m.	12		0	0	3	1	Tornado (suspected)	Tornado moving westward passed 1/2 mile south of Sentinel, damaging service station.
GEORGIA Alma, Bacon County	4	9 p.m.			0	0	3	1	Wind, rain, electrical, and funnel aloft (suspected)	Trees uprooted and utility lines downed by winds with gusts estimated to 75 m.p.h. Lightning struck several buildings. Possible that tornado passed overhead as weird roaring sound heard by many citizens at height of storm.
MASSACHUSETTS Cape Cod area	4	P.m.					4	1	Electrical, rain, and wind	Lightning damaged several homes and knocked out powerlines in area and set afire store at Falmouth. Some trees felled by wind. Some phone cables damaged by rain.
NEW MEXICO Las Vegas and vicinity, San Miguel County	4				2				Rain	Heavy rains in nearby mountains washed out 3 small dams, damaged highway bridges, and flooded some low lands. 2 persons drowned while crossing flooded arroyo.
TEXAS Olton (near), Hale County	4				0	0			Funnel aloft	
	4									Minor storms also reported at Fairhope, and Mobile, Ala.; at Morrilton, Ark.; at Hugo, Colo.; at Dublin, Ind.; at Bowling Green, Mo.; at Okmulgee and Wagoner, Okla.; and near Ralls and Tulia, Tex.
ARIZONA Winslow (30 miles west-southwest of), Coconino County	5	11:05 a.m.			0	0			Funnel aloft	Pilot reported funnel cloud aloft.
MONTANA Dillon, Beaverhead County	5	Early morning						3	Wind and electrical	Wind speed reported at 75 m.p.h. Power- and telephone lines damaged, tree limbs broken, and TV antennas blown over.
ALABAMA Ashford, Houston County	5	1 p.m.			1		2	1	Electrical and rain	Man fishing in pond killed when he took refuge from rain under oak tree. Large hog also killed under same tree.
UTAH Emery, Duchesne, and Grand Counties	5	Afternoon					4	3	Rain and electrical	Heavy rain and resulting run-off caused damage to homes, roads, farms, and crops at Orangeville and in Hanna-Tabiona area; TV cable knocked out by lightning. Torrential rains in Moab area caused destruction of water lines crossing Mill Creek and other minor damage.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

AUGUST 1957

Place	Date	Time	Length of path, miles	Width of path yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MONTANA Warmsprings, Deer Lodge County	5	3 p.m.			1		1	1	Electrical	Lightning strike killed patient on grounds of State Hospital.
COLORADO El Paso and Crowley Counties	5	4-7:30 p.m.			0	0			Tornado, wind, and electrical	Near Palmer Lake, "twister" took part of roof off lumber company building and blew stacked lumber about. In Colorado Springs 2 homes struck by lightning, but no serious damage reported. At Ordway, valuable quarter horse and a calf killed by lightning. $3,000 damage at lumberyard.
MONTANA Harlem (12 miles south of), Blaine County	5	7 p.m.					3	4	Thunder, wind, and hail	Property damage from wind.
TEXAS Houston, Harris County	5	7 p.m.			1				Electrical	Young girl struck and killed by lightning.
TEXAS Jefferson County Airport (30 miles southwest of)	5	7 p.m.			0	0			Waterspout	Over Trinity Bay; moved northeastward.
MONTANA Saco (north and east of), Phillips County and Valley County	5	7:30 p.m.	8	*7			1		Hail	Crops complete loss in some sections. Storm moved eastward into western Valley County.
ARKANSAS Des Arc, Prairie County	5	8:45 p.m.				1			Electrical, wind, and rain	1 person injured and several electrical appliances damaged by lightning. Trees and TV antennas blown down. Fields flooded.
MONTANA Hinsdale (north of), Valley County	5	9 p.m.	10	*5			1	5	Hail	Greatest damage in Cache Creek community. Hailstones as big as walnuts. Crop damage 25 to 100 percent.
MONTANA Baylor-Wildrose area, Valley County	5	9 p.m.	10	440			1	4	Hail	Storm moved eastward.
SOUTH DAKOTA Woonsocket (west of), Jerauld County	5					1			Wind	Worker had both feet injured when wind snapped wires on building under construction.
	5									Minor storms also reported in Mesa County, Colo.; at Brady and near Opheim, Mont.; at Taylor, Utah; and in Pierce County, Wash.
MONTANA Northern Lewis and Clark and eastern Teton Counties	5-6	9 p.m.	30-40	*2-10			3	5	Hail	Hailstones up to 1 inch in diameter. Storm moved northeastward.
UTAH Helper-Castle Gate area, Carbon County	6	12:30 p.m.							Rain	About 2 inches of rain in 1/2 hour washed rocks, huge boulders, and mud across US Highway 50-6, 10 miles north of Castle Gate.
FLORIDA West Palm Beach, Palm Beach County	6	3 p.m.			0	0			Waterspout	
NEBRASKA Chadron (8 miles southeast of), Dawes County	6	Late afternoon			1		1	1	Electrical	Farmer in field struck and killed.
NORTH DAKOTA Ward, Renville, and Bottineau Counties	6	Evening	30				5	5	Wind and hail	Elevator damaged at Lansford. Many smaller buildings on farms wrecked or moved and many trees uprooted. Storm moved eastward.
PENNSYLVANIA Meshoppen area, Wyoming County	6	Night					4	1	Electrical	Barn fired by lightning and all contents completely destroyed. 11 cows electrocuted in field.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

AUGUST 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
	6									Minor storm also reported at Lordsburg, N. Mex.
RHODE ISLAND Rumford, Providence County	7	3 p.m.			0	0	1	1	Dust devil	Small but strong dust devil ripped shingles and tore awning at 1 house in Rumford, east of Providence. Disturbance moved to nearby house where wind gusts swept through window and knocked over lamp 15 feet inside bedroom. Blind blown down from garage window.
PENNSYLVANIA Allentown (near), Lehigh County	7	Afternoon	** 600	5	0	0	3	1	Tornado	Large carnival tent ripped when baby twister cut path almost right through middle of it. No other damage reported.
UTAH Weber, Davis, Sanpete, and Carbon Counties	7	Afternoon -evening							Wind and rain	Several homes and small buildings damaged. Heavy rain in Carbon County washed over roads and farms and caused rock slide over railroad tracks; section of U.S. Highway 50-6 washed out in Price Canyon. Small bridge washed away at Spring Glen.
INDIANA Brownstown, Jackson County	7	4 p.m.					4	1	Wind and electrical	High winds blew down smoke stacks of packing company. Large barn and shed struck by lightning and burned to ground east of Brownstown. $40,000 property damage by wind, $10,000 by lightning.
FLORIDA Jacksonville area, Duval County	7	5-6 p.m.			0	0			Funnels aloft and waterspouts	Several funnel clouds sighted near Mayport and several waterspouts also reported.
UTAH Salina area, Sevier County	7	5:30 p.m.	1-1/2	50	0	0	4		Tornado	Small tornado moving northward hit western edge of Salina, blowing roofs off turkey processing plant and service station; automobile damaged and small shed demolished.
NEBRASKA Callaway (near), Custer County	7	Evening				1	3	1	Electrical	Many spots struck; fuse boxes and other electrical equipment destroyed. 1 person burned.
NEW MEXICO Escondida	7								Rain	Flash flood in arroyo damaged 2 homes, crops, and gardens.
	7									Minor storms also reported in Montrose and Ouray Counties, Colo.; and at Redmond, Utah.
MONTANA Hogeland, Blaine County	8	5 p.m.		*5			3	5	Hail and wind	Most all damage from hail.
SOUTH DAKOTA Grenville, Day County	8	6-7 p.m.					4		Electrical	60-year old three-story school burned, following lightning strike.
	8									Minor storms also reported at Jewell, Kans.; and near Arnold and Greeley, Nebr.
LOUISIANA Coastal parishes	8-9				2		3	1	Hurricane Bertha	Weak extra-tropical low entered Gulf of Mexico on August 6 and drifted slowly southwest for next 2 days. On 8th, it developed into tropical storm about 100 miles south of mouth of Mississippi River. Storm moved in general northwest direction and crossed coast near Cameron late on 9th. It weakened after moving inland and turned northward through east Texas. Lowest pressure reported 29.46 inches at oil rig at Latitude 28.7 north, Longitude 91.4 west. Several reports of estimated winds of 50 to 70 m.p.h. received from ships at sea and from land stations. Highest tide reported 4.7 feet at Schooner Bayou control structure at west end of Vermilion Bay. Damages from storm small and rainfall so beneficial that it offset any losses. Fishing vessel which radioed for help off southwest pass was never located, so 2 possible deaths listed.
LOUISIANA Quarantine (west of), Plaquemines Parish	9	12:45 p.m.			0	0			Funnel aloft	Observed briefly to west of station.
MASSACHUSETTS Saxonville, Middlesex County	9	2:20 p.m.			0	0	1	1	Dust devil	Sent people scurrying to cover, but no serious damage done.
KANSAS Stevens County	9	Afternoon							Hail	Growing crops damaged across southern part of County by local falls of hail, some fields suffered more than 50 percent loss.

See footnotes at end of table.

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AUGUST 1957

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					Killed	Injured	Property (exclusive of crops)	Crops		
WASHINGTON Entire State	9								Electrical	Lightning from scattered thunderstorms over State started several small forest fires and damaged some residences in eastern Washington.
	9									Minor storm also reported at Wakefield, Nebr.
MONTANA Cut Bank, Glacier County	10	3:42 p.m.	10	1320			1	4	Hail	Hailstones as large as 1-1/4 to 3 inches reported. Storm moved northeastward.
MONTANA Toole County (northern half)	10	Afternoon -evening					3	5	Hail	At least 3 different storms struck County in afternoon and evening, widespread. Storms moved northeastward.
MONTANA Liberty County (northern half)	10	5 p.m.	100	*3			4	5	Hail	Hail drifts up to 8 inches by buildings. Hailstones up to 1-1/4 inches in diameter. Storm moved northeastward.
MISSISSIPPI Waveland (15 miles north-northeast of), Harrison County	10	5:23 p.m.			0	0	3	1	Tornado	Touched ground briefly then dissipated; occurred in thinly settled, wooded area; some damage to timber.
MONTANA Hogeland and Turner to Canadian Border, Blaine County	10	8:30 p.m.	50	*20			4	5	Hail and wind	Hailstones up to 2 inches in diameter. Wind estimated at 65 m.p.h., at Turner and 100 m.p.h., at Canadian Border.
RHODE ISLAND Central portion	10	P.m.							Electrical and rain	Lightning struck high voltage line at Narragansett shortly after noon. Power disrupted to several thousand users in many towns of Washington County. Most storm damage occurred in Providence. Lightning damage confined to downed tree limbs and utility poles and streets temporarily flooded. Precipitation of 0.68 inch between 6:20 and 6:50 p.m., observed at WBAS Providence.
MONTANA Hinsdale (north of), Valley County	10	Night						3	Hail	Hailstones as large as hens' eggs fell in Cache Creek community. Crops nearly all harvested, resulting in little damage. Considerable property damage.
	10									Minor storm also reported at Nashua, N. H.
NORTH DAKOTA Sheridan County	11	1 a.m.					4	4	Hail and wind	Much standing grain damaged or completely hailed out. Hail and wind damaged buildings and cars.
CALIFORNIA Palm Springs, Indian Wells, Palm Desert, and Cathedral City areas, Riverside County	11	11 a.m. - 6 p.m.							Rain	Severe thunderstorm with accompanying flash flood knocked out powerlines from Palm Springs to Palm Desert, and partially closed State Highway 111. Storm concentrated near Rancho Mirage, 9 miles east of Palm Springs, where 5 power poles toppled and water sluiced across highway.
MONTANA Geyser, Judith Basin County	11	5:30 p.m.	12	*3					Hail	Hailstones size of golf balls. Airplane 60 miles southeast of Great Falls at 5:25 p.m. (near Geyser area) reported golf-ball size hailstones knocked out astra dome at 10,000 feet M.S.L. Storm moved northeastward.
PENNSYLVANIA Washington, Washington County	11	6-9 p.m.					4	1	Electrical	2 barns and a house fired by lightning, destroying all 3 structures.
MONTANA Winifred, Fergus County	11	6:30 p.m.	40	*3-4			3	4	Hail and wind	Windows and roofs on west damaged by wind-driven hail. Some TV antennas blown over. Storm moved eastward.
	11									Minor storms also reported at Buchanan, Ga.; in northern Henry County; in Campbell County, Ky.; at Bristol, Tenn.; and at Gatesville, Tex.
ARKANSAS Blytheville, Mississippi County	12	1:48 a.m.			0	0	2		Funnel aloft and wind	Funnel sighted by several persons, -- remained about 200 feet in air. Damage due to wind. Storm moved northeastward.
MASSACHUSETTS Hubbardston and Sterling areas, Worcester County	12	4:45 a.m.			0	0			Hail and tornado (suspected)	Oblong and unusual-shaped hail up to 1-3/4 inches at Hubbardston, with some damage to crops. Narrow path 1/5 mile long 1/4 mile north of Sterling with wind damage to trees and utility poles suspected by local resident to be from small tornado.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MISSOURI Sikeston, Scott County	12	2-3 p.m.				3			Electrical and rain	Lightning damaged 5 homes and business buildings.
MARYLAND Baltimore City and Baltimore County	12	2:30-3:30 p.m.							Wind, electrical, and hail	Strong winds downed trees and some powerlines in scattered districts of metropolitan Baltimore. Lightning damaged dwelling in Dundalk. Hail, size of chesnuts, reported in some sections of Dundalk and nearby Fort Holabird.
NORTH DAKOTA Hettinger and Grant Counties	12	Afternoon					4	4	Wind and hail	2 large barns wrecked and other buildings damaged. Much grain damaged. Storm moved northwestward.
GEORGIA Calhoun, Gordon County	12	3:30 p.m.				1	4	1	Wind	Trailer overturned injuring 1 person. Roofs damaged and many trees uprooted and utility lines downed. 9 cars badly damaged by falling trees.
INDIANA Evansville, Vanderburgh County	12	3:35-5:15 p.m.				1		1	Wind, rain, and electrical	Heavy rain-wind-lightning storm damaged powerlines and flooded streets. 1 person waded into water in street to investigate smoke. He was electrocuted as he approached a "live" wire.
TEXAS Seymour (15 miles southwest of), Baylor and Throckmorton Counties	12	3:50 p.m.	** 700	Narrow	0	0	4		Tornado	Smashed hay barn, unroofed oat barn, and knocked down phone poles and wires; moved northeastward.
GEORGIA Americus (near), Sumter County	12	4 p.m.				1	4	1	Wind, rain, and electrical	Winds toppled 11 telephone poles along highway, 1 falling on moving automobile causing it to wreck and slightly injure driver. Other minor damage to roofs in area.
NORTH CAROLINA Forsyth, Surry and Yadkin Counties	12	4 p.m.						4	Hail	Light damage to 200 acres of tobacco, heavier damage to small area.
OKLAHOMA Oklahoma City, Oklahoma County	12	4 p.m.	20	*4		4		3	Wind, rain, hail, and electrical	Strong winds and golf-ball-sized hail stripped trees of small limbs and leaves, snapped off several utility poles, and damaged utility lines, etc. Automobile accidents caused 2 injuries and 2 resulted from walking into side of automobile during heavy rain. Storm moved southward.
MARYLAND Ocean City, Worcester County	12	Late afternoon							Rain and hail	Severe rainstorm reported preceded by heavy fall of hail.
MARYLAND Easton, Talbot County	12	5 p.m.							Hail	Severe hailstorm lasted about 20 minutes. Hailstones ranged in size from peas to as large as chicken eggs. Some farmers reported heavy crop damage.
COLORADO Costilla County	12	5 p.m.							Rain and hail	Official estimate of 2-1/4 inches of rainfall in 45 minutes flooded Culebra River, which inundated 5,000 acres of rich farm land and flooded many homes in San Luis. Hail accompanied rain and knee-deep drifts observed. Estimated that 50 percent of crops in 5000-acre area completely ruined.
TEXAS Lake Fort Phantom Hill, Jones County	12	5:30-6 p.m.		7	0	0	3		Tornado	Ripped porch off lake cabin, tore off roof and water cooler on roof.
OKLAHOMA Lawton, Comanche County	12	5:45 p.m.					4	1	Wind, rain, and electrical	Winds up to 82 m.p.h., damaged hangars and several planes at airport. 300-foot section of concrete block fence blown over. Minor damage resulted to electric lines. Storm moved east-northeastward.
TEXAS Denison and vicinity, Grayson County	12	6 p.m.					5		Wind	Heavy damage to trees and TV antennas in Denison. Boats and boat houses smashed at Lake Texoma resort. Storm moved northeastward.
SOUTH CAROLINA Florence, Florence County	12	6:22 p.m.	5	*3-1/2			5		Wind and hail	Combination of wind and hail stripped many trees. Considerable wind damage in and around city. Wind damage $140,000, hail damage $10,000. Storm moved southward.
OKLAHOMA Walters area, Cotton County	12	6:30 p.m.						3	Wind, rain, hail, and electrical	Strong winds damaged buildings at several farmsteads, also trees and utilities in area east and north of Walters. Heavy hail fell in spots.

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STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
SOUTH CAROLINA Timmonsville adjoining rural areas, Florence County	12	7:05 p.m.	7	*2			5	5	wind and hail	Several tobacco warehouses damaged, also lesser wind damage in area. (Hail damage to buildings $18,000, to crops $60,000; wind damage $207,000). Storm moved southward.
NORTH DAKOTA Central and eastern portions	12	7:25 p.m.							Rain and wind	Heavy rains, several inches in an hour in some places, caused considerable damage to crops. Deluges washed away swathed grain, floated bales of hay from fields, and flooded some roads. Heaviest damage in Pierce, Grand Forks, Wells, and Stutsman Counties. Basements flooded in Grand Forks, Fessenden, and Carrington. Barn and elevator destroyed near Jamestown. Electricity out at Jamestown and Fargo for short period. Storm moved eastward.
NORTH DAKOTA Jamestown (52 miles southeast of), Ransom County	12	8 p.m.	1/2	34	0	0	4	1	Tornado	Destroyed warehouse and several other buildings and grain bins blown down. Touched southeast corner of Englevale. Storm moved southeastward.
VIRGINIA Mathews area, Mathews County	12	9:50 p.m.							Hail, electrical and wind	Hail, with largest stones described as walnut size, broke windows in buildings. Lightning caused 2 fires and knocked out electric power. Winds blew down communication lines.
GEORGIA Fulton, Spalding, Jackson, and Clinch Counties	12	P.m.			1		3	1	Wind, rain, and electrical	1 person killed by lightning in Atlanta and several minor fires started. Trees uprooted and some damage to utility lines. Some minor wind damage also reported in thunderstorms in Griffin area, Spalding County and near Commerce, Jackson County. Small hail also fell in Griffin. Minor, local wind damage reported near Homerville, Clinch County.
TENNESSEE Etowah, McMinn County	12	P.m.					1		Hail	Heavy damage to crops.
TENNESSEE Warren County	12	P.m.						1	Electrical and wind	Lightning ignited a relatively new barn which burned to ground. High winds blew down a number of TV antennas, ripped awnings from houses, and blew away 2 dog houses.
	12									Minor storms also reported at Athens and in Tri Cities area, Ala.; at Phoenix, Ariz.; in Canon City and Hartsell areas, Colo.; near Tampa, Kans.; in Edmonson, Henderson, and Robertson Counties, Ky.; in Minneapolis-St. Paul area, Minn.; at Farmington, Mo.; at Poteau and Roosevelt Bridge, Okla.; in Aberdeen and Wilmot areas, S. Dak.; in Glendale community and at Mansfield, Tenn.; and in Hopewell area, Va.
ARKANSAS Yell, Logan, Johnson, Pope, Newton, Perry, Conway, Van-Buren, Searcy, Faulkner, Scott, Cleburne, Stone, and White Counties	12-13	Morning 12th-afternoon 13th			2				Rain	Heavy rains over large area caused flash flooding over wide area. Precipitation averaged over 8 inches over most of the area. Unofficial amount of 16 inches reported near Chimes, Van Buren County. Extensive damage to roads and bridges. Considerable flooding of streets and business buildings in Clarksville, Russellville, and Clinton. 2 persons drowned in Conway County when Cypress Creek overflowed its banks. Unusually high water reported on several creeks. Flash flood on Little Red River, which reached stage of 44.2 feet at Heber Springs at 7 a.m., of 14th and 36.5 feet at Judsonia at 4:30 a.m., of 16th.
	12-13									Minor storms also reported at Alpena, Goodwin, Highmore, and Waubay, S. Dak.
TEXAS Jefferson County Airport (12 miles east of)	13	9:55 a.m.			0	0			Waterspout	Observed over Lake Sabine.
MINNESOTA Southern portion	13	A.m.							Rain	Some highway shoulder washouts, most serious near Albert Lea.
KANSAS Ionia (southwest of) Jewell County	13	3:50 p.m.			0	0			Funnel aloft	Small funnel cloud observed moving northeastward. did not come to ground and was visible only a few minutes.
OKLAHOMA Stephens County	13	4:30 p.m.						3	Wind, rain, hail, and electrical	Strong winds destroyed and damaged buildings in or near Gas City, Fair, and Santa Fe communities.

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KANSAS Weskan (north-west of), Wallace County	13	4:30-5:15 p.m.	6	*2			3	4	Hail	Heavy hail damaged crops severely in 6-1/2 sections immediately northwest of Weskan. Average stones near an inch in diameter, with some 3 inches in diameter. Storm moved northwestward.
NORTH DAKOTA McLean and Mercer Counties	13	5 p.m.					4	4	Wind and hail	Several buildings totally demolished and others damaged in and near Riverdale, Falkirk, Underwood, and Hazen areas. Storm moved eastward.
TENNESSEE Jackson (near), Madison County	13	9:38 p.m.			0	0			Funnel aloft	Funnel cloud reported 19 miles north of Jackson.
TEXAS Snyder (north of), Scurry County	13	11:25 p.m.			0	0			Funnel aloft	
CALIFORNIA Needles, San Bernardino County	13	Evening							Wind, electrical, and rain	Severe thunderstorm, concentrated on west side of Needles, lasted more than 1-1/2 hours. Television antennas, signs, power- and telephone lines torn loose, and lightning struck several transformers, causing power outages in many sections of city. Roofing torn from high school auditorium, and class room wings, flooding some class rooms. Superstructures and air vents also swept away by wind, and wind caused considerable damage to coolers. Baseball field slightly damaged by erosion. More than 1 inch of rain fell in storm area.
IOWA Southwestern portion	13	Evening					4	1	Electrical	Several farm buildings burned.
KANSAS Morrill (south of), Brown County	13	Evening							Electrical	Large barn and contents burned after being struck by lightning.
	13									Minor storms also reported in Hancock County, Iowa; near De Witt and Verdon and at Omaha, Nebr.; at Walters, Okla.; and at Marion, S. Dak.
ARKANSAS Greene County (eastern portion)	13-14	11 p.m.-4:30 a.m.	20						Rain	Heavy rain, with precipitation amounts ranging up to unofficial 12 inches caused flash flooding. Extensive damage to roads estimated at $75,000. Missouri Pacific freight train derailed when it hit section of flooded track. Many fields in area flooded. Storm moved northeastward.
MISSOURI Senath and Kennett, Dunklin County	13-14	Night							Rain, wind, and electrical	9.00 to 11.00 inches of rain fell in 6 to 8 hours in Kennett area. Heavy local flooding.
TENNESSEE Covington and vicinity, Tipton County	14	2:30 a.m.				1	4	1	Rain and electrical	Flash floods resulted in $10,000 water damage at Crystal Works, washed out rail siding under construction, and entered some homes. Lightning struck industrial plant, injuring nightwatchman and damaging furnace.
TENNESSEE Halls and vicinity, Lauderdale County	14	3 a.m.						1	Electrical and rain	Lightning and accompanying flash flood resulted in considerable damage and delay to oil-well drilling group. Many electrical appliances lightning damaged.
ILLINOIS Boone, McHenry, and Cook Counties	14	4 a.m.					4		Electrical and rain	Several lightning fires reported. Heavy rain showers also occurred at Chicago.
NORTH DAKOTA Fessenden (7 miles northeast of), Wells County	14	7:15 a.m.			0	0	4	3	Tornado	Barn, garage, granary, and brooder house destroyed. Damage reported on 1 farm only.
MICHIGAN Lower southwestern portion	14	Morning					5	1	Electrical	Lightning-set fires destroyed factory at Allegan and barn in Cass County. Minor lightning damage occurred at South Haven.
ALABAMA Saco, Pike County	14	1 p.m.				2	3	1	Electrical	2 men hit by lightning and left in serious condition. 3 days earlier they were caught stealing gasoline from a truck. When arrested 1 held his hand up and said to the sheriff, "I hope God will strike me down with lightning if I ever stole any gas before."

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ALABAMA Columbiana, Shelby County	14	Afternoon			1	1	1	1	Electrical	Man in field on load of hay on truck killed. Man on ground throwing hay to him injured.
ARKANSAS Craighead and Poinsett Counties	14	Afternoon							Electrical, wind, and rain	1 house destroyed by fire set by lightning and 1 damaged. State Police Radio Station at Harrisburg damaged by lightning. Several trees damaged by wind. Hail damage very light.
OKLAHOMA Hanson, Sequoyah County	14	4 p.m.	5		0	0		3	Tornado, wind, rain, hail, and electrical	Several persons reported funnel cloud about 20 feet off ground and caused damage to homes, buildings, trees, utilities, etc. Hail 1/2 inch in diameter covered ground 1 inch deep over area 3 miles long and 1 mile wide. Storm moved northeastward.
OKLAHOMA Tishomingo, Johnston County	14	4:30 p.m.	10	880				3	Wind, rain, and hail	Strong winds and hail up to 1 inch in diameter caused damage to windows, TV antennas, trees, etc.
OKLAHOMA Marietta (15 miles northeast of), Love County	14	5 p.m.	3	*2				3	Wind, rain, hail, and electrical	Hail up to 3/4 inch in diameter covered ground, resulting in heavy damage to crops. Wind, rain, and lightning severe during storm which moved southwestward.
SOUTH DAKOTA Marshall County	14	5:20 p.m.			0	0			Tornado	Touched ground twice. Apparently no damage.
OKLAHOMA Pryor (7 miles southeast of), Mayes County	14	5:30 p.m.			0	0			Tornado (suspected)	Tornado reported to have struck farmstead. Outbuildings destroyed or damaged and windows blown out.
OKLAHOMA Ketchum (2-1/2 miles east of), Delaware County	14	6 p.m.	3	880	0	0	3	1	Tornado (suspected), wind, rain, and electrical	Tornado reported to have moved off Grand Lake and hit properties along west shore near Ketchum. Cabins damaged, trees uprooted and broken off, and strong winds and high waves caused extensive damage to boat docks. Storm moved northwestward.
GEORGIA Cobb to Jackson Counties	14	P.m.			0	0	3	1	Wind, electrical, and funnel aloft	Widespread but minor damage caused by wind and lightning in Marietta. Trees uprooted and utility lines damaged, disrupting services in many sections of city. Lightning struck Jackson County Jail at Jefferson on same afternoon, and an unconfirmed funnel cloud reported above ground near U.S. Highway 78 between Atlanta and Athens.
MINNESOTA Southwestern portion	14	P.m.			0	0	5	6	Wind, hail, rain, and funnel aloft	Damage in 11 counties. Hail up to golf-ball size stripped crops and damaged roofs. 40 barns and many trees blown down. Report of funnel cloud near Beardsley, Big Stone County, not confirmed. Storm moved southeastward.
SOUTH DAKOTA Roberts and Grant Counties	14	Evening					4	4	Wind and hail	Wind demolished weaker farm buildings and destroyed home at Big Stone City. Extensive crop damage near Lake Traverse from base-ball-sized hail. Some stones saucer-shaped. Storm moved southeastward.
TENNESSEE Memphis, Shelby County	14							1	Electrical	Lightning knocked 400-pound stone from church tower damaging church roof. Lightning, entering home by way of radio wire, burned hole in mattress; 13-year old boy sleeping upon mattress not injured.
	14									Minor storms also reported in Madison County, Ky.; at Benkelman and near Rising City and Sargent, Nebr.; in Cleveland County, N.C.; at Blanco, Spiro, and Tipton, Okla.; at Chattanooga, and Dyersburg and in Millsfield Community, Tenn.; and near Amarillo, Tex.
RHODE ISLAND Block Island and Washington County	15	8 a.m.- 3 p.m.					4	1	Electrical and rain	Precipitation totaling 2.79 inches fell on Block Island, with 2.11 inches measured between 12:45 and 1 p.m. 2 power generators burned out by lightning strike, with disruption of all power on island. Portable generator moved by Navy from Newport and power resumed 24 hours after storm. Lightning-caused fires destroyed barn and contents on island and machine shop at Ashaway for total damage of $6,000. Other lightning strikes caused minor fires in 2 buildings at Narragansett as well as knocking out telephones for 8 hours. Streets in affected area flooded with as much as 2 feet of water at many points. 1 automobile accident blamed on flooded streets.

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MICHIGAN Muskegon (20 miles north of), Muskegon County	15	10:05 a.m.			0	0			Funnel aloft	Unconfirmed funnel aloft.
COLORADO Metropolitan Denver, Denver County	15	12:20 p.m.				1			Electrical	Lightning struck several homes, starting fires. 44,000-volt REA transmission line struck 8 miles south of KOA radio towers, cutting off power to over 5,000 homes and business in adjoining towns. Woman injured in southwestern Denver by lightning. Storm moved southeastward.
IDAHO Inkom (7 miles north of), Bannock County	15	12:30-1:30 p.m.	5	*2					Rain and hail	Rain caused flash flood in Buckskin Basin. Hail 1/8 inch in diameter damaged grain estimated at 11 to 48 percent on various fields. Storm moved eastward.
MICHIGAN Lower southwestern and extreme southern portions	15	Afternoon					5	4	Wind, electrical, and hail	High winds and lightning caused scattered damage in several counties. Hail damaged apples and peaches in eastern Muskegon and northern Kent Counties.
ALABAMA Huguley community (8 miles west of Phenix City), Russell County	15	5:30 p.m.			0	0	3	1	Tornado (suspected)	Several houses damaged. Storm called tornado by press.
ALABAMA Smiths, Lee County	15	5:30 p.m.	Short	150	0	0	3	1	Tornado (suspected)	Storm called tornado by press and Highway Patrol, 2 houses damaged considerably and 2 barns collapsed. 3 power poles snapped.
NEBRASKA Grand Island (5 miles west of), Hall County	15	7:46 p.m.			0	0			Funnel aloft	
INDIANA Greenfield, Hancock County	15	9 p.m.					4	1	Wind and rain	Damage by high winds and falling trees. Heavy rains flooded streets. Property damage $5,000 by wind, $5,000 by rain.
INDIANA Terre Haute (20 miles north of), Vermillion County	15	9:09 p.m.			0	0			Funnel aloft	Pilot reported funnel cloud aloft.
INDIANA Indianapolis, Marion County	15	9:30 p.m.				2	5	1	Electrical wind, and rain	Power services knocked out to approximately 12,000 homes; 400 telephone lines damaged, and city sewers and streets suffered $100,000 damage. Property damage by lightning $70,000, by wind $70,000.
ILLINOIS Southeastern portion	15	Evening					4		Electrical	Lightning damage reported at Seymour, Newton, Robinson, and Lawrenceville.
INDIANA Emporia (near), Madison County	15	Evening					4	1	Lightning	Lightning and resulting fire destroyed barn.
INDIANA New Winchester, Hendrick County	15	Evening					4	1	Electrical	Barn destroyed by fire as result of lightning.
INDIANA Mechanicburg (2 miles west of), Madison County	15	Evening					4	1	Electrical	Lightning and resulting fire destroyed barn.
INDIANA Ft. Wayne, Allen County	15	Evening			1		3	1	Electrical, wind, hail, and rain	Boy struck by lightning while playing golf. Hail size of golf balls fell. Rain heavy. $1,000 property damage by wind.
NEBRASKA Battle Creek (south of), Madison County	15	Night			0	0	3	1	Tornado and electrical	Property damage $500 by tornado. $500 by lightning.
	15									Minor storms also reported at Burket and Claypool, Ind.; near Axtell, Kans.; at Concordia and Lexington, Mo.; in Campbell vicinity, at Elsie and Geneva, and near Deshler, Loomis, McCool, and Tecumseh, Nebr.; at Weleetka, Okla.; and at Upton, Wyo.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
	15-16									Minor storm reported at Glasgow, Mo.
ARIZONA Yuma, Yuma County	16	Midnight					5	1	Electrical and wind	Lightning and wind damaged homes and stores.
NEBRASKA Crete, Saline County	16	Early a.m.						1	Electrical	House struck, considerable damage.
NEBRASKA Stromsburg, Polk County	16	Early a.m.						1		House struck, considerable damage.
KANSAS Nickerson, Reno County	16	6:30-9 a.m.							Electrical	Severe electrical storm. A number of houses, light and telephone poles, and some trees hit. 2 houses struck twice within minutes. Telephones, electric lines, and numerous appliances knocked out of service. Several trees stripped of bark and some roof and siding damage.
COLORADO Fremont County	16	Near noon							Rain	Newly-built county road, culverts, and bridges heavily damaged, when cloudbursts at higher elevations flooded 2 gulches in western part of County.
MASSACHUSETTS Amesbury, Essex County	16	2:15 p.m.			0	0	1	1	Waterspout	Funnel not visible except near water on Lake Attitash. Black cloud overhead. 14-foot boat with motor picked up and overturned.
KANSAS Stevens County	16	2:45-3 p.m.			0	0			Funnels aloft	3 funnel clouds aloft sighted moving southwestward in area from 2-1/2 miles to 8 miles west of Hugoton.
MISSOURI Jefferson City, Cole County	16	3 p.m.							Rain, wind, and electrical	Heavy rain, 1.50 to 4.00 inches in about 1 hour. Heavy wind damage to roofs of several buildings.
KANSAS Elk and Montgomery Counties	16	3-8 p.m.							Electrical	Numerous lightning strikes reported over the 2 Counties. Telephone and light services had many outages. Trees, roofs, and aerials damaged and house in Independence total loss from fire caused by lightning.
KANSAS Kingman County (southeastern portion)	16	Afternoon				1			Electrical	16-year old boy struck by lightning while driving tractor. He suffered burns on his neck and chest and was hospitalized several days.
KANSAS Caldwell (5 miles west of), Sumner County	16	Afternoon			1		1	1	Electrical	Man killed by lightning while plowing with a tractor. Examination showed a burnt spot on top of his head.
SOUTH DAKOTA Pennington County	16	Afternoon					2		Hail	4 inches of hail in Black Hills from Pactola to Sheridan Lake. Car skidded into ditch.
OKLAHOMA Bristow, Creek County	16	7:15 p.m.	2	1000				1	Wind, rain, and electrical	Strong winds blew roof off school gymnasium onto house, destroying it. Estimated damage to school $7,692. Roof blown off warehouse and large tree blown across another house, destroying it. Many large trees blown over, roofs damaged, and lightning struck TV antenna and damaged set. Storm moved southeastward.
OKLAHOMA Tahlequah, Cherokee County	16	P.m.						1	Electrical	Lightning struck 2 homes; interior of 1 literally exploded. Wiring damaged in both homes. Several barns near Hulbert hit by lightning. Fire destroyed 1 which contained 1,000 bales of hay and some grain.
NEBRASKA Superior (northern edge), Nuckolls County	16		Short	Narrow	0	0	2	2	Tornado	Funnel observed by several persons, struck little of value.
	16									Minor storms also reported near Claflin and Hays, Kans.; at Carthage, Keytesville, Marionville, Perryville, and Rolla, Mo.; and at Alva, Claremore, Drumright, Duncan, Jay, and Morrison, Okla.
TENNESSEE Nashville, Davidson County	17	4 a.m.-5 p.m.						1	Rain	Flash flood in wake of heavy thunderstorm reached 4-feet depth over some streets and flooded some buildings.
FLORIDA Jacksonville area, Duval County	17	Noon - 3 p.m.							Electrical	Violent thunderstorm knocked out numerous powerlines, caused several small fires, but damages generally minor. Weather Bureau counted 516 lightning strokes between 12:10 and 4:45 p.m.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MASSACHUSETTS Worcester, Worcester County	17	1 p.m.			0	0	3	1	Dust devil	Twister sucked out plate-glass window from service station and cracked windshields on 6 automobiles. Other minor damage. Storm moved eastward.
NEW MEXICO Santa Fe, Santa Fe County	17	2 p.m.					5		Rain	Heavy rain in eastern portion of town, estimated at 2.50 inches. Severe flooding in some sections damaged streets, bridges, and some homes and business buildings.
SOUTH DAKOTA Castlewood, Hamlin County	17	2-3 p.m.						4	Hail and wind	Hail drifted 6 inches deep. Gusty wind. Storm moved southeastward.
MASSACHUSETTS Rutland, Worcester County	17	2:30 p.m.			0	0	1	1	Dust devil	Dust funnel interrupted proceedings at Rutland Fair, but damage slight.
WYOMING Riverton, Fremont County	17	4:30 p.m.	15	*6			3	4	Hail	Most fabric on 5 airplanes cut to shreds accounting for largest part of property damage. Crops damaged, included small grains nearly ready for harvest, hay, beets, and beans. Storm moved southeastward.
COLORADO Larimer, Weld, Morgan, Washington, and Yuma Counties	17	Afternoon -evening					3		Rain, hail, and electrical	Up to 4 inches of rain fell in Loveland and Bertheud areas. Hail in scattered areas did heavy damage to beets and other crops. Farmer living 18 miles northeast of Ft. Morgan lost 6 head of cattle by lightning.
TEXAS Corsicana, Navarro County	17	5:45 p.m.	3-4	1300	0	0	4		Tornado and electrical	Flattened drive-in theatre screen made of concrete blocks. Accompanying lightning killed some livestock. Storm moved southeastward.
MONTANA Lewistown, Fergus County	17	6:30 p.m.	25				5	4	Hail	Hailstones up to 1-1/4 inches in diameter. About 85 percent crops harvested before storm hit. Storm moved northeastward.
TENNESSEE Cleveland Bradley County	17					1	1	1	Electrical	Lightning struck woman, resulting in minor injuries.
	17									Minor storms also reported at Florence, Tombstone, and Yuma, Ariz.; at Hawkinsville, Ga.; and near West, Tex.
LOUISIANA Mandeville, St. Tammany Parish	18	12:30 p.m.			2		3	1	Wind, electrical and rain	Small plane crashed during thunderstorm killing occupants; thunderstorms caused high waves on Lake Pontchartrain, but all boats reached land safely.
FLORIDA Ft. Pierce, St. Lucie County	18	3 p.m.			0	0			Funnel aloft	Cloud remained aloft.
ALABAMA Addison and Arley areas, Winston County	18	Afternoon					4	1	Electrical	3 homes destroyed (presumably by fire) and 6 others extensively damaged. 5 cows at dairy killed.
FLORIDA Naples, Collier County	18	Afternoon			1				Electrical	
SOUTH DAKOTA Jackson County	18	Afternoon					2		Hail	Hail drifted 4 inches deep. West of Kadoka, car slid into deep washout.
IOWA Coggon, Linn County	18	4:05 p.m.			0	0			Funnel aloft	Unable to confirm report.
ARIZONA Doney Park, Coconino County	18	5:45 p.m.		800	0	0			Tornado (suspected)	Possible tornado moved northeastward across open country east of Flagstaff.
	18									Minor storm also reported in Yorktown area, Tex.
CALIFORNIA Imperial County, (western portion)	19	1 a.m.				7			Rain and wind	Intense thunderstorm, with locally heavy rains and high winds caused damage over wide area from southern portions of Imperial Valley northward to Riverside County line. Winds downed telephone and powerlines and damaged television antennas. Many dips on Highways 99 and 111 were full of water and highway traffic disrupted in many places. Highway 111 partially closed when mud several feet thick drifted across route. At least 1 highway accident attributed to storm occurred east of Holtville, injuring 7 persons. Heaviest rain, 0.62 inch, fell east of Calexico.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

AUGUST 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
VIRGINIA Eastern portion	19	8 a.m. - 9 p.m.					5	1	Wind and rain	Gale winds throughout day, with gusts to 61 m.p.h., at Norfolk, along with drought-breaking rains exceeding 3 inches over eastern Virginia, caused widespread damage in coastal areas. Brick wall of new Post Office building under construction at Virginia Beach blown down; freighter grounded; hundreds of small craft damaged at docks; some roofs sustained major damage; blowing debris and winds broke many windows, awnings, etc. Electric power and communications disrupted. High tide of 5.56 feet above MLW or 2.65 feet above normal at 3:30 p.m., caused 1-1/2 feet of water in some downtown street intersections in Norfolk. Vehicular and ferry traffic disrupted. Many vehicles damaged.
FLORIDA Ft. Myers, Lee County	19	Noon			0	0			Waterspout	
MONTANA Glasgow, Valley County	19	6:33 p.m.						1	Wind and electrical	Maximum 1 minute wind speed at WBAS 63 m.p.h., gusts up to 76 m.p.h. Major damage to Cessna 140 airplane.
	19									Minor storms also reported near Rushville, Nebr.; and near Wheatland, Wyo.
MASSACHUSETTS Rockland, Plymouth County	20	2 p.m.			0	0	1	1	Dust devil	Funnel moving southeastward picked up small trailer and ripped clothes from line.
ARIZONA Prescott (40 miles northwest of), Yavapai County	20	Afternoon			0	0			Tornado	Pilot reported funnel cloud touching ground. No damage reported.
MISSOURI Nodaway County (eastern half)	20	7-9 p.m.							Wind, rain, and electrical	Wind at Maryville Airport estimated 65-70 m.p.h. Many powerlines, telephone lines and trees downed. Storm moved southeastward.
MISSOURI St. Joseph, Buchanan County	20	7:45-8:17 p.m.							Wind	Gusts to 53 kts. at St. Joseph Airport at 8:17 p.m. Many powerlines downed; tree limbs blocked streets.
NEBRASKA Wauneta (near), Chase County	20							3	Hail	Hailstones size of marbles; accumulated on highway to stall traffic; ground covered to depth of 3 inches in spots. Main crop (wheat) had been harvested. Moderate property damage.
	20									Minor storms also reported in Lyon County, Iowa; and at Avoca and Holdredge and near Lyons, Nebr.
OREGON Scattered areas over much of State	20-21	Afternoons - evenings					4	3	Electrical	Widely distributed thunderstorms started a number of range fires and a few small forest fires. 1,200 acres of grassland in Malheur County, 200 acres of grassland on outskirts of John Day, and 4 acres of range land in Silver Lake area burned over.
COLORADO Mesa County	21	10-11:30 a.m.							Rain	Nearly 3 inches of rain came down in 1-1/2 hours, causing flash flood in vicinity of Gateway. Water up to 6 inches deep in homes and business places. 1 bridge washed away and roads washed and covered with dirt, mud, and rocks.
NEVADA Las Vegas, Clark County	21	A.m.					4		Rain	Violent thundershowers washed out highways and caused damage to city streets.
PENNSYLVANIA Harrisburg (near), Dauphin County	21	2:30 p.m.			0	0	2	1	Tornado	Baby twister lifted small pavilion about 20 feet into air and carried it some 30 feet. Impact of it hitting ground completely destroyed it.
COLORADO Jefferson, Denver, and Arapahoe Counties	21	Afternoon				1			Rain and electrical	Heavy rain in mountains caused flash floods in Mt. Vernon and Bear Creek Canyons. Bridge washed out at Idledale on Bear Creek, temporarily stranding several families. Bear and Vernon Creeks crested at Morrison at same time, flooding business section. Considerable damage to homes and cabins along flooded streams and some private bridges to homes across creek washed out. 1 resident of Kittredge estimated damage of $5,000 to his home. Some flooding of South Platte River in southwestern Denver and heavy rains flooded streets and caused some damage to homes in Golden, Lakewood, Edgewater, and Arvada. 10-year old boy hospitalized after being struck by lightning in Aurora.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

AUGUST 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MASSACHUSETTS Pittsfield, Berkshire County	21	5 p.m.					5	1	Rain and wind	Gullywashing cloudburst, said to be worst in memory of residents, flooded basements and streets when 3 inches of rain fell in little over 1 hour. Wind damage slight, but some trees or branches fell on powerlines. Most utility outages due to floods. 6 families evacuated from their homes.
IDAHO Butte and Custer Counties	21								Rain, hail, and wind	Serious damage to crops near Arco, Moore, Darlington, Leslie, and Mackay. Hailstones as large as marbles, ground white. Storm moved eastward.
CONNECTICUT Central portion	21-22	5 p.m. 21st - 2 a.m. 22d					3	2	Electrical, rain, and hail	Unusual electrical storm, occurring under dominant anticyclonic circulation at surface, produced heavy rains, principally in New Haven County and Storrs area of Tolland County. Official measurements of 1.50 to 2.50 inches in affected areas, although unofficial observer at Storrs measured 4.50 inches. Extensive street flooding, with reports of basement and store flooding in Meriden but latter damage minor. Flash flooding of small stream at Storrs resulted in drowning of 2 cows for $500 loss. Numerous lightning strikes in Wallingford-Hamden-Waterbury areas resulted in some structural damages. Extensive power and telephone disruptions. Marble-sized hail at Cheshire caused minor crop damage. Rainfall greatly replenished depleted reservoirs, but runoff too heavy to greatly benefit drought-stricken crops. Storm moved southeastward.
UTAH Kanab area, Kane County	22	Afternoon							Rain	Heavy rain washed out several culverts and roads in Kanab area.
COLORADO Merino and Atwood, Logan County	22	5-6 p.m.	8	*5				5	Hail	Hail mostly 3/4 inches in diameter, with some of 1 inch. Storm moved eastward.
SOUTH DAKOTA Spencer, McCook County	22	9:20 p.m.			0	0			Funnel aloft	Public report.
SOUTH DAKOTA Minnehaha County	22	10:38 p.m.			0	0			Funnel aloft	Pilot report.
SOUTH DAKOTA Statewide	22					2	2		Electrical	At Burke, lightning cracked full length of a chimney. At Roubaix Lake in Black Hills, 2 National Guardsmen stunned when stroke apparently hit a field phone wire. At Sioux Falls, dirt showered on nearby houses when lightning dug hole 1 foot deep and 2 feet across.
	22									Minor storms also reported at Tucson, Ariz.; and at Howe, Idaho.
FLORIDA Pass-a-Grille, Pinellas County	23	5 p.m.			0	0			Funnel aloft and waterspout	Several funnel clouds sighted, 1 believed to have been waterspout.
FLORIDA Clearwater, Pinellas County	23	Evening			2				Wind	High winds in Gulf of Mexico off Clearwater contributed to sinking of shrimp boat, 2 fishermen missing and presumed lost.
	23									Minor storm also reported in O'Brien County, Iowa.
FLORIDA Tavernier, Monroe County	24	10:30 a.m.			0	0			Waterspout	
FLORIDA Orlando, Orange County	24	Afternoon							Wind and electrical	Strong winds, with gusts to 60 m.p.h., downed Highway Patrol radio tower and numerous trees and disrupted power services generally.
NORTH DAKOTA Dunn Center (near), Dunn County	24				0	0			Funnel aloft	Zigzag path, mostly southwestward.
ARIZONA Prescott, Yavapai County	25	Afternoon			1	1	1	1	Electrical	Lightning killed girl and injured her companion.
UTAH Kanab, Kane County	25	3:15 p.m.					3	3	Hail	Hail 2 inches deep accumulated during 10-minute hailstorm; gardens flattened; several roofs damaged, and when hail melted some flooding occurred.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
PENNSYLVANIA York area, York County	25	5-8 p.m.					4	1	Electrical	Lightning struck and set fire to barn, completely destroying structure and contents. Storm moved northeastward.
MARYLAND Hills Point, Dorchester County	25	Night		1000					Wind and rain	Sudden windstorm like an immature twister swept 1,000 yard path through Hills Point area, ripping roofs from small buildings and uprooting trees. About one-half the dwellings in this community suffered minor damage. Windlash came during severe rainstorm.
NEW MEXICO Winston, Sierra County	25								Rain	Flash flooding caused by rains up to estimated 5 inches; damaged several homes.
NEW MEXICO Socorro (near), Socorro County	25				2				Rain	Child drowned as car overturned in flooded arroyo.
	25									Minor storm also reported at Jewell, Iowa.
CONNECTICUT Fairfield County	25-26	A.m. 25th - p.m. 26th							Electrical and rain	As storm of more or less gentle rain covered State, thunderstorm activity erupted on evening of 25th in Stamford-Bridgeport areas. Lightning bolt knocked out feeder line on electrified railroad in Norwalk. Trains between New Haven and New York stalled or delayed for several hours. House in Stamford struck by lightning, with some damage resulting from fire. Telephone and power failures to 700 users.
MASSACHUSETTS Cape Cod and Martha's Vineyard areas	25-26	Near midnight					3	1	Rain, wind, and electrical	Rains and high tide undermined 2 cottages at Dennisport and washing rains collapsed foundation wall of new building at Edgartown. Some road washouts occurred. Minor damage from lightning. Wind felled some trees and interrupted utility service.
IOWA Central portion	26	Early a.m.					4	1	Electrical	Some farm buildings burned and others damaged.
IDAHO Inkom, Bannock County	26	1 p.m.							Rain and hail	Heavy damage to wheat crops, loss estimated to 50 percent of crop on 1 farm. Water roared down Rapid Creek through Inkom about 5:30 p.m., in second flash flood in 11 days. At least $1,000 road damage.
NORTH CAROLINA Carteret, Craven, Edgecombe, Franklin, Lenoir, Nash, and Vance Counties	26	4-6 p.m.					4	5	Hail, wind, rain, and electrical	Widespread thunderstorms in east caused hail damage to tobacco crop, structural damage due to wind and lightning fires, and some local overflow of storm-drainage facilities.
NEBRASKA Martin Keith County	26	5:05 p.m.					4	1	Electrical	Depot struck and burned, furniture also lost.
COLORADO Rifle (near), Garfield County	26	6:30 p.m.			1				Electrical	15-year old boy killed by lightning while working in hay field.
KANSAS Comanche County	26	8 p.m.			1				Electrical	Man struck by lightning and killed while plowing with tractor, 14 miles south and 3 west of Coldwater. Prairie fire started by lightning about same time nearby.
TEXAS Perryton and vicinity, Ochiltree County	26					3	3		Wind and electrical	2 persons injured when trailer overturned; child injured when shed blew down. Carports blown off, roofs damaged, fences shattered, windows broken, tree limbs knocked down and 1 home struck by lightning.
	26									Minor storms also reported at Scottsdale and Tempe, Ariz.; in Mesa County, Colo.; and at Etna, Wyo.
KANSAS Toronto (10 miles east of), Woodson County	27	4 a.m.							Electrical	Large barn and 3500 bales of hay burned when struck by lightning.
KANSAS Stafford County	27	Early morning							Electrical	7-room farm home about 1 mile north of Pratt-Stafford County line struck by lightning. No one was at home at the time. Passing motorist discovered the blaze at 3:10 a.m., but too late to save anything.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TEXAS Galveston (7 miles northeast of), Galveston County	27	9:22-9:35 a.m.			0	0			Funnel aloft	
COLORADO Morgan, Washington, Yuma, and Kit Carson Counties	27	Afternoon			0	0			Funnel aloft, hail, and rain	Apparent tornado cloud reported by pilot at 12:55 p.m., in vicinity 25 miles southeast of Akron. Hailstorm in Burlington area damaged corn, beets, and sorghum grains. Over 2-1/2 inches of rain fell. In Morgan County, 1,500 acres of beets damaged by hail.
ILLINOIS Mattoon area	27	Late afternoon							Electrical and rain	Number of reports of lightning strikes and heavy rainshowers within a 30 to 50 mile radius of Mattoon. Wind gust to 58 m.p.h., at Coles County Airport.
NEBRASKA Brady (12 miles south of), Lincoln County	27	Late afternoon	2	Narrow	0	0	3	1	Tornado (suspected)	Moved northward.
KANSAS Goodland (6 miles east and 8 miles north of), Sherman County	27	4-5 p.m.	2				4	3	Wind and hail	Local wind- and hailstorm affected small area 6 miles east and 8 north of Goodland. Hail caused $2,000 crop damage. Wind damaged several farm buildings. Storm moved east-southeastward.
NEBRASKA Riverdale to Kenesaw, Buffalo and Adams Counties	27	5:50-6 p.m.	25	1-1/2			3	5	Hail	Hailstones up to 1-1/4 inches in diameter. Storm moved east-southeastward.
MONTANA Harlowton, Wheatland County	27	5 p.m.	5	*2			4	4	Hail	Hail covered ground up to 2 inches, largest hailstone 1 inch in diameter. Storm moved southeastward.
MONTANA Billings, Yellowstone County	27	7:30 p.m.	15	*1-2			3	4	Hail	Hail covered ground up to 1 inch, hailstones up to 2 inches in diameter. Hail damage mainly to beets and beans. Storm moved eastward.
ILLINOIS East St. Louis, St. Clair County	27	Evening			1				Electrical	Man struck by lightning.
KANSAS Clay County (extreme south-central portion)	27	Midnight							Electrical	Barn and 2,000 bales of hay and alfalfa destroyed when lightning hit just before midnight.
KANSAS Minneapolis area, Ottawa County	27	Night							Electrical	House in Minneapolis struck by lightning, with damage to electrical appliances. Another house a few miles north of town burned, with considerable loss when hit by lightning about same time.
KANSAS Heizer (northwest of), Barton County	27								Electrical	Oil tank battery struck by lightning. Considerable loss of crude oil and some damage to facilities.
	27									Minor storms also reported near Beulah, Colo.; at Fredonia, near Edson, and in eastern Geary County, Kans.; at La Belle and St. Clair, Mo.; at Stanford, Mont.; and at Belle Fourche, S. Dak.
IDAHO Tetonia (northwest of), Teton County	28	10:45-11:30 a.m.	5	*1				4	Hail	Ground covered 1 to 2 inches deep; hailstones averaged 1/4 inch in diameter, largest 1/2 inch. Storm moved northeastward.
KANSAS Butler County	28	Early morning				1			Electrical	While lowering window, woman struck by lightning and knocked unconscious.
LOUISIANA Lake Maurepas, St. John the Baptist Parish	28	1:50 p.m.			0	0			Waterspout	
OKLAHOMA Carnegie area, Caddo County	28	2 p.m.						1	Wind	Strong wind destroyed barn, bent windmill double, and damaged house on farmstead northwest of Carnegie. Storm moved southwestward.

See footnotes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TEXAS McLean area, Gray County	28	3:10-7:45 p.m.	6	*3			3	5	Hail, wind, and rain	Strong winds, excessive rain (5.50 inches in 24 hours). Cotton and feed destroyed or damaged; roof of commercial garage caved in by excessive rain, 2 cars damaged.
FLORIDA Dade and Broward Counties	28	Evening			0	0			Funnel aloft	Clouds aloft reported in vicinity of West Hollywood and Pompano Beach.
	28									Minor storms also reported at Davenport, Iowa; at Wyola, Mont.; in Morton area, Tex.; and at Cheyenne and near Huntley, Wyo.
NEBRASKA Superior (5 miles west of), Nuckolls County	29	1 a.m.	5	Narrow	0	0	3	1	Tornado (suspected)	Barn blown down.
FLORIDA Daytona Beach area, Volusia County	29	11 a.m.			0	0			Waterspout	Waterspout observed 6 miles east-northeast of Daytona Beach. Dissipated at sea, no damage reported.
ARIZONA Sentinel, Maricopa County	29	2:30 p.m.		800	0	0	4	1	Tornado	Filling station unroofed and homes damaged. Tornado moved northward.
UTAH Salt Lake County	29	4:55 p.m.					4		Wind	Thunderstorm wind, estimated at 75 m.p.h., demolished about 60 percent of roller coaster structure at Saltair Beach.
NEW MEXICO Alamogordo (near), Otero County	29				3				Rain	Highway collision attributed to heavy rains took 3 lives.
NEW MEXICO Lyden, Rio Arriba County	29						4	C	Rain	Flooding from heavy rains damaged homes, gardens, and orchards. Irrigation and drainage ditches destroyed.
	29									Minor storms also reported at Durango and Oxford and near Paonia, Colo.; at Shenandoah and in Jones County, Iowa; near Stanford, Mont.; and near Cedar Rapids, Nebr.
OREGON Scattered over much of State	29-31	After-noons - evenings					4	2	Electrical	Lightning strikes experienced in practically every National Forest in State, as well as on considerable State and privately owned land. Fires following these strikes not generally serious and were brought under control after only small losses.
ARIZONA Willcox, Cochise County	30	Afternoon					1		Hail	Hail damage to crops. No estimate of damage available.
UTAH Cedar Point, San Juan County	30	Afternoon							Hail	Severe damage reported.
TEXAS Gulf of Mexico	30	6:45 p.m.			0	0			Waterspout	Sighted from boat 18 miles east-southeast of Port Aransas moving west-southwestward.
LOUISIANA Quarantine (southwest of), Plaquemines Parish	30	10:15 p.m.			0	0			Funnel aloft	
COLORADO Western portion	30						5		Rain and wind	Heavy rain in Mesa, Delta, Montrose Counties, and San Juan Basin did heavy damage to roads and crops. 15-foot wall of water 4 miles southeast of Naturita did heavy damage to drilling company camp and equipment. Section of road taken out and parked car washed away. Fruit damaged by rain and wind.
IDAHO Clementsville (near), Madison County	30								Hail	Crops damaged on several farms; damage estimated up to 30 percent in some places. Storm moved northward and eastward.
	30									Minor storms also reported at Cherokee, Iowa; and in Day and Hamlin Counties, S. Dak.
TEXAS El Paso, El Paso County	31	Early morning			5	10	6		Rain and Electrical	Plane crash attributed to blinding rain.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TEXAS Mineola, Wood County	31	4:15-6 p.m.					3		Rain, wind, and hail	Heavy rain, estimated 4 inches in 30 minutes. TV antennas, live utility wires, and trees blown down, chimney and porch on house damaged, and windows broken. Storm moved westward.
WYOMING Gillette, Campbell County	31	6 p.m.	30	*2-1/2			5	3	Hail	Most damage to windows, cars, signs, etc. Very little crop damage since small grains had already been harvested. Storm moved eastward.
SOUTH DAKOTA Butte County	31	8-10 p.m.					4	3	Wind, hail, and rain	At 8:30 p.m., strong winds blew trees over on cars and houses at Belle Fourche. Heavy rain caused water damage. Baseball-sized hail fell 5 miles north of Newell about 9:30 p.m.
SOUTH DAKOTA Gettysburg (17 miles southeast of), Potter County	31	10 p.m.				3	2		Electrical	Family stunned when lightning followed telephone wire into house, demolishing telephone. In June, cow was killed 50 feet from same telephone pole struck in this storm.
	31									Minor storm also reported in Wyandotte County, Kans.

* Miles instead of yards.
** Yards instead of miles.
° Includes crop damage.
C Crop damage.
† Storm damages are placed in categories varying from 1 to 9 as follows:
1 Less than $50
2 $50 to $500
3 $500 to $5,000
4 $5,000 to $50,000
5 $50,000 to $500,000
6 $500,000 to $5,000,000
7 $5,000,000 to $50,000,000
8 $50,000,000 to $500,000,000
9 $500,000,000 to $5,000,000,000.

GENERAL SUMMARY OF RIVER AND FLOOD CONDITIONS

AUGUST 1957

There was no major flooding during August. Considerable damage resulted from the flash floods, the most damaging one being the flash flood on the Little Red River at Heber Springs, Ark.

ATLANTIC SLOPE DRAINAGE

The light flooding on the Cape Fear River at Elizabethtown, N. C., on the 27th was due to rainfall averaging 2.3 inches during the 4-day period from the 23d through the 26th. No damage was reported.

MISSISSIPPI SYSTEM

Missouri Basin.--Heavy rains in the mountains west of Denver, Colo., caused flash floods in Mt. Vernon and Bear Creeks Canyons during the afternoon of the 21st. A wall of water, 6 to 8 feet high, came down Bryan Gulch into Bear Creek near Idledale, Colo., washing out a bridge and temporarily stranding several families. Swollen Bear and Vernon Creeks crested at Morrison, Colo., at the same time and overflowed into the business district, pushing heavy logs and debris into streets and blocking traffic. There was considerable damage to homes and cabins along the flooded streams, and some private bridges to homes across the creek were washed out. Four to 5 feet of water overflowed from Bear Creek in the Sheridan area near Denver, Colo., where a boy was rescued from a sand bar when he was trapped by flood waters. The rush of water temporarily swelled the South Platte River, and debris carried by the water threatened damage to several southwest Denver bridges. There was some damage to homes in Golden, Lakewood, Edgewater, and Arvada, Colo.

Minor overflows occurred along the Little Blue River in Nebraska and Kansas on the 16th to the 18th with negligible damage.

White Basin.--Excessively heavy rains (more than 8 inches) over a large area of north-central Arkansas during the afternoon and evening of August 12 and the morning of the 13th caused flash flooding with unusually high water being reported on several creeks. Streets and buildings were flooded in the cities of Mansfield, Clarksville, Russellville, and Clinton. Heavy rains in northeastern Arkansas on the 13th and 14th caused flash flooding in eastern Green County. There was considerable damage to roads and bridges in the area. A Missouri Pacific freight train was derailed when it ran into a section of flooded track. Several fields in the area were flooded.

A flash rise on the Little Red River at Heber Springs, Ark., on the 14th sent the stream to a crest of 44.2 feet, 20.2 feet above flood stage. The rise further downstream was considerably less and crested at a stage of 36.5 feet, 6.5 feet above flood stage at Judsonia, Ark., on the 16th. High flow from the Little Red River caused a rise to slightly above flood stage on the White River at Georgetown, Ark., and downstream. Extensive damage occurred from the flash floods. Two persons lost their lives in Conway County, Ark., when Cypress Creek overflowed its banks.

Arkansas Basin.--Heavy thundershowers on the 3d, east of Pueblo, Colo., caused some damage near Baxter Arroyo for the second time within a week. About 15 to 20 acres of cropland were flooded. A rural bridge across the Arroyo in this area was also washed out. A flash flood occurred during the evening of the 27th on the St. Charles River above Beulah, Colo., due to heavy thundershowers. A bridge was washed out on the Burnt Mill Road.

Slight flooding occurred on the Petit Jean River at Danville, Ark., on the 13th, 14th, and 16th.

WEST GULF OF MEXICO DRAINAGE

The light flooding in the Trinity River at Liberty, Tex., from the 11th to the 17th, was due to excessive rains from tropical storm "Bertha" on the 10th. The rainfall amounts for the 48-hour period ending at 7 a.m. on the 11th ranged from 2 to 11 inches with the heaviest amounts around Long Lake.

Flood stage was exceeded slightly on the Rio Grande at Albuquerque, New Mex., several times due to moderate to locally heavy rains in the basin above that point. Streamflow was contained well within the levees and no damage resulted.

FLOOD STAGE DATA

(All dates in August unless otherwise specified)

AUGUST 1957

River and station	Flood stage	Above flood stages -dates		Crest*	
		From–	To–	Stage	Date
	Ft.			Ft.	
ATLANTIC SLOPE DRAINAGE					
Cape Fear. Elizabethtown, N C	20	27	27	20.2	27
MISSISSIPPI SYSTEM					
Missouri Basin					
Little Blue: De Weese, Nebr.		16	16	7.4	
Endicott, Nebr.	9	17	18	10.9	18
Hanover, Kans	14	18	18	14.5	18
White Basin					
Little Red: Heber Springs, Ark.	24	14	14	44.2	14
Judsonia, Ark.	30	14	17	36.5	16
White: Georgetown, Ark.	21	16	20	22.1	18
Des Arc, Ark.	24	18	21	24.6	19
Clarendon, Ark.	26	18	30	27.4	22
St. Charles, Ark.	25	23	23	25.3	25
MISSISSIPPI SYSTEM (Cont'd.)					
Arkansas Basin					
Petit Jean: Danville, Ark.	20	13	14	20.7	13
		16	16	20.8	16
WEST GULF OF MEXICO					
Trinity: Liberty, Tex.	24	11	17	#25.8	12
Rio Grande: Albuquerque, New Mexico	6	2	2	6.2	2
		3	3	6.2	3
		5	5	6.7	5
		7	7	6.1	7
		30	30	6.3	30
		31	31	6.3	31

* Provisional
# Highest Observed stage

Tropical Storm BERTHA, August 8-11, 1957

Compiled by
HOWARD C. SUMNER
U. S. Weather Bureau, Washington, D. C.

Tropical storm BERTHA developed over the northern Gulf of Mexico in an area of disturbed conditions that prevailed about 100 miles south of the mouth of the Mississippi River on August 8, 1957. At this stage of development the storm was accompanied by winds of 30 to 40 m.p.h. in scattered squalls, with winds slightly higher in some of the heavier squalls. From this region the storm, moving in a northwesterly direction, crossed the coastline near Cameron, La., during the late afternoon of the 9th of August and at 7 p.m. (c.s.t.) was centered about 20 miles south of Lake Charles, La. After moving inland the storm weakened and turned northward, passing through east Texas and reaching southeastern Oklahoma during the morning of the 11th of August. In this area the center could no longer be distinguished on a surface map, although a circulation aloft was accompanied by locally heavy rains for about 3 days as the storm area turned eastward and moved across northern Arkansas.

The lowest pressure reported along the coast was 1001 millibars (29.56 inches) from the Weather Bureau Airport Station at Jefferson County Airport, Beaumont, Tex. A slightly lower pressure 997.6 millibars (29.46 inches) was reported from an oil rig located at latitude 28.7°N., longitude 91.4°W.

Estimates of winds between 50 and 70 m.p.h. came from a number of ships and land stations. The Weather Bureau Airport Station at Beaumont, Tex., recorded a fastest mile of 44 m.p.h. from the north with gusts to 52 m.p.h.

Excessive rainfall of 12.8 inches was reported from a location 14 miles north of Palestine, Tex., during passage of the storm. At Livingston, Tex., rainfall associated with BERTHA was reported as 10.73 inches. Locally heavy rains sent the Trinity River past flood stage and spread its waters 6 miles wide at a point near Liberty, Tex. There was some flooding of homes and business places in Trinity and nearby Livingston, but no heavy damage or casualties were reported in this area. A report of a highest tide of 4.7 feet came from the Schooner Bayou control structure at the west end of Vermilion Bay.

As a result of the severe threat that BERTHA posed to the Louisiana and Texas coasts, thousands of persons were evacuated from low-lying areas. Only the sheriff and 12 men remained in Cameron, which less than 3 months before had been devastated by AUDREY, the first hurricane of the season. Some 1,350 workers were removed from oil drilling platforms in the Gulf of Mexico, two of whom were rescued by a helicopter from the oil rig tender MURMANILL No. 1 shortly before she sank stern first in choppy seas about 3 miles south of Tambalier Bay.

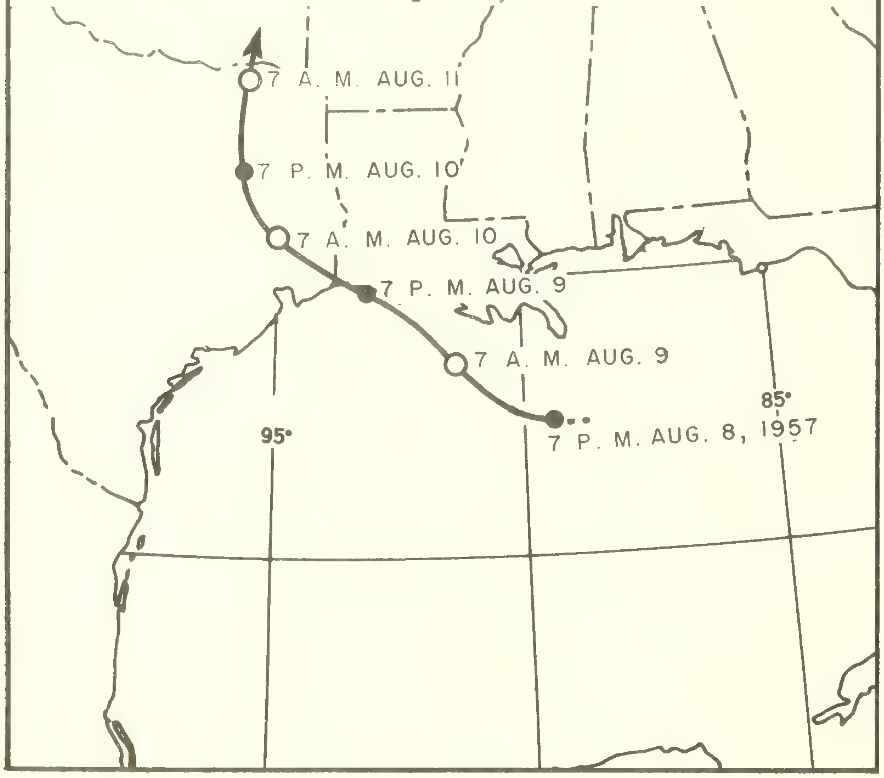
The remnants of Tropical Storm BERTHA caused excessive heavy rains over a large area of west-central and north-central Arkansas during the afternoon and evening of August 12 and the morning of the 13th. The rains caused considerable flash flooding over a large area with unusually high waters reported on several creeks. A flash flood on the Little Red River reached a crest of 44.2 feet (20.2 feet above flood stage) at Heber Springs at 7:00 a.m., of the 14th and 36.5 feet (6.5 feet above flood stage) at Judsonia at 4:30 a.m., of the 16th. Streets and buildings were flooded in the towns of Mansfield, Clarksville, and Clinton.

Damage from this flash flooding was spread over a large area comprising portions of 14 counties. Since much of the damage was of a local nature, accurate estimates of the monetary losses involved are very difficult to obtain. Heaviest reported damage was $113,000 in Conway County, $100,000 of which was to roads and bridges. Faulkner County reported $102,850 damage, $35,000 of which was to roads and bridges. Scott County reported $11,800 damage, $1,500 of which was to roads and bridges. Two persons drowned in Conway County when Cypress Creek overflowed and washed away their home.

A continuation of the storm moved into the northeastern portion of the state on the 13th and 14th, with unofficial precipitation amounts of as much as 12 inches reported. This rain caused flash floods over eastern Greene and southern Clay Counties. Clay County authorities estimate the damage from the flash floods at $710,000, of which $500,000 was to crops in flooded fields and $100,000 to roads and bridges. A Missouri Pacific freight train was derailed when it ran onto a flooded section of track near Knobel in southern Clay County.

TRACK OF TROPICAL STORM BERTHA
August 8-11, 1957

Open circles on track indicate locations of center at 7 a.m., E.S.T., of date entered nearby; solid circles on track indicate locations of center at 7 p.m., E.S.T.



RAWINSONDE DATA

Average monthly values

AUGUST 1957

ALBANY, N. Y. (1007 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	86	14.9	89	268	1.0
1,000	31	143			266	1.0
950	31	575	15.1	68	310	5.2
900	31	1,035	13.2	61	310	8.6
850	31	1,515	10.3	61	307	9.0
800	31	2,017	7.3	60	303	11.2
750	31	2,547	4.8	54	289	12.9
700	31	3,108	2.7	45	286	16.5
650	31	3,705	-.6	40	292	19.7
600	31	4,340	-3.8	34	296	20.8
550	31	5,017	-8.0	37	291	23.6
500	31	5,757	-12.5	37	289	26.0
450	31	6,550	-17.8		288	27.6
400	31	7,426	-24.1		288	31.1
350	31	8,386	-31.1		288	35.5
300	31	9,461	-39.2		290	39.7
250	31	10,689	-47.3		285	44.0
200	31	12,144	-52.9		286	44.9
175	31	13,000	-55.3		284	40.9
150	31	13,980	-57.2		279	36.7
125	31	15,129	-58.6		279	31.4
100	30	16,532	-58.6		280	26.4
80	29	17,942	-55.9		279	13.4
60	28	19,786	-53.0		256	.8
50	27	20,965	-51.5		110	4.6
40	27	22,419	-49.8		92	11.0
30	23	24,311	-47.5		90	14.8
25	14	25,513	-45.1		90	16.0
20	6	27,022	-42.8			
15						

ALBUQUERQUE, N. MEX (842 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,619	18.9	70	105	2.1
1,000	31	113				
950	31	566				
900	31	1,039				
850	31	1,536				
800	31	2,059	17.8	61	173	2.1
750	31	2,604	14.6	61	207	3.7
700	31	3,189	10.7	64	237	5.7
650	31	3,800	6.2	68	237	5.4
600	31	4,456	1.7	69	230	4.6
550	31	5,147	-3.0	70	220	4.7
500	31	5,902	-7.4	64	229	5.3
450	31	6,713	-12.1	58	225	6.6
400	31	7,610	-17.7	53	216	6.7
350	31	8,596	-24.8	50	199	8.5
300	31	9,699	-33.1	45	214	9.2
250	31	10,955	-43.0		224	12.4
200	31	12,422	-54.5		239	12.1
175	30	13,266	-60.2		246	10.7
150	29	14,216	-65.5		240	7.3
125	25	15,308	-70.2		231	7.5
100	18	16,626	-69.6		225	5.7
80	16	17,974	-65.1		93	5.2
60	14	19,752	-59.0		92	10.7
50	14	20,903	-56.4		91	16.1
40	13	22,331	-54.2		91	19.0
30	11	24,190	-50.3		87	24.5
25	11	25,386	-48.4		87	30.2
20	9	26,855	-47.1			
15						

1/ AMARILLO, TEX (895 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,099	19.6	74	182	5.5
1,000	31	123				
950	31	571				
900	31	1,041				
850	31	1,539	21.2	54	210	13.8
800	31	2,063	18.4	53	234	12.7
750	31	2,605	14.6	57	243	10.1
700	31	3,193	10.1	63	247	6.4
650	31	3,798	6.1	61	213	3.3
600	31	4,456	1.6	61	209	3.1
550	31	5,143	-2.4	52	213	4.2
500	31	5,904	-6.7	46	225	4.5
450	31	6,715	-11.6	40	237	6.3
400	31	7,614	-17.7	38	221	6.6
350	31	8,599	-24.6	40	223	4.8
300	31	9,703	-33.0		236	4.1
250	31	10,960	-42.8		253	3.1
200	31	12,429	-54.0		274	3.2
175	31	13,274	-60.1		247	4.7
150	30	14,221	-66.1		284	4.0
125	26	15,322	-69.6		291	3.7
100	25	16,648	-69.5		95	4.2
80	25	17,995	-64.6		89	10.6
60	24	19,779	-58.7		92	15.9
50	24	20,933	-55.7		97	17.9
40	23	22,363	-52.9		90	20.2
30	22	24,233	-49.3		91	24.9
25	21	25,439	-46.8		86	24.5
20	18	26,921	-44.3		86	27.8
15	15	28,870	-40.6		89	29.1

ANCHORAGE, ALASKA (1010 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	30	13.0	85	183	2.3
1,000	31	115	13.9	78	196	3.1
950	31	547	12.2	72	200	3.8
900	31	998	9.8	71	156	3.9
850	31	1,472	7.2	70	139	5.7
800	31	1,969	4.6	65	160	7.0
750	31	2,491	1.6	62	168	7.5
700	31	3,046	-1.4	55	174	8.2
650	31	3,627	-4.7	51	180	8.2
600	31	4,259	-8.4	48	186	8.2
550	30	4,921	-12.4	45	198	6.8
500	30	5,655	-17.1	45	200	7.8
450	30	6,425	-22.6	44	198	8.0
400	30	7,292	-28.8	43	199	7.7
350	30	8,233	-36.2		189	9.5
300	30	9,285	-44.2		188	11.7
250	30	10,485	-51.9		202	6.8
200	28	11,917	-53.0		222	7.1
175	27	12,779	-51.4		255	8.9
150	26	13,784	-50.9		255	7.9
125	25	14,967	-51.0		255	8.0
100	22	16,417	-51.2		245	7.4
80	18	17,868	-50.5		221	4.5
60	16	19,735	-50.1		250	4.1
50	15	20,925	-50.1		284	2.6
40	13	22,392	-49.2			
30	9	24,294	-49.1			
25	5	25,484	-48.2			
20						
15						

ANNETTE, ALASKA (1013 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	37	12.8	91	135	3.1
1,000	31	147	13.2	88	130	3.3
950	31	575	12.4	79	140	2.7
900	31	1,032	10.1	75	123	3.1
850	31	1,506	7.4	70	119	4.0
800	31	2,003	4.6	70	116	3.2
750	31	2,525	1.8	66	107	2.2
700	31	3,081	-1.3	68	107	3.0
650	31	3,665	-4.6	62	89	4.1
600	31	4,295	-8.5	58	95	4.9
550	31	4,960	-12.8	52	80	4.3
500	31	5,688	-17.4	45	90	5.5
450	31	6,461	-23.1	44	89	6.7
400	30	7,323	-29.4	44	73	9.9
350	30	8,263	-36.6	42	68	13.4
300	30	9,313	-44.6		73	15.3
250	30	10,510	-53.4		68	14.4
200	30	11,943	-51.8		41	7.3
175	30	12,813	-50.2		35	5.0
150	30	13,819	-50.5		8	3.0
125	29	15,007	-50.6		9	2.4
100	29	16,461	-50.8		312	.7
80	25	17,919	-50.6		140	.7
60	24	19,796	-50.8		242	1.2
50	20	20,988	-50.9		66	2.2
40	19	22,449	-49.7		80	3.3
30	15	24,334	-48.1		67	4.8
25	14	25,536	-47.4		78	4.1
20	11	27,015	-45.9			
15	5	28,953	-42.3			

2/ ATHENS, GA. (989 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	246	19.5	90	28	3.8
1,000	31	149				
950	31	595	22.1	65	59	6.4
900	31	1,064	19.9	61	56	4.8
850	31	1,555	16.7	64	24	3.1
800	31	2,069	13.3	62	[illegible]	2.8
750	31	2,607	10.3	56	335	2.9
700	31	3,182	7.7	44	334	5.1
650	31	3,784	4.5	38	324	6.5
600	31	4,437	.8		318	7.8
550	31	5,124	-3.3	34	320	7.5
500	31	5,879	-7.6	33	320	7.6
450	31	6,688	-12.8		318	9.9
400	31	7,582	-18.8		314	11.4
350	31	8,564	-25.7		315	13.9
300	31	9,663	-34.1		311	17.1
250	31	10,914	-43.7		312	19.4
200	31	12,380	-54.2		324	24.2
175	31	13,226	-59.4		324	22.6
150	31	14,180	-63.9		324	19.0
125	31	15,287	-67.7		333	14.6
100	31	16,631	-67.4		20	5.3
80	30	17,988	-63.3		46	7.0
60	30	19,779	-58.1		79	16.5
50	29	20,934	-55.4		85	20.5
40	28	22,367	-52.3		89	22.3
30	27	24,241	-49.0		[illegible]	25.8
25	27	25,444	-47.0		86	28.3
20	25	26,931	-44.6		87	28.8
15	23	28,876	-41.6		[illegible]	32.6

3/ BARROW, ALASKA (1011 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	8	4.7	95	177	1.3
1,000	31	99	4.5	92	184	1.7
950	31	515	3.8	89	227	7.4
900	31	957	3.0	81	225	11.4
850	31	1,420	1.4	80	218	16.0
800	31	1,907	-.9	74	222	19.4
750	31	2,417	-3.5	73	225	21.4
700	31	2,964	-6.3	69	229	22.7
650	31	3,535	-9.5	63	231	26.6
600	31	4,156	-13.3	59	235	27.6
550	31	4,808	-17.4	56	242	29.8
500	31	5,523	-22.1	54	229	30.4
450	31	6,285	-27.5	51	218	36.0
400	31	7,129	-33.5	48		
350	31	8,054	-40.3			
300	31	9,089	-47.6			
250	31	10,277	-52.6			
200	31	11,732	-48.4			
175	31	12,614	-47.3			
150	29	13,630	-47.0			
125	29	14,838	-46.9			
100	29	16,316	-47.1			
80	29	17,794	-46.9			
60	28	19,703	-46.7			
50	28	20,911	-46.8			
40	28	22,392	-46.4			
30	25	24,310	-45.4			
25	24	25,538	-44.4			
20	22	27,030	-43.5			
15	14	28,991	-41.3			

4/ BARTER IS., ALASKA (1011 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	15	6.4	94	72	1.9
1,000	31	107	7.8	92	67	1.0
950	31	537	9.8	82	247	2.5
900	31	982	8.6	77	236	6.3
850	31	1,454	6.3	76	232	9.2
800	31	1,949	3.3	78	233	12.0
750	31	2,468	.1	77	233	14.9
700	31	3,021	-3.0	74	227	16.7
650	31	3,599	-6.4	66	229	18.4
600	31	4,227	-10.1	59	228	21.3
550	31	4,886	-14.4	59	227	22.1
500	31	5,610	-19.1	53	222	24.3
450	31	6,377	-24.5	49	223	26.1
400	31	7,236	-30.6	48	223	29.9
350	31	8,171	-37.8	44	221	33.2
300	31	9,216	-45.6		226	34.8
250	31	10,408	-53.7		227	36.5
200	30	11,838	-52.2		227	34.8
175	30	12,709	-49.5		227	27.7
150	30	13,721	-48.9		229	22.8
125	30	14,918	-48.8		231	18.5
100	30	16,386	-48.4		232	13.2
80	30	17,858	-47.6		230	10.2
60	30	19,761	-47.2		237	7.7
50	29	20,974	-46.9		229	6.3
40	29	22,455	-46.6		277	1.9
30	28	24,376	-45.5		309	1.8
25	28	25,596	-44.3		4	1.4
20	26	27,106	-43.1		48	5.5
15	23	29,059	-41.0		64	4.6

5/ BETHEL, ALASKA (1012 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	4	11.1	94	197	2.2
1,000	31	103			219	2.1
950	31	530	9.6	84	204	8.2
900	31	979	7.5	81	199	10.7
850	31	1,449	5.1	79	198	11.7
800	31	1,942	2.8	81	202	11.0
750	31	2,461	.4	78	215	12.1
700	31	3,014	-2.5	74	223	8.7
650	31	3,594	-5.6	65	235	9.4
600	31	4,224	-9.1	58	237	10.0
550	31	4,885	-13.1	49	246	11.6
500	31	5,613	-17.8	47	236	11.9
450	31	6,386	-23.2	45	243	13.8
400	31	7,246	-29.2	45	249	16.5
350	31	8,187	-36.2	44	248	18.5
300	31	9,240	-43.7		269	18.5
250	31	10,445	-50.4		278	16.6
200	31	11,894	-51.1		254	11.9
175	31	12,765	-50.0		258	16.3
150	31	13,773	-50.0		269	15.7
125	31	14,965	-50.2		252	17.8
100	31	16,422	-50.1		255	11.8
80	31	17,881	-49.6		255	11.9
60	29	19,765	-49.3		149	2.3
50	29	20,960	-49.1		174	2.4
40	29	22,426	-48.6		95	.8
30	27	24,322	-47.9		104	2.6
25	25	25,521	-46.9		56	2.3
20	24	27,008	-45.5		108	4.3
15	20	28,944	-43.7			

6/ BISMARCK, N. DAK (958 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	505	15.4	87	106	3.8
1,000	31	136				
950	31	575	15.6	84	109	5.1
900	31	1,035	17.1	70	159	5.3
850	31	1,523	16.0	57	216	3.7
800	31	2,036	13.4	55	249	6.7
750	31	2,576	10.2	53	261	11.6
700	31	3,148	6.8	50	262	14.2
650	31	3,752	2.8	47	264	15.6
600	31	4,396	-1.6	46	265	17.8
550	31	5,079	-6.2	41	270	20.4
500	31	5,824	-11.0	40	272	25.4
450	31	6,622	-16.1	37	270	28.7
400	31	7,504	-22.2	37	270	34.6
350	30	8,467	-29.8	36	267	36.7
300	30	9,548	-38.1		263	44.3
250	30	10,780	-47.1		262	53.0
200	30	12,227	-55.7		270	53.8
175	30	13,072	-58.1		268	49.6
150	30	14,040	-60.0		273	42.4
125	30	15,175	-60.8		270	29.5
100	30	16,564	-60.5		274	16.3
80	30	17,963	-57.7		284	5.9
60	30	19,791	-54.9		350	5.2
50	30	20,962	-52.9		3	1.9
40	30	22,410	-50.5		82	4.9
30	29	24,302	-47.5		71	9.1
25	29	25,512	-46.3		86	9.1
20	27	27,005	-44.5		86	12.6
15	24	28,950	-41.7		81	12.2

BOISE, IDAHO (915 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	868	14.4	52	175	2.7
1,000	31	103				
950	31	545				
900	31	1,006	16.6	41	231	1.8
850	31	1,495	18.8	26	306	5.0
800	31	2,012	16.1	26	277	4.7
750	31	2,555	12.0	29	240	7.9
700	31	3,129	7.3	33	233	12.9
650	31	3,732	2.6	37	229	19.4
600	31	4,376	-2.1	36	229	26.5
550	31	5,055	-7.0	38	231	32.4
500	31	5,798	-12.4	37	231	35.3
450	31	6,590	-18.0	35	233	38.1
400	31	7,466	-24.2		238	41.6
350	31	8,426	-31.5		233	38.0
300	31	9,499	-39.8		241	43.9
250	31	10,722	-48.3			
200	31	12,171	-54.3			
175	31	13,024	-55.7			
150	29	14,001	-57.3			
125	24	15,146	-58.0			
100	20	16,540	-59.1			
80	19	17,938	-58.3			
60	19	19,761	-55.5			
50	18	20,926	-54.1			
40	17	22,362	-52.0			
30	15	24,229	-49.5			
25	15	25,428	-47.8			
20	8	26,933	-45.9			
15						

BROWNSVILLE, TEX. (1014 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	7	24.9	91	117	2.2
1,000	31	128	26.2	83	140	4.8
950	31	578	23.6	[illegible]	169	11.9
900	31	1,052	20.8	72	168	12.1
850	31	1,545	18.2	62	154	10.7
800	31	2,063	15.2	60	133	7.7
750	31	2,600	12.4	52	103	6.2
700	31	3,183	9.4	49	94	7.0
650	31	3,786	5.9	45	90	7.9
600	31	4,446	2.3	36	91	7.8
550	31	5,137	-1.8	34	84	7.7
500	31	5,897	-6.4	31	70	7.5
450	31	6,706	-11.7	32	72	7.9
400	31	7,606	-18.0	30	74	9.5
350	31	8,590	-25.0	29	70	9.9
300	31	9,693	-33.3		65	8.7
250	31	10,948	-43.2		75	9.2
200	31	12,414	-54.7		75	10.1
175	31	13,257	-60.9		79	10.6
150	29	14,204	-66.9		70	12.5
125	29	15,291	-71.8		73	17.6
100	26	16,602	-71.5		77	20.7
80	25	17,934	-67.2		80	21.6
60	24	19,688	-61.9		86	28.4
50	24	20,825	-59.0		89	33.6
40	24	22,235	-55.8		89	35.8
30	20	24,084	-51.3		93	41.9
25	16	25,266	-49.4		88	46.1
20	8	26,738	-49.1			
15						

7/ BUFFALO, N. Y. (996 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	182	15.7	82	288	1.5
1,000	31	150			80	1.5
950	31	585	16.3	69	287	3.5
900	31	1,046	13.6	68	289	7.5
850	31	1,526	11.0	69	286	10.3
800	31	2,030	8.5	61	288	12.0
750	31	2,561	5.9	50	295	15.5
700	31	3,125	3.8	39	300	18.0
650	31	3,723	.6	43	298	19.7
600	31	4,363	-3.0	42	296	22.2
550	31	5,044	-7.1	38	298	24.3
500	31	5,784	-11.7	38	297	26.1
450	31	6,581	-17.1		298	28.4
400	31	7,458	-23.4		296	32.1
350	31	8,421	-30.6		297	36.3
300	31	9,498	-38.8		299	40.3
250	31	10,726	-47.4		303	44.6
200	31	12,179	-53.8		301	49.3
175	31	13,033	-56.1		292	47.6
150	31	14,008	-58.3		288	39.8
125	31	15,152	-59.6		286	29.8
100	29	16,546	-59.4		287	18.4
80	28	17,950	-57.7		286	11.0
60	26	19,780	-54.6		311	3.0
50	26	20,952	-52.9		72	2.9
40	26	22,400	-50.7		79	6.4
30	25	24,284	-48.4		86	11.0
25	24	25,490	-46.7		86	11.1
20	23	26,974	-44.5		80	9.9
15	18	28,920	-41.9		77	11.4

8/ BURRWOOD, LA. (1016 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	3	26.5	89	284	0.5
1,000	30	141	25.9	85	339	.3
950	30	593	23.1	81	50	7
900	30	1,064	20.1	78	84	2.1
850	30	1,556	17.1	73	91	2.1
800	30	2,072	14.4	66	158	.5
750	30	2,615	11.5	61	16	.6
700	30	3,190	8.7	55	23	2.8
650	30	3,798	5.7	55	20	2.5
600	30	4,451	2.0	49	18	6.0
550	30	5,142	-1.8	44	18	7.2
500	30	5,902	-6.1	39	33	6.6
450	30	6,714	-11.3	32	14	8.5
400	30	7,613	-17.5	31	13	9.9
350	30	8,598	-24.7	31	35	11.5
300	30	9,701	-33.1		32	13.4
250	30	10,958	-42.9		46	8.0
200	30	12,427	-54.1		54	12.9
175	30	13,272	-59.9		36	13.4
150	30	14,222	-65.4		49	12.0
125	30	15,319	-69.6		51	16.8
100	29	16,649	-68.8		72	17.1
80	26	17,998	-65.3		79	14.1
60	26	19,773	-59.9		86	20.7
50	26	20,919	-57.5		91	24.9
40	26	22,338	-54.7		92	25.1
30	24	24,189	-51.6		87	25.9
25	23	25,380	-49.5		93	28.8
20	22	26,853	-47.1		96	33.6
15	14	28,756	-44.3		87	31.0

9/ CAPE HATTERAS, N C. (1015 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	4	23.8	84	2	3.1
1,000	31	135	23.3	80	359	3.7
950	31	576	20.7	74	346	3.5
900	31	1,049	18.1	71	333	3.1
850	31	1,537	15.3	66	325	4.1
800	31	2,049	12.0	64	307	6.0
750	31	2,584	9.1	60	297	8.9
700	31	3,157	6.3	50	286	10.7
650	31	3,755	3.4	44	283	11.1
600	30	4,408	-.2	37	283	11.9
550	30	5,094	-4.0	36	286	13.6
500	30	5,847	-8.3	34	283	14.2
450	30	6,652	-13.1		280	14.6
400	30	7,547	-19.0	31	282	15.5
350	30	8,528	-25.9		283	14.8
300	30	9,626	-34.0		270	17.7
250	29	10,880	-43.5		270	21.8
200	28	12,347	-53.9		272	21.4
175	28	13,195	-58.8		284	20.2
150	28	14,154	-62.9		290	15.9
125	28	15,269	-65.0		303	12.0
100	28	16,630	-64.0		284	6.0
80	28	18,009	-60.5		45	3.1
60	28	19,820	-56.3		86	13.4
50	28	20,984	-54.2		88	15.3
40	27	22,425	-51.2		90	19.8
30	27	24,310	-47.8		91	22.5
25	26	25,516	-46.1		91	23.3
20	25	27,010	-43.3		87	24.9
15	21	28,959	-40.7		85	25.5

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

1/ 10 mb., 7 obs., 31,638 m., -37.8°C.
2/ 10 mb., 10 obs., 31,636 m., -37.0°C.
3/ 10 mb., 9 obs., 31,739 m., -38.5°C.
4/ 10 mb., 18 obs., 31,859 m., -36.7°C.
5/ 10 mb., 15 obs., 31,678 m., -41.1°C.
6/ 10 mb., 10 obs., 31,714 m., -38.8°C.
7/ 10 mb., 12 obs., 31,679 m., -38.0°C.
8/ 10 mb., 7 obs., 31,519 m., -40.7°C.
9/ 10 mb., 12 obs., 31,735 m., -37.5°C.

RAWINSONDE DATA

Average monthly values

AUGUST 1957

1/ CARIBOU, ME (992 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	191	11.9	90	252	3.0
1,000	31	125				
950	31	556	12.3	70	282	8.3
900	31	1,008	10.3	65	294	11.9
850	31	1,482	7.6	63	291	14.1
800	31	1,980	5.0	59	285	16.0
750	31	2,506	2.5	49	281	17.7
700	31	3,060	-.1	45	279	19.8
650	31	3,647	-3.1	39	275	21.3
600	31	4,281	-6.8	35	274	24.1
550	31	4,947	-10.9	33	274	26.5
500	31	5,683	-15.6		276	28.4
450	31	6,467	-20.8		269	33.1
400	30	7,338	-27.0	37	269	33.9
350	30	8,287	-34.1	37	267	35.3
300	30	9,349	-41.8		266	40.7
250	30	10,565	-49.2		268	42.7
200	28	12,022	-52.0		262	47.1
175	28	12,886	-52.4		263	44.4
150	28	13,881	-53.4		261	38.5
125	28	15,052	-54.7		262	32.0
100	28	16,480	-54.5		266	24.7
80	27	17,911	-53.6		260	18.0
60	27	19,769	-51.5		248	8.9
50	27	20,956	-50.3		231	3.4
40	27	22,417	-49.1		121	2.9
30	27	24,312	-47.4		79	8.8
25	25	25,519	-46.1		90	10.5
20	23	27,015	-43.8		92	14.1
15	22	28,957	-40.7		92	12.0

CHARLESTON, S. C (1015 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	13	22.0	93	327	2.4
1,000	31	145	23.3	84	355	2.6
950	31	593	22.3	72	23	3.6
900	31	1,063	19.9	65	23	4.9
850	31	1,555	17.0	62	356	4.3
800	31	2,069	13.9	59	345	4.4
750	31	2,608	10.8	57	315	3.5
700	31	3,185	7.9	47	303	5.3
650	31	3,791	4.5	43	305	6.1
600	31	4,441	.9	37	308	8.1
550	31	5,129	-3.1	36	304	9.4
500	31	5,885	-7.2	34	299	8.6
450	31	6,695	-12.1		300	10.2
400	31	7,592	-18.1		311	9.2
350	31	8,577	-25.2		319	10.0
300	31	9,678	-33.6		308	13.1
250	31	10,931	-43.6		303	15.0
200	31	12,396	-54.2		320	14.5
175	31	13,243	-59.2		309	15.0
150	31	14,198	-64.0		310	12.5
125	31	15,305	-67.6		329	10.1
100	30	16,651	-67.1		6	4.4
80	28	18,009	-63.2		56	9.6
60	28	19,797	-58.9		82	19.4
50	28	20,950	-55.6		90	22.9
40	26	22,382	-53.4		93	25.8
30	19	24,243	-49.9		91	30.9
25	15	25,442	-48.0		94	32.1
20	6	26,936	-46.6			
15						

COLD BAY, ALASKA (1011 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	29	10.2	94	184	6.1
1,000	31	120	10.0	92	201	5.8
950	31	541	9.0	88	212	7.7
900	31	994	7.4	84	223	6.4
850	31	1,465	6.2	76	234	10.3
800	31	1,961	4.4	71	234	13.9
750	31	2,480	1.9	64	233	15.7
700	31	3,039	-.7	60	232	16.0
650	31	3,618	-3.9	54	223	17.3
600	31	4,257	-7.5	49	235	16.8
550	31	4,917	-11.6	47	237	17.1
500	31	5,654	-16.3	45	238	16.8
450	31	6,429	-21.6	40	235	19.2
400	31	7,298	-27.7	39	245	23.7
350	31	8,244	-34.7	41	233	24.9
300	31	9,301	-42.7		237	19.0
250	31	10,511	-49.4		246	27.7
200	31	11,962	-51.9		260	31.6
175	31	12,828	-51.7		263	20.4
150	31	13,827	-52.1		260	19.9
125	31	15,006	-52.5		267	14.8
100	31	16,448	-52.2		267	12.1
80	31	17,894	-51.9		247	6.8
60	30	19,761	-51.2		227	5.8
50	30	20,947	-50.7		125	4.5
40	30	22,404	-49.9		87	4.6
30	25	24,292	-49.0		79	8.3
25	19	25,497	-48.3		78	5.9
20	9	26,948	-47.5			
15						

COLUMBIA, MO. (990 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	238	19.4	88	143	2.4
1,000	31	149				
950	31	595	22.6	64	216	7.4
900	31	1,066	20.1	63	237	5.8
850	31	1,557	17.4	59	261	3.8
800	31	2,073	14.6	55	278	3.5
750	31	2,611	11.5	53	283	3.8
700	31	3,190	8.2	49	289	4.5
650	31	3,795	4.8	44	304	5.8
600	31	4,447	1.1	37	296	6.8
550	31	5,133	-3.0	38	300	9.6
500	31	5,891	-7.3	37	298	11.9
450	31	6,697	-12.3		301	13.5
400	31	7,596	-18.3		297	14.5
350	31	8,579	-25.3		299	18.2
300	31	9,679	-33.7		305	25.0
250	31	10,934	-43.1		307	29.0
200	31	12,402	-54.0		306	34.1
175	31	13,248	-59.3		306	32.0
150	31	14,203	-63.8		307	26.0
125	31	15,312	-67.0		307	19.2
100	31	16,659	-66.2		322	11.2
80	30	18,025	-62.1		357	5.7
60	30	19,826	-56.6		66	7.9
50	29	20,990	-54.1		79	11.2
40	29	22,432	-51.0		92	15.0
30	24	24,313	-47.8		89	16.8
25	20	25,526	-46.0		89	18.2
20	7	27,025	-42.6			
15						

2/ DAYTON, OHIO (984 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	297	17.2	86	9	1.6
1,000	31	159				
950	31	601	19.5	66	329	3.6
900	31	1,065	17.3	65	310	6.2
850	31	1,551	14.2	67	304	7.4
800	31	2,061	11.2	61	297	10.4
750	31	2,595	8.5	53	302	12.0
700	31	3,166	5.8	45	304	13.0
650	31	3,762	2.4	40	309	14.5
600	31	4,411	-1.1	35	310	16.5
550	31	5,091	-5.1	36	309	17.6
500	31	5,843	-9.6		303	19.4
450	31	6,642	-14.4		306	21.7
400	31	7,533	-20.5		308	25.2
350	30	8,506	-27.4		306	27.8
300	30	9,597	-35.6		312	29.5
250	30	10,840	-45.1		311	36.8
200	30	12,299	-54.1		312	42.2
175	30	13,148	-57.9		313	38.2
150	30	14,111	-61.5		311	31.7
125	30	15,234	-64.0		308	24.3
100	30	16,602	-62.9		312	15.4
80	30	17,987	-60.1		339	6.3
60	29	19,804	-55.7		71	6.4
50	29	20,973	-53.0		89	11.0
40	29	22,421	-50.7		91	14.4
30	25	24,311	-47.6		89	17.3
25	23	25,520	-45.5		90	20.0
20	20	27,007	-43.1		90	20.9
15	13	28,940	-40.5		88	18.7

DENVER, COLO. (841 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,608	14.9	78	200	5.1
1,000	31	116				
950	31	559				
900	31	1,028				
850	31	1,521				
800	31	2,041	18.9	50	223	6.9
750	31	2,595	16.4	44	247	4.6
700	31	3,177	12.4	45	263	5.2
650	31	3,791	7.5	51	271	5.7
600	31	4,448	2.4	54	254	7.1
550	31	5,135	-3.0	57	251	10.2
500	31	5,894	-7.6	44	254	11.7
450	31	6,700	-12.8	43	250	13.8
400	31	7,596	-18.6	39	248	16.9
350	31	8,579	-25.6	40	246	23.2
300	31	9,678	-34.1	39	250	29.3
250	31	10,930	-43.7		251	35.8
200	31	12,395	-54.6		254	40.5
175	30	13,238	-59.4		256	37.2
150	30	14,193	-64.2		257	29.8
125	23	15,309	-67.6		250	20.1
100	18	16,658	-67.4		253	9.1
80	15	18,023	-62.6		101	3.3
60	15	19,822	-57.4		90	9.7
50	15	20,983	-54.1		84	11.6
40	14	22,421	-51.7		88	14.4
30	12	24,302	-48.9		91	19.6
25	12	25,505	-46.9		93	20.6
20	10	27,001	-43.6		86	21.5
15	8	28,943	-41.4			

DODGE CITY, KANS. (927 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	792	20.1	76	149	4.5
1,000	31	125				
950	31	571				
900	31	1,044	22.7	61	181	9.0
850	31	1,541	21.3	56	211	12.9
800	31	2,065	18.4	56	232	14.0
750	31	2,609	15.0	54	240	8.6
700	31	3,196	10.9	56	229	6.7
650	31	3,801	6.5	56	230	7.3
600	31	4,463	2.1	52	242	8.0
550	31	5,150	-2.1	42	258	6.9
500	31	5,912	-6.8	41	270	7.8
450	31	6,719	-11.5	31	265	9.0
400	31	7,622	-17.4	31	265	12.6
350	31	8,608	-24.4	33	273	12.4
300	31	9,712	-32.7		276	14.8
250	31	10,970	-42.6		278	17.7
200	31	12,439	-54.2		274	23.0
175	31	13,283	-60.1		274	18.8
150	31	14,233	-65.6		274	16.9
125	29	15,333	-69.0		283	13.9
100	29	16,664	-68.3		303	5.9
80	27	18,019	-63.9		38	3.9
60	26	19,805	-58.3		87	12.1
50	24	20,959	-55.0		91	15.2
40	23	22,393	-52.1		92	15.0
30	23	24,266	-49.5		85	17.7
25	12	25,444	-48.2			
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EL PASO, TEX. (883 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,195	22.3	64	353	4.8
1,000	31	103				
950	31	558				
900	31	1,035				
850	31	1,533	22.0	55	51	2.1
800	31	2,058	19.4	54	153	3.1
750	31	2,605	15.6	59	176	4.5
700	31	3,193	11.3	65	176	5.0
650	31	3,800	6.8	68	175	5.9
600	31	4,462	2.2	70	177	5.7
550	31	5,153	-2.4	66	179	5.9
500	31	5,912	-7.0	63	180	6.5
450	30	6,722	-11.9	51	179	8.0
400	30	7,622	-17.6	46	178	6.7
350	30	8,608	-24.5	43	173	5.4
300	30	9,713	-32.9	38	153	4.1
250	30	10,970	-42.7		174	1.8
200	30	12,439	-54.4		228	3.6
175	30	13,283	-60.4		229	3.0
150	30	14,230	-66.4		176	3.0
125	26	15,325	-71.4		126	4.4
100	16	16,649	-71.8		96	9.1
80	7	17,977	-67.1			
60	7	19,736	-61.3			
50	7	20,876	-57.8			
40	7	22,297	-54.1			
30	7	24,157	-50.8			
25	7	25,351	-48.0			
20	5	26,836	-46.7			
15	5	28,758	-43.5			

ELY, NEV. (811 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	1,908	11.4	44	185	9.9
1,000	30	114				
950	30	554				
900	30	1,022				
850	30	1,512				
800	30	2,025	16.3	37	184	10.2
750	30	2,574	15.7	30	194	11.0
700	30	3,155	11.4	32	213	13.7
650	30	3,768	6.6	38	211	15.9
600	30	4,420	1.3	43	208	16.8
550	30	5,108	-4.1	45	210	18.1
500	30	5,860	-8.7	34	219	19.1
450	30	6,662	-14.4		231	20.1
400	30	7,551	-20.9		234	22.8
350	30	8,524	-28.1		234	26.2
300	30	9,613	-36.1		232	32.0
250	30	10,857	-44.8		237	36.0
200	30	12,322	-53.3		237	44.4
175	29	13,174	-57.4		236	40.1
150	29	14,141	-60.8		234	35.7
125	29	15,270	-62.3		235	32.7
100	28	16,644	-63.3		231	20.7
80	27	18,024	-60.7			
60	25	19,830	-56.2			
50	24	20,994	-53.9			
40	23	22,436	-51.8			
30	23	24,312	-49.1			
25	16	25,503	-47.7			
20	10	26,966	-46.1			
15						

FAIRBANKS, ALASKA (998 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	135	11.1	86	342	1.9
1,000	31	118			348	1.1
950	31	548	14.2	64	259	1.7
900	31	1,005	11.9	61	227	4.1
850	31	1,481	8.5	65	217	6.4
800	31	1,979	4.9	68	216	10.2
750	31	2,497	1.5	70	216	12.3
700	31	3,056	-1.7	65	214	11.9
650	31	3,635	-5.2	54	212	11.9
600	31	4,267	-9.0	49	208	12.5
550	31	4,927	-13.2	45	209	12.5
500	31	5,655	-17.7	44	212	14.6
450	31	6,426	-23.1	45	216	15.9
400	31	7,289	-29.3	44	210	17.0
350	31	8,229	-36.5		196	18.6
300	31	9,279	-44.7		204	16.4
250	31	10,476	-53.4		215	14.0
200	31	11,904	-54.1		244	15.7
175	31	12,765	-52.2		252	16.5
150	31	13,765	-51.3		242	9.3
125	30	14,951	-50.8		230	9.8
100	30	16,405	-50.4		248	10.1
80	30	17,864	-49.8		242	5.9
60	29	19,753	-49.2		224	4.4
50	29	20,951	-48.9		252	2.0
40	29	22,419	-48.4		236	.7
30	28	24,325	-47.3		37	4.9
25	28	25,534	-46.4		76	8.1
20	26	27,032	-45.0		91	9.2
15	19	28,958	-42.8			

FLINT, MICH. (991 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	234	13.4	93	272	1.2
1,000	31	158				
950	31	595	17.0	70	281	2.3
900	31	1,056	14.5	66	312	5.0
850	31	1,538	12.4	60	303	8.6
800	31	2,044	9.8	58	298	11.9
750	31	2,576	7.7	48	299	14.1
700	31	3,145	5.0	44	298	16.5
650	31	3,744	1.7	42	301	18.7
600	31	4,388	-2.1	42	303	20.2
550	31	5,068	-6.0	42	302	21.2
500	31	5,816	-10.9	39	301	23.6
450	31	6,611	-16.0	35	304	27.7
400	31	7,497	-21.9	30	303	29.9
350	31	8,466	-29.0		303	34.8
300	31	9,550	-37.2		306	39.3
250	31	10,787	-46.1		305	45.1
200	31	12,245	-53.4		307	52.3
175	31	13,098	-56.4		307	50.2
150	31	14,071	-58.9		305	38.6
125	31	15,209	-60.8		303	29.9
100	30	16,597	-60.1		302	20.4
80	30	17,998	-57.7		314	10.5
60	30	19,830	-53.9		3	4.0
50	30	21,007	-52.0		71	6.5
40	30	22,461	-49.7		89	10.6
30	28	24,362	-46.9		92	13.6
25	24	25,578	-45.1		90	14.8
20	22	27,074	-43.0		80	12.5
15	7	29,017	-41.5			

3/ FORT WORTH, TEX (995 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	178	25.0	71	119	1.6
1,000	31	137				
950	31	590	24.8	63	191	12.0
900	31	1,063	22.8	61	201	10.1
850	31	1,559	19.9	60	207	4.9
800	31	2,080	16.5	59	179	.7
750	31	2,622	12.9	58	2	1.9
700	31	3,203	9.3	57	20	3.8
650	31	3,808	5.5	54	36	4.1
600	31	4,464	1.8	48	42	3.6
550	31	5,158	-1.9	42	32	2.7
500	31	5,914	-6.2	38	28	1.8
450	31	6,723	-11.5	36	30	2.5
400	31	7,623	-17.9	32	42	3.7
350	31	8,608	-25.0	31	47	5.6
300	31	9,710	-33.2		53	6.2
250	30	10,965	-43.1		58	6.3
200	30	12,431	-54.5		68	6.5
175	29	13,275	-60.3		57	6.3
150	29	14,223	-66.0		49	8.0
125	29	15,317	-70.4		60	8.0
100	29	16,641	-69.4		71	9.0
80	27	17,986	-65.6		74	12.3
60	27	19,759	-60.3		87	19.0
50	26	20,902	-57.9		94	21.7
40	26	22,319	-54.9		91	24.3
30	26	24,173	-51.7		89	28.0
25	26	25,363	-49.4		87	31.1
20	24	26,835	-46.7		87	34.9
15	21	28,756	-44.2		88	38.6

GLASGOW, MONT. (935 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	695	14.8	69	80	5.2
1,000	31	121				
950	31	555				
900	31	1,021	17.3	60	113	8.5
850	31	1,509	16.0	53	141	3.1
800	31	2,022	13.6	51	248	3.3
750	31	2,557	10.2	54	244	7.6
700	31	3,133	6.1	53	255	11.1
650	31	3,730	2.1	52	256	18.5
600	31	4,378	-2.5	57	259	24.9
550	31	5,054	-7.4	57	260	29.1
500	31	5,799	-12.4	55	261	26.8
450	31	6,586	-17.7	45	258	30.5
400	31	7,468	-24.0	43	258	33.6
350	31	8,429	-31.3	40	253	39.1
300	31	9,502	-39.6		255	49.2
250	31	10,726	-48.7		256	54.6
200	30	12,173	-54.5		255	58.5
175	30	13,025	-55.8		260	59.3
150	30	14,005	-56.5		263	53.2
125	26	15,161	-57.3			
100	21	16,560	-57.2			
80	19	17,963	-56.6			
60	19	19,802	-53.5			
50	19	20,979	-51.9			
40	19	22,433	-49.6			
30	18	24,332	-46.4			
25	13	25,552	-44.9			
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GRAND JUNCTION, COLO. (855 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,474	17.5	63	108	7.9
1,000	31	106				
950	31	554				
900	31	1,026				
850	31	1,522	18.6	59	111	8.0
800	31	2,044	18.5	52	144	9.9
750	31	2,593	15.4	52	193	7.9
700	31	3,176	11.6	53	238	9.1
650	31	3,786	6.8	58	244	10.4
600	31	4,444	1.8	62	241	11.3
550	31	5,131	-3.4	61	234	12.2
500	31	5,887	-8.1	50	240	14.4
450	31	6,693	-13.0	43	242	16.6
400	31	7,588	-18.9	41	240	18.6
350	31	8,569	-26.1	37	242	21.8
300	31	9,667	-34.3		244	27.6
250	31	10,917	-43.8		244	32.7
200	31	12,382	-54.2		246	41.4
175	31	13,229	-59.0		250	38.6
150	28	14,187	-62.9		250	32.2
125	26	15,301	-66.5		244	17.3
100	21	16,646	-66.5			
80	17	18,015	-61.7			
60	16	19,819	-56.6			
50	16	20,983	-54.2			
40	16	22,421	-52.0			
30	14	24.301	-48.8			
25	10	25,501	-46.8			
20	6	26,966	-45.7			
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4/ GREAT FALLS, MONT. (889 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,123	13.1	64	265	2.7
1,000	31	119				
950	31	557				
900	31	1,022				
850	31	1,505	14.2	57	198	1.3
800	31	2,015	11.9	56	196	2.1
750	31	2,553	8.9	55	225	6.2
700	31	3,121	5.9	49	235	11.8
650	31	3,722	1.9	46	242	18.3
600	31	4,365	-2.9	48	239	23.9
550	31	5,043	-7.7	46	238	30.4
500	31	5,783	-12.9	40	239	32.7
450	31	6,569	-18.5	37	239	35.6
400	31	7,447	-24.9	33	239	38.1
350	31	8,404	-32.2	35	239	42.3
300	31	9,474	-40.5		240	48.4
250	31	10,694	-48.6		239	58.1
200	31	12,142	-53.7		241	55.1
175	31	12,999	-54.4		242	53.6
150	31	13,986	-55.2		244	42.2
125	31	15,147	-56.2		245	23.8
100	31	16,562	-57.6		251	12.4
80	30	17,972	-56.0		255	7.4
60	29	19,808	-53.5		291	.4
50	29	20,984	-52.1		50	3.7
40	28	22,437	-49.8		73	4.7
30	25	24,323	-46.6		67	7.1
25	23	25,540	-45.1		71	9.8
20	22	27,040	-42.7		82	11.1
15	16	29,011	-39.2		94	16.2

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

1/ 10 mb , 13 obs., 31,731 m., -35.7°C.
2/ 10 mb., 7 obs., 31,727 m., -36.6°C.
3/ 10 mb., 16 obs., 31,465 m., -42.0°C.
4/ 10 mb., 7 obs., 31,873 m., -35.7°C.

RAWINSONDE DATA

Average monthly values

AUGUST 1957

GREEN BAY, WIS. (993 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	210	14.6	91	279	1.1
1,000	31	153				
950	31	591	16.8	74	258	2.2
900	31	1,051	14.7	71	284	6.4
850	31	1,534	12.7	66	283	9.9
800	31	2,042	10.1	62	286	13.4
750	31	2,575	7.3	58	290	16.0
700	31	3,143	4.6	49	291	17.6
650	31	3,742	1.4	43	290	19.8
600	31	4,385	- 2.5	42	288	23.1
550	31	5,061	- 6.7	38	289	26.9
500	31	5,809	-11.1	36	297	25.9
450	31	6,606	-16.4	36	298	29.8
400	31	7,489	-22.4		296	33.4
350	31	8,456	-29.4		298	36.2
300	31	9,539	-37.6		300	40.0
250	31	10,774	-46.1		302	49.1
200	31	12,231	-53.8		299	49.4
175	31	13,083	-57.0		299	48.2
150	31	14,056	-58.3		299	39.8
125	31	15,198	-60.4		300	27.9
100	31	16,591	-59.4		288	20.6
80	31	17,994	-57.6		308	14.3
60	30	19,829	-53.7		1	6.6
50	29	21,008	-51.7		38	2.4
40	28	22,463	-49.7		79	5.1
30	23	24,351	-47.1			
25	11	25,578	-45.8			
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GREENSBORO, N. C. (987 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	273	18.2	91	5	2.8
1,000	31	159				
950	31	605	21.2	67	8	7.3
900	31	1,070	19.2	63	7	8.0
850	31	1,560	15.9	64	347	7.4
800	31	2,072	12.7	63	330	8.3
750	31	2,614	9.8	54	321	10.3
700	31	3,183	6.8	51	311	11.1
650	31	3,788	3.4	43	309	10.7
600	31	4,435	.0	40	309	10.7
550	31	5,124	- 3.6	36	306	13.4
500	31	5,875	- 7.9		303	14.9
450	31	6,684	-13.0		302	15.9
400	31	7,575	-19.3		299	17.4
350	31	8,555	-26.2		297	21.4
300	31	9,651	-34.4		292	25.5
250	31	10,900	-44.1		295	23.7
200	31	12,365	-53.7		315	26.3
175	31	13,215	-58.3		315	27.4
150	31	14,176	-61.9		323	25.8
125	31	15,296	-64.8		329	17.9
100	29	16,658	-63.9		342	9.2
80	29	18,037	-60.9		45	5.3
60	26	19,843	-56.9		72	14.5
50	25	21,002	-55.4		87	19.4
40	24	22,436	-52.3		91	22.7
30	20	24,310	-49.7		87	24.0
25	13	25,513	-47.4		85	27.3
20						
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HILO, T. H. (1015 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	9	22.1	92	232	.4
1,000	31	137	22.7	84	229	2.4
950	31	585	20.3	84	95	6.5
900	31	1,049	17.3	87	88	8.6
850	31	1,536	14.5	89	87	8.2
800	31	2,048	12.3	82	95	7.8
750	31	2,590	10.5	65	100	9.3
700	31	3,160	8.1	54	105	8.0
650	31	3,768	4.7	47	111	6.5
600	31	4,417	1.2	45	129	3.0
550	31	5,111	- 2.1	40	235	2.0
500	31	5,865	- 6.3	38	247	4.7
450	31	6,678	-11.2		263	8.2
400	31	7,577	-17.3		261	13.2
350	31	8,564	-24.6		266	20.3
300	31	9,668	-32.6		267	26.3
250	31	10,927	-42.7		271	30.2
200	31	12,395	-54.3		260	37.1
175	31	13,239	-60.3		258	35.8
150	31	14,187	-66.5		261	29.8
125	31	15,275	-71.7		258	18.1
100	30	16,586	-72.5		167	1.8
80	30	17,909	-69.1		86	17.3
60	30	19,654	-63.3		88	28.7
50	29	20,782	-60.7		87	31.5
40	29	22,182	-57.5		88	34.3
30	29	24,016	-53.5		89	37.3
25	23	25,194	-51.2		87	36.6
20	11	26,657	-49.2			
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INTERNAT'L FALLS, MINN (975 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	360	13.3	80	197	1.7
1,000	31	149				
950	31	583	14.9	73	228	2.2
900	31	1,040	13.1	70	280	5.1
850	31	1,519	10.7	68	284	9.4
800	31	2,022	8.2	65	289	14.3
750	31	2,551	5.7	55	290	15.6
700	31	3,116	3.1	48	294	19.3
650	31	3,707	- .1	44	295	22.5
600	31	4,351	- 3.8	41	297	25.8
550	31	5,024	- 8.0	39	296	29.7
500	30	5,769	-12.7		293	32.0
450	30	6,559	-18.1		290	34.4
400	30	7,436	-24.3	32	290	37.0
350	30	8,396	-31.2		291	45.5
300	30	9,471	-39.3		291	54.4
250	30	10,698	-47.7		288	62.5
200	30	12,147	-54.5		288	64.6
175	29	13,000	-55.7		289	62.3
150	29	13,979	-57.2		291	53.2
125	29	15,130	-57.9		291	38.6
100	29	16,539	-57.1		297	26.6
80	29	17,953	-56.3		304	16.8
60	28	19,795	-53.4		318	9.9
50	28	20,973	-51.6		326	6.1
40	27	22,430	-49.3		75	3.5
30	27	24,329	-46.4		84	6.9
25	27	25,545	-44.8		91	9.0
20	24	27,044	-43.0		95	11.8
15	18	28,994	-40.9		97	16.4

JACKSON, MISS. (1006 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	161	21.6	89	232	0.3
1,000	31	152	22.4	86	176	.8
950	31	600	23.0	71	194	3.9
900	31	1,071	20.1	69	188	2.8
850	31	1,563	16.9	71	175	1.6
800	31	2,078	13.9	67	141	1.5
750	31	2,617	11.2	59	62	1.7
700	31	3,194	8.3	54	24	2.8
650	31	3,801	5.1	49	21	2.7
600	31	4,454	1.9	45	352	3.2
550	31	5,144	- 1.8	37	344	4.9
500	31	5,904	- 6.3	32	3	6.1
450	31	6,714	-11.5	32	6	7.4
400	31	7,615	-17.5	31	17	8.1
350	31	8,601	-24.6		10	10.4
300	30	9,705	-32.9		5	10.2
250	29	10,961	-42.7		13	13.0
200	29	12,431	-54.0		8	11.9
175	29	13,277	-59.8		359	12.1
150	29	14,226	-65.6		14	12.7
125	29	15,322	-69.9		37	10.4
100	29	16,652	-68.8		54	10.4
80	29	18,000	-64.3		70	12.6
60	29	19,787	-58.9		84	19.0
50	29	20,938	-56.2		88	22.2
40	28	22,366	-53.0		92	24.8
30	28	24,239	-48.9		87	29.2
25	27	25,442	-46.9		89	31.8
20	24	26,922	-44.4		90	34.5
15	22	28,862	-41.2		91	36.0

JACKSONVILLE, FLA (1016 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	6	23.2	95	293	1.7
1,000	31	149	24.0	88	293	2.4
950	31	595	22.7	80	318	1.8
900	31	1,069	20.0	78	49	.4
850	31	1,561	17.1	73	109	1.0
800	31	2,077	14.2	69	165	.4
750	31	2,614	11.1	65	283	1.3
700	31	3,193	8.1	59	273	2.6
650	31	3,796	4.9	51	284	4.2
600	31	4,452	1.4	44	299	3.6
550	31	5,136	- 2.5	44	306	4.2
500	31	5,899	- 6.7	33	299	4.3
450	31	6,704	-11.8	32	338	4.8
400	31	7,608	-18.1		340	4.2
350	31	8,592	-25.2		356	5.6
300	31	9,693	-33.6		341	5.4
250	31	10,945	-43.7		316	5.0
200	31	12,408	-55.0		317	8.9
175	31	13,250	-60.6		331	10.6
150	31	14,198	-65.5		344	10.5
125	30	15,298	-69.4		14	8.6
100	29	16,625	-68.9		60	8.4
80	29	17,973	-65.0		76	13.6
60	29	19,750	-60.1		83	24.2
50	29	20,896	-57.2		91	28.6
40	28	22,322	-53.9		96	31.4
30	26	24,184	-50.6		96	33.5
25	25	25,377	-48.6		89	35.1
20	21	26,858	-46.1		91	36.1
15	5	28,776	-42.8			

1/ KING SALMON, ALASKA (1013 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	15	11.0	92	186	4.6
1,000	31	123	11.9	88	214	5.0
950	31	550	10.7	83	207	6.5
900	31	1,003	8.5	83	191	6.4
850	31	1,474	6.1	83	191	6.3
800	31	1,970	3.8	77	198	7.0
750	31	2,490	1.2	68	214	6.9
700	31	3,046	- 1.3	58	223	8.1
650	31	3,625	- 4.4	53	225	8.1
600	31	4,261	- 8.1	51	232	7.6
550	31	4,924	-12.3	50	227	9.0
500	31	5,655	-17.2	47	223	10.3
450	31	6,428	-22.6	44	234	11.1
400	31	7,293	-28.7	45	236	13.3
350	31	8,236	-35.7	44	239	14.7
300	31	9,290	-43.7		246	14.2
250	31	10,496	-50.3		249	17.2
200	31	11,944	-52.3		260	17.6
175	31	12,811	-50.9		258	14.6
150	31	13,815	-50.7		247	14.2
125	31	15,003	-50.9		252	11.0
100	31	16,455	-50.9		254	8.5
80	31	17,912	-50.1		246	5.1
60	31	19,796	-49.7		238	2.3
50	31	20,992	-49.1		235	1.9
40	30	22,463	-48.5		87	1.3
30	29	24,364	-47.7		94	3.3
25	27	25,582	-45.9		71	4.8
20	26	27,078	-44.5		85	5.3
15	24	29,023	-42.6		95	5.3

KOTZEBUE, ALASKA (1012 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	5	10.3	90	238	1.2
1,000	30	101	10.3	85	228	2.3
950	30	525	8.3	82	210	5.5
900	30	973	5.8	80	213	8.9
850	30	1,439	3.4	78	211	10.6
800	30	1,930	.9	75	213	10.2
750	30	2,444	- 1.5	64	214	12.5
700	30	2,994	- 4.4	62	219	14.2
650	30	3,569	- 7.8	57	215	15.7
600	30	4,194	-11.3	52	219	16.8
550	30	4,852	-15.6	52	217	17.4
500	30	5,571	-20.2	49	215	18.9
450	29	6,342	-25.2	45	215	20.0
400	29	7,197	-31.4	44	224	20.9
350	29	8,139	-38.5		232	20.7
300	29	9,172	-46.1		231	18.3
250	29	10,365	-53.0		251	15.7
200	29	11,811	-49.9		249	16.0
175	29	12,688	-48.6		255	16.0
150	29	13,703	-48.4		256	17.0
125	28	14,904	-48.8		246	13.3
100	28	16,371	-48.6		248	12.3
80	28	17,840	-48.2		240	9.8
60	27	19,735	-47.9		232	7.4
50	26	20,941	-47.8		226	6.3
40	24	22,411	-47.8		237	5.9
30	15	24,312	-47.4			
25	12	25,540	-45.6			
20	6	27,100	-42.6			
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LAKE CHARLES, LA. (1016 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	5	24.4	89	30	0.9
1,000	31	143	25.5	81	92	1.4
950	31	592	23.6	75	183	3.2
900	31	1,066	20.9	69	177	3.7
850	31	1,560	18.1	64	163	1.9
800	31	2,077	15.0	63	70	.8
750	31	2,615	12.1	60	41	1.3
700	31	3,197	9.1	56	26	3.1
650	31	3,803	6.0	47	26	5.3
600	31	4,461	2.5	42	51	4.7
550	31	5,151	- 1.7	42	38	6.2
500	31	5,913	- 6.0	36	42	6.4
450	31	6,724	-11.2	34	39	7.6
400	31	7,626	-17.3	31	42	7.5
350	31	8,612	-24.5		43	8.2
300	31	9,716	-32.7		36	9.2
250	31	10,974	-42.8		49	9.1
200	31	12,441	-54.4		45	8.7
175	31	13,285	-60.5		38	10.7
150	29	14,230	-66.1		54	10.0
125	29	15,322	-71.0		63	13.3
100	29	16,641	-70.0		73	14.4
80	29	17,986	-65.2		72	16.2
60	28	19,765	-59.5		82	23.8
50	28	20,913	-56.8		85	25.8
40	26	22,339	-53.4		89	26.6
30	24	24,206	-49.7		84	34.3
25	20	25,404	-48.1		87	37.3
20	13	26,869	-46.1			
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LANDER, WYO (832 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	1,696	15.2	39	227	2.6
1,000	31	99				
950	31	539				
900	31	1,011				
850	31	1,509				
800	31	2,026	18.1	45	280	1.8
750	31	2,572	15.4	41	260	3.7
700	31	3,158	11.1	44	255	8.3
650	31	3,764	6.4	45	252	11.5
600	31	4,423	1.1	49	258	15.8
550	31	5,103	- 4.4	50	250	17.2
500	31	5,860	- 9.5	45	248	20.6
450	31	6,655	-15.1	41	243	23.0
400	31	7,547	-21.3	36	241	28.1
350	31	8,518	-28.4	34	241	34.2
300	31	9,605	-36.7		236	40.8
250	31	10,842	-46.1		237	45.7
200	30	12,303	-54.7		244	50.9
175	29	13,151	-58.3		245	44.3
150	29	14,115	-61.1		240	42.9
125	27	15,240	-63.5		242	28.6
100	25	16,602	-64.0		243	18.5
80	22	17,979	-61.1		260	6.2
60	22	19,784	-57.4		102	1.2
50	22	20,942	-55.1		74	6.0
40	22	22,377	-52.5		91	8.7
30	21	24,251	-49.3		77	8.0
25	18	25,461	-47.3		71	12.9
20	10	26,919	-45.9			
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LAS VEGAS, NEV. (936 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	660	25.6	34	217	6.2
1,000	31	72				
950	31	524				
900	31	1,007	27.2	26	218	9.9
850	31	1,510	24.0	26	227	9.4
800	31	2,036	20.3	28	216	11.2
750	31	2,586	16.0	32	195	11.5
700	31	3,170	11.3	38	188	13.1
650	31	3,780	6.7	44	188	13.5
600	31	4,437	2.0	47	191	13.2
550	31	5,124	- 2.9	43	197	11.1
500	31	5,882	- 7.8		211	11.7
450	31	6,688	-13.0		229	12.4
400	31	7,582	-19.3		232	17.2
350	31	8,561	-26.7		227	22.5
300	30	9,655	-35.1		225	29.5
250	30	10,902	-44.0		225	33.5
200	30	12,369	-53.6		220	38.8
175	30	13,218	-58.6		221	39.5
150	30	14,177	-63.3		226	34.5
125	29	15,289	-66.6		226	24.7
100	27	16,637	-66.0		213	12.5
80	23	17,999	-62.7		160	4.9
60	19	19,783	-58.4		99	10.3
50	18	20,937	-56.0		90	12.8
40	16	22,362	-53.6		88	16.8
30	14	24,220	-50.8		88	19.1
25	11	25,402	-49.6		86	22.8
20	8	26,868	-47.1			
15	5	28,786	-44.3			

LITTLE ROCK, ARK. (1008 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	79	21.8	91	356	0.5
1,000	31	147	22.4	85	128	1.3
950	31	596	22.9	69	188	4.3
900	31	1,066	20.2	69	221	3.5
850	31	1,558	17.4	67	247	3.8
800	31	2,075	14.7	62	269	2.1
750	31	2,620	11.5	59	298	1.6
700	31	3,193	8.7	53	342	2.3
650	31	3,804	5.1	51	338	3.4
600	31	4,453	1.8	41	330	4.3
550	31	5,148	- 2.0		329	5.6
500	30	5,905	- 6.4		320	6.3
450	30	6,716	-11.6		326	6.0
400	30	7,616	-17.7	35	326	7.9
350	30	8,601	-25.0	38	335	10.4
300	30	9,703	-33.3		325	14.1
250	30	10,958	-43.4		327	17.7
200	30	12,421	-55.1		317	12.0
175	30	13,263	-61.1		310	10.5
150	30	14,208	-66.4		320	11.9
125	30	15,300	-70.4		5	8.8
100	29	16,626	-69.3		39	7.6
80	29	17,974	-65.0		56	8.7
60	29	19,755	-59.3		78	14.9
50	28	20,902	-56.6		91	17.5
40	28	22,327	-53.7		95	21.0
30	26	24,187	-50.8		94	24.5
25	20	25,374	-48.9			
20	8	26,821	-48.3			
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McGRATH, ALASKA (1002 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	103	11.1	89	135	0.7
1,000	31	116			206	.4
950	31	544	12.3	74	203	4.8
900	31	999	9.7	74	198	8.4
850	31	1,472	6.7	75	200	10.0
800	31	1,967	3.8	75	196	12.4
750	31	2,485	.7	74	195	13.3
700	31	3,041	- 2.3	68	199	13.5
650	31	3,621	- 5.4	61	206	14.1
600	31	4,252	- 8.9	55	201	13.0
550	31	4,914	-13.0	53	200	14.0
500	31	5,641	-17.8	51	199	13.3
450	31	6,411	-23.4	51	206	13.7
400	31	7,273	-29.7	49	205	14.6
350	31	8,212	-36.9	46	210	16.7
300	31	9,261	-44.7		210	16.6
250	31	10,460	-51.6		236	14.8
200	31	11,900	-52.7		243	14.2
175	31	12,766	-50.7		254	14.2
150	31	13,772	-50.4		258	11.8
125	31	14,962	-50.4		256	10.9
100	31	16,418	-50.4		250	9.5
80	31	17,879	-49.6		251	5.3
60	31	19,765	-49.3		254	3.8
50	31	20,962	-49.1		275	3.0
40	31	22,429	-48.7		210	1.8
30	29	24,320	-48.4		345	1.4
25	11	25,525	-47.6			
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MEDFORD, OREG (970 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	401	12.1	73	257	1.0
1,000	31	144				
950	31	580	14.3	65	275	2.2
900	31	1,034	12.9	65	281	2.4
850	31	1,514	10.9	65	251	.3
800	31	2,019	9.4	57	202	3.4
750	31	2,551	7.1	45	220	11.2
700	31	3,118	3.6	41	219	16.4
650	31	3,712	.3	29	227	18.2
600	31	4,355	- 3.4	26	231	19.9
550	31	5,031	- 7.6	26	235	23.6
500	31	5,775	-12.3		239	27.2
450	31	6,564	-18.0		240	28.8
400	31	7,443	-24.6		240	33.7
350	31	8,402	-31.7		240	35.7
300	31	9,474	-40.1		237	37.3
250	31	10,695	-49.0		248	34.2
200	30	12,145	-54.2		236	31.3
175	30	13,001	-54.6		251	29.2
150	30	13,986	-55.9		235	30.4
125	30	15,143	-57.3		235	27.4
100	30	16,551	-58.1		227	18.4
80	30	17,959	-57.2		229	9.1
60	30	19,784	-55.8		123	4.1
50	30	20,948	-54.8		102	5.0
40	30	22,382	-52.8		86	10.7
30	29	24,245	-50.7		87	14.3
25	20	25,438	-49.3			
20						
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MIAMI, FLA. (1016 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	41	25.3	90	97	1.2
1,000	31	142	26.3	82	120	3.3
950	31	594	23.8	80	151	6.6
900	31	1,068	20.8	78	158	6.5
850	31	1,562	17.7	75	170	5.9
800	31	2.079	14.6	66	179	5.3
750	31	2,613	11.6	60	194	5.5
700	31	3,198	8.3	55	202	5.4
650	31	3,802	4.7	57	199	4.1
600	31	4,456	1.1	57	194	1.8
550	31	5,139	- 2.8	54	141	.6
500	31	5,903	- 7.3	48	86	1.0
450	31	6,709	-12.5	44	68	2.4
400	31	7,608	-18.6	43	72	3.0
350	31	8,592	-25.2	39	58	4.8
300	31	9,694	-33.3	33	61	6.4
250	31	10,949	-43.3		55	7.0
200	31	12,414	-54.8		35	10.7
175	30	13,258	-60.6		38	12.2
150	29	14,204	-66.3		44	13.1
125	29	15,300	-69.3		57	14.1
100	29	16,631	-68.7		68	14.1
80	28	17,971	-66.8		80	17.3
60	28	19,731	-61.6		83	27.5
50	27	20,869	-58.9		87	36.2
40	26	22,282	-55.5		91	39.1
30	26	24,133	-51.5		94	41.1
25	25	25,320	-49.1		92	41.7
20	20	26,791	-46.9		88	43.3
15	11	28,708	-44.2			

These average values for standard pressure surfaces were obtained by rawinsondes, dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

1/ 10 mb., 22 obs., 31,776 m., -38.7°C, 92 dir., 6.3 speed
7 mb., 16 obs., 34,212 m., -35.9°C, 102 dir., 3 9 speed

RAWINSONDE DATA

Average monthly values

AUGUST 1957

MIDLAND, TEX. (918 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	871	22.4	63	125	3.3
1 000	31	117				
950	31	569				
900	31	1,043	23.6	57	162	8.2
850	31	1,542	21.7	52	180	16.1
800	31	2,066	18.6	51	174	9.2
750	31	2,610	14.7	53	132	5.7
700	31	3,197	10.7	52	98	5.1
650	31	3,806	6.5	49	98	5.0
600	31	4,463	2.4	45	108	4.2
550	31	5,156	- 2.2	43	125	4.2
500	31	5,913	- 6.7	34	138	3.6
450	31	6,723	-12.1	31	148	4.6
400	31	7,620	-17.8	31	124	3.8
350	31	8,606	-24.5		107	3.3
300	31	9,711	-32.8		108	3.2
250	31	10,968	-42.8		53	3.3
200	31	12,439	-53.8		38	3.4
175	31	13,285	-59.7		53	4.3
150	29	14,238	-65.3		63	5.8
125	26	15,338	-69.9		77	7.4
100	18	16,668	-69.8		83	10.7
80	12	18,013	-65.6		72	15.5
60	11	19,796	-59.4		95	21.4
50	11	20,945	-57.0		93	23.7
40	11	22,369	-53.6		93	24.8
30	9	24,236	-49.7			
25	7	25,436	-47.9			
20						
15						

MONTGOMERY, ALA (1010 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	61	21.8	91	45	0.6
1,000	31	148	22.5	85	61	.8
950	31	598	23.2	73	63	2.7
900	31	1,069	20.5	70	81	3.0
850	31	1,561	17.2	71	59	1.9
800	31	2,077	14.1	66	61	.9
750	31	2,615	10.9	62	346	1.1
700	31	3,193	8.1	50	350	2.3
650	31	3,800	5.1	44	6	3.3
600	31	4,451	1.3	44	354	4.2
550	31	5,145	- 2.3	33	352	7.3
500	31	5,899	- 6.5		357	7.9
450	31	6,709	-11.6		359	7.9
400	31	7,608	-17.8		3	9.0
350	31	8,593	-25.0		352	10.0
300	31	9,695	-33.4		348	14.7
250	31	10,949	-43.1		347	14.8
200	31	12,417	-54.2		353	17.1
175	31	13,262	-60.0		353	17.7
150	31	14,213	-65.1		352	15.6
125	31	15,312	-69.4		7	12.8
100	31	16,645	-68.1		52	9.5
80	31	17,996	-64.6		66	10.7
60	30	19,776	-58.8		81	20.8
50	30	20,930	-55.6		88	22.7
40	29	22,363	-53.0		89	24.6
30	25	24,235	-49.6		88	29.6
25	23	25,434	-47.4		87	33.3
20	14	26,911	-44.9			
15						

NANTUCKET, MASS (1015 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	14	18.9	82	292	0.6
1,000	31	142	18.1	77	317	1.7
950	31	580	16.3	66	314	3.8
900	31	1,040	13.8	61	300	5.3
850	31	1,520	11.2	60	291	7.0
800	31	2,024	8.2	60	288	9.2
750	31	2,551	5.3	56	286	10.3
700	31	3,116	2.6	50	294	12.8
650	31	3,709	- .5	45	292	15.2
600	31	4,350	- 3.8	42	280	17.9
550	31	5,026	- 7.5	36	277	21.4
500	31	5,769	-11.9	34	271	24.7
450	31	6,559	-17.2		268	25.2
400	31	7,444	-23.0		261	28.9
350	31	8,409	-29.8		261	29.0
300	31	9,490	-37.8		266	29.8
250	31	10,723	-47.0		273	29.7
200	31	12,172	-55.1		296	31.5
175	31	13,020	-58.3		301	33.8
150	31	13,987	-59.6			
125	31	15,124	-60.8			
100	31	16,513	-60.5			
80	31	17,910	-58.2			
60	31	19,732	-55.8			
50	31	20,896	-54.7			
40	31	22,329	-53.1			
30	28	24,196	-50.5			
25	26	25,386	-48.6			
20	17	26,852	-46.9			
15						

1/ NASHVILLE, TENN. (998 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	177	19.1	91	353	0.4
1,000	31	157			137	1.1
950	31	604	22.8	59	187	.8
900	31	1,075	19.9	59	302	2.3
850	31	1,565	16.5	61	310	4.1
800	31	2,079	13.3	59	297	4.6
750	31	2,616	10.5	46	296	4.9
700	31	3,193	8.0	40	298	5.5
650	31	3,795	4.4	39	309	5.5
600	31	4,448	.7	32	309	7.2
550	31	5,138	- 3.2		316	7.9
500	31	5,891	- 7.5		322	9.5
450	31	6,697	-12.8		320	13.2
400	31	7,593	-19.2	30	324	16.2
350	31	8,573	-26.2		324	18.9
300	31	9,670	-34.4		334	22.2
250	31	10,921	-43.9		331	25.7
200	31	12,386	-54.1		328	26.4
175	31	13,233	-58.9		327	26.1
150	31	14,190	-63.5		346	20.4
125	31	15,300	-66.7		352	15.3
100	30	16,648	-65.3		13	8.4
80	30	18,018	-62.2		46	8.5
60	30	19,818	-57.4		76	14.0
50	30	20,977	-55.1		88	17.0
40	29	22,413	-52.6		86	18.6
30	28	24,285	-50.0		92	23.9
25	28	25,482	-48.0		89	26.5
20	25	26,963	-45.4		94	28.8
15	20	28,887	-42.8		97	25.8

N.Y. INT. AP, IDLEWILD (1016 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	5	19.8	77	337	4.3
1,000	31	145	19.0	70	347	5.2
950	31	585	16.9	61	2	5.1
900	31	1,045	14.4	59	327	4.9
850	31	1,526	11.5	60	311	7.4
800	31	2,031	8.8	56	307	9.7
750	31	2,561	6.3	51	303	11.1
700	31	3,126	3.5	47	302	13.8
650	31	3,722	.4	45	297	16.9
600	30	4,363	- 3.0	45	292	18.8
550	30	5,041	- 6.7	39	294	19.8
500	30	5,787	-11.1	34	290	22.7
450	30	6,584	-16.2		290	24.1
400	30	7,466	-22.3		290	27.4
350	30	8,434	-29.5		288	31.3
300	30	9,516	-37.6		285	36.9
250	30	10,752	-46.0		280	41.2
200	30	12,209	-54.0		282	42.9
175	30	13,061	-56.7		284	40.8
150	30	14,032	-59.5		285	35.6
125	30	15,169	-60.8		284	28.0
100	29	16,561	-60.2		283	20.6
80	29	17,962	-57.5		284	10.7
60	29	19,797	-53.8		86	3.9
50	26	20,968	-52.4		95	9.5
40	26	22,418	-50.5		93	12.6
30	24	24,310	-47.1		90	15.7
25	17	25,522	-45.0		88	17.5
20						
15						

NOME, ALASKA (1012 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	7	9.0	92	164	1.4
1,000	31	103			205	2.4
950	31	523	8.2	84	184	5.6
900	31	974	5.9	84	196	7.5
850	31	1,441	4.2	80	194	9.3
800	31	1,933	2.0	76	193	8.9
750	31	2,444	- .5	67	206	8.9
700	31	3,002	- 3.3	61	213	9.1
650	31	3,574	- 6.7	60	222	9.6
600	31	4,206	-10.4	55	216	9.6
550	31	4,864	-14.4	48	218	12.0
500	31	5,588	-18.9	43	225	12.5
450	31	6,354	-24.4	42	250	7.9
400	31	7,214	-30.8	44	221	11.1
350	31	8,147	-37.4		223	12.8
300	31	9,194	-45.1		236	12.3
250	31	10,394	-51.0		238	16.5
200	31	11,845	-50.0		241	17.5
175	30	12,717	-48.4		250	13.1
150	30	13,732	-48.4		241	9.7
125	30	14,931	-48.7		240	11.0
100	29	16,403	-48.6		245	9.5
80	29	17,873	-48.3		251	6.9
60	29	19,771	-48.0		238	4.5
50	29	20,973	-47.9		268	3.2
40	29	22,446	-47.6		244	1.8
30	29	24,349	-46.8		273	1.1
25	29	25,561	-46.0		248	1.1
20	22	27,047	-45.0		73	3.5
15	13	28,992	-42.8			

NORFOLK, VA. (1016 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	9	21.4	86	13	2.4
1,000	31	145	21.8	80	10	3.5
950	31	591	20.4	70	10	6.0
900	31	1,056	17.9	65	3	5.8
850	31	1,544	15.0	67	342	6.2
800	31	2,055	11.6	70	324	7.8
750	31	2,595	8.6	62	311	10.7
700	31	3,161	6.0	51	304	12.5
650	31	3,763	2.8	44	295	14.0
600	31	4,410	- .7	40	294	15.6
550	31	5,094	- 4.4	36	292	15.2
500	31	5,846	- 9.0	32	290	15.8
450	31	6,651	-14.0		287	18.6
400	31	7,541	-20.1		285	19.9
350	31	8,517	-27.1		284	21.4
300	31	9,610	-35.4		278	26.9
250	31	10,855	-44.8		276	29.2
200	31	12,315	-54.5		280	33.1
175	30	13,162	-58.8		288	31.1
150	29	14,116	-62.6		287	26.6
125	27	15,234	-64.8		286	19.5
100	26	16,596	-63.8		289	12.2
80	24	17,970	-61.0		345	3.7
60	23	19,775	-56.8		87	9.3
50	21	20,938	-55.1		91	13.0
40	20	22,374	-52.4		91	17.5
30	15	24,250	-49.2		92	21.7
25	12	25,456	-47.1			
20						
15						

NORTH PLATTE, NEBR. (919 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	848	17.6	88	95	3.4
1,000	31	117				
950	31	558				
900	31	1,027	19.1	79	140	4.7
850	31	1,522	20.2	61	202	7.7
800	31	2,044	18.3	54	231	7.7
750	31	2,589	15.0	52	234	6.8
700	31	3,177	11.0	51	247	6.8
650	31	3,785	6.4	48	251	8.9
600	31	4,443	1.9	46	254	9.9
550	31	5,131	- 2.8	44	260	11.6
500	31	5,889	- 7.6	40	262	12.2
450	31	6,695	-12.9	36	262	16.3
400	31	7,592	-18.8	38	266	19.8
350	31	8,573	-25.7	36	266	22.7
300	31	9,673	-33.9	34	270	27.1
250	31	10,924	-43.7		266	32.2
200	31	12,389	-54.6		270	37.3
175	31	13,234	-59.6		271	32.8
150	31	14,187	-64.4		269	28.1
125	30	15,294	-66.7		276	20.6
100	25	16,648	-65.8		267	10.5
80	21	18,013	-61.9		269	3.2
60	21	19,817	-56.7		68	4.7
50	21	20,980	-54.3		84	6.7
40	21	22,420	-51.4		70	10.3
30	18	24,307	-48.5		91	12.9
25	13	25,510	-47.3			
20						
15						

2/ OAKLAND, CALIF. (1014 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	6	14.5	86	280	3.0
1,000	31	125	13.8	85	262	3.5
950	31	560	16.0	67	257	5.7
900	31	1,021	19.2	30	286	9.4
850	31	1,510	17.5	25	275	7.3
800	31	2,025	14.7	21	240	7.3
750	31	2,564	11.9		226	9.7
700	31	3,142	8.6		218	11.2
650	31	3,743	4.9		226	13.3
600	31	4,398	.6		227	15.7
550	31	5,080	- 4.0		227	16.9
500	31	5,836	- 9.2		233	19.0
450	31	6,631	-15.3		239	20.8
400	31	7,521	-22.4		237	24.5
350	31	8,488	-30.1		236	28.5
300	31	9,567	-38.7		236	33.8
250	31	10,796	-47.6		235	38.5
200	31	12,246	-55.0		230	45.3
175	31	13,094	-57.5		230	42.6
150	31	14,063	-59.9		231	40.1
125	30	15,197	-61.9		238	28.4
100	28	16,574	-62.4		235	12.6
80	25	17,952	-60.7		189	4.4
60	24	9,756	-57.4		95	8.9
50	24	20,914	-55.6		96	10.3
40	23	22,342	-53.6		85	15.8
30	23	24,206	-50.5		90	19.0
25	22	25,399	-48.9		90	21.2
20	21	26,868	-47.2		93	22.5
15	12	28,795	-44.3		95	24.2

3/ OKLAHOMA CITY, OKLA. (971 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	391	21.1	83	160	6.0
1,000	31	135				
950	31	584	24.0	66	175	11.8
900	31	1,057	23.2	55	199	13.7
850	31	1,554	20.4	53	215	9.2
800	31	2,075	17.1	56	251	4.7
750	31	2,616	13.4	56	301	4.2
700	31	3,200	9.6	51	339	3.1
650	31	3,806	5.8	44	26	4.2
600	31	4,461	1.6	46	22	3.8
550	31	5,153	- 2.4	41	338	3.1
500	31	5,908	- 6.7	36	306	3.7
450	31	6,716	-11.8	35	295	4.8
400	31	7,615	-17.9	32	300	5.1
350	31	8,600	-24.8	32	314	5.4
300	31	9,704	-32.6		314	6.6
250	31	10,964	-42.1		333	9.4
200	31	12,440	-53.1		318	7.3
175	31	13,288	-59.1		310	8.1
150	31	14,241	-64.8		311	7.6
125	31	15,343	-68.3		326	7.9
100	31	16,679	-67.8		34	5.0
80	31	18,036	-63.3		69	7.9
60	30	19,833	-57.3		84	14.9
50	30	20,994	-54.4		94	17.7
40	30	22,432	-51.9		89	19.9
30	28	24,310	-48.7		89	23.9
25	28	25,514	-46.7		88	26.9
20	27	26,998	-45.0		87	29.7
15	25	28,937	-42.7		87	31.8

OMAHA, NEBR (969 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	403	18.9	86	124	4.9
1,000	30	134				
950	30	578	20.6	74	153	7.2
900	30	1,046	20.3	64	197	9.1
850	30	1,538	17.8	59	232	8.4
800	30	2,055	15.2	60	248	8.5
750	30	2,594	12.0	57	255	9.3
700	30	3,175	8.6	55	264	9.5
650	30	3,779	4.9	50	275	10.7
600	30	4,433	.9	48	286	13.0
550	30	5,122	- 3.3	44	297	13.2
500	29	5,877	- 7.6		290	14.6
450	28	6,685	-13.0		293	16.7
400	28	7,579	-19.1		292	20.4
350	28	8,559	-26.0		289	25.1
300	28	9,657	-34.1		291	29.5
250	28	10,910	-43.6		292	35.6
200	27	12,377	-54.2		290	38.1
175	27	13,223	-59.4		289	38.3
150	27	14,179	-63.4		289	35.8
125	27	15,293	-65.8		290	29.7
100	25	16,651	-65.0		295	17.1
80	25	18,023	-61.5		319	6.6
60	24	19,830	-56.0		64	5.4
50	22	20,997	-53.4		86	7.0
40	22	22,442	-50.9		86	11.7
30	22	24,325	-48.1		89	15.0
25	22	25,531	-46.4		88	17.7
20	22	27,020	-44.4		89	17.5
15	15	28,947	-41.3		100	20.4

PEORIA, ILL. (994 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	201	18.0	91	99	1.4
1,000	31	152				
950	31	595	20.6	69	240	4.1
900	31	1,063	18.4	65	261	5.4
850	31	1,551	15.4	62	280	6.1
800	31	2,064	12.7	57	297	8.3
750	31	2,601	9.9	53	300	8.7
700	31	3,174	6.8	45	298	9.6
650	31	3,775	3.4	43	300	10.4
600	31	4,425	- .3	34	298	12.0
550	31	5,107	- 4.2	28	302	13.8
500	31	5,862	- 8.7		305	17.1
450	31	6,662	-13.5		306	20.1
400	31	7,557	-19.7		307	22.2
350	31	8,535	-26.8		308	27.5
300	31	9,629	-34.9		308	33.4
250	31	10,876	-44.4		306	38.1
200	31	12,338	-54.5		303	42.6
175	31	13,185	-58.6		305	40.5
150	30	14,144	-62.5		306	34.4
125	30	15,261	-65.0		308	28.4
100	29	16,620	-64.2		313	16.1
80	29	17,998	-60.7		335	9.1
60	29	19,807	-55.9		62	6.7
50	29	20,974	-53.2		86	9.3
40	29	22,421	-50.3		87	11.2
30	28	24,308	-48.0		95	14.9
25	26	25,514	-46.0		88	16.0
20	24	27,003	-43.3		89	15.6
15	14	28,962	-39.7			

PHOENIX, ARIZ. (972 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	341	26.2	61	109	2.9
1,000	31	91				
950	31	547	28.1	46	117	4.6
900	31	1,026	26.5	41	158	3.5
850	31	1,529	23.5	42	192	3.1
800	31	2,055	19.6	46	214	3.7
750	31	2,601	15.2	53	210	4.4
700	31	3,188	10.8	58	202	5.2
650	31	3,794	6.2	61	182	5.0
600	31	4,454	1.7	63	169	6.8
550	31	5,141	- 2.5	59	168	7.4
500	31	5,902	- 6.9	53	205	7.6
450	31	6,710	-12.1	48	219	9.1
400	31	7,609	-18.0	46	217	10.9
350	31	8,594	-24.9	45	221	15.0
300	31	9,697	-33.2	39	217	18.2
250	31	10,953	-43.0		202	18.4
200	31	12,421	-54.0		209	20.3
175	31	13,268	-59.7		212	20.6
150	31	14,219	-65.4		215	19.5
125	30	15,316	-69.7		208	10.2
100	29	16,643	-69.7		152	7.6
80	29	17,985	-65.5		109	8.8
60	26	19,760	-59.3		96	13.6
50	26	20,908	-57.0		95	18.6
40	25	22,329	-54.3		90	24.6
30	20	24,187	-51.3		95	29.1
25	17	25,379	-49.3		93	27.5
20						
15						

PITTSBURGH, PA. (978 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	353	16.2	82	261	1.0
1,000	31	163				
950	31	601	18.4	68	303	2.1
900	31	1,063	16.2	65	307	7.2
850	31	1,547	13.2	68	312	9.9
800	31	2,055	10.1	68	307	12.6
750	31	2,588	7.6	56	303	15.2
700	31	3,156	5.1	45	303	16.5
650	31	3,758	1.9	45	300	18.3
600	31	4,400	- 1.7	46	299	19.0
550	31	5,083	- 5.7	40	300	20.2
500	31	5,828	-10.6	40	300	20.8
450	31	6,625	-15.9	36	302	22.5
400	31	7,509	-21.9	37	304	25.5
350	31	8,477	-29.3	38	304	28.6
300	31	9,559	-37.6		302	32.1
250	30	10,794	-46.7		305	37.7
200	30	12,244	-55.2		308	41.4
175	27	13,091	-58.3		307	39.4
150	27	14,054	-61.2		303	31.1
125	26	15,178	-63.7		299	27.0
100	26	16,550	-62.4		306	17.3
80	25	17,937	-60.2		312	10.1
60	25	19,748	-56.2		23	5.2
50	25	20,913	-54.2		69	8.7
40	22	22,353	-52.6		92	12.4
30	13	24,243	-49.3		78	17.3
25	8	25,446	-47.0			
20						
15						

PORTLAND, ME. (1014 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	20	15.2	83	283	3.3
1,000	31	141	15.9	72	276	5.3
950	31	577	15.8	56	301	7.0
900	31	1,036	13.3	54	289	9.1
850	31	1,514	10.1	59	283	10.2
800	31	2,016	7.2	55	282	11.9
750	31	2,541	4.4	49	281	15.6
700	31	3,103	1.6	47	281	18.4
650	31	3,694	- 1.1	36	279	20.4
600	30	4,333	- 4.7	34	277	22.7
550	30	5,007	- 8.6	36	272	25.8
500	30	5,747	-13.0		268	26.6
450	30	6,535	-18.3	37	265	29.2
400	30	7,412	-24.7	39	263	30.6
350	30	8,370	-31.8		259	34.1
300	30	9,443	-39.4		260	41.9
250	30	10,672	-46.8		265	44.1
200	30	12,132	-52.2		261	45.8
175	30	12,993	-54.1		260	47.2
150	30	13,978	-55.7		261	45.2
125	30	15,135	-57.3		263	33.8
100	30	16,546	-56.7		262	27.9
80	29	17,967	-54.9		260	19.3
60	26	19,815	-52.6		248	11.2
50	26	20,997	-51.1		224	2.7
40	26	22,454	-49.4		88	7.6
30	25	24,350	-46.7		77	20.3
25	23	25,564	-44.9		79	21.9
20	22	27,064	-42.8		82	19.6
15	12	29,044	-39.7			

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

1/ 10 mb., 6 obs., 31,663 m., -39.6°C.
2/ 10 mb., 6 obs., 31,529 m., -41.4°C.
3/ 10 mb., 13 obs., 31,712 m., -39.1°C.

RAWINSONDE DATA

Average monthly values

Standard pressure surface (mb.)	† RAPID CITY, S. DAK. (906 MB.)						1/ ST. CLOUD, MINN. (980 MB.)						SALEM, OREG. (1010 MB.)						SALT LAKE CITY, UTAH (871 MB.)						SAN ANTONIO, TEX. (988 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	966	16.5	78	89	0.5	31	316	15.2	94	17	1.6	31	61	11.2	90	182	1.5	31	1,288	19.4	55	162	10.1	31	243	24.1	83	171	1.2
1,000--	31	116					31	146					31	148	13.0	82	224	.2	31	81					31	136				
950----	31	558					31	584	17.6	81	132	2.4	31	577	12.4	77	23	2.4	31	529					31	589	22.9	80	187	10.1
900----	31	1,024	17.2	75	138	.6	31	1,046	16.4	70	221	2.0	31	1,033	10.7	76	303	1.8	31	1,003					31	1,058	21.5	66	183	12.9
850----	31	1,516	18.3	63	185	4.6	31	1,532	14.7	63	276	5.6	31	1,508	8.4	68	263	4.9	31	1,502	22.5	35	163	15.5	31	1,552	19.2	60	155	8.8
800----	31	2,035	16.6	56	210	7.5	31	2,044	12.5	58	290	8.1	31	2,007	6.1	61	253	7.1	31	2,028	20.0	29	176	17.9	31	2,072	16.1	60	119	7.3
750----	31	2,581	13.6	54	232	7.4	31	2,580	9.6	54	293	10.2	31	2,533	3.8	46	243	8.7	31	2,577	16.1	31	198	15.7	31	2,612	12.9	55	92	6.6
700----	31	3,162	9.8	55	235	10.6	31	3,153	6.5	51	293	13.0	31	3,092	.9	42	235	13.0	31	3,163	11.5	34	216	14.0	31	3,194	9.4	49	73	6.6
650----	31	3,768	5.3	56	250	12.0	31	3,751	3.1	44	298	16.7	31	3,678	- 2.2	34	238	17.3	31	3,773	6.3	40	223	15.7	31	3,793	6.2	39	80	7.5
600----	31	4,423	.5	55	261	15.0	31	4,402	- 1.1	42	298	19.9	31	4,317	- 5.8		239	20.9	31	4,429	.7	49	228	16.2	31	4,457	2.2	37	74	6.1
550----	31	5,107	- 4.3	50	259	17.5	31	5,081	- 5.5	41	292	22.0	31	4,985	-10.0		241	22.7	31	5,115	- 4.9	57	225	16.9	31	5,149	- 1.9	34	76	6.0
500----	31	5,860	- 9.5	47	262	19.2	31	5,833	-10.0	35	287	25.1	31	5,722	-14.8		241	28.1	31	5,866	-10.1	53	228	19.6	31	5,906	- 6.3	31	69	5.8
450----	31	6,662	-14.7	42	260	21.8	31	6,635	-15.3		289	27.9	31	6,500	-20.3		241	30.9	31	6,666	-15.3	42	235	22.9	31	6,716	-11.5	31	76	6.7
400----	31	7,550	-20.8	42	260	24.6	31	7,519	-21.3		288	31.4	31	7,374	-26.9		243	35.3	31	7,553	-21.5		235	26.3	31	7,615	-17.5	29	67	6.7
350----	31	8,522	-28.2	43	254	29.6	31	8,491	-28.4		290	36.4	31	8,324	-33.8		243	40.1	31	8,524	-28.4		233	32.5	31	8,602	-24.5		75	7.4
300----	30	9,610	-36.7	48	257	41.1	31	9,579	-36.5		293	44.9	31	9,387	-41.6		242	45.8	31	9,612	-36.5		232	38.1	31	9,706	-32.8		71	7.4
250----	30	10,847	-46.4		255	47.7	31	10,818	-45.8		286	47.2	30	10,606	-49.0		241	49.1	31	10,852	-45.5		234	48.2	31	10,963	-42.7		66	6.0
200----	30	12,298	-55.5		258	56.1	31	12,273	-54.9		290	44.8	29	12,060	-52.4		242	45.6	31	12,313	-53.8		233	52.7	31	12,432	-54.0		77	5.0
175----	29	13,139	-59.2		260	50.7	31	13,120	-58.3		291	46.7	29	12,923	-52.8		241	43.9	31	13,163	-57.9		233	51.1	31	13,278	-59.8		84	4.6
150----	29	14,097	-62.3		259	44.0	31	14,085	-60.3		288	39.4	29	13,916	-53.7		240	37.8	31	14,127	-61.2		236	41.8	31	14,229	-65.4		79	9.6
125----	27	15,220	-64.0		261	32.1	30	15,212	-61.3		288	31.8	28	15,084	-54.5		240	29.8	28	15,250	-63.9		237	25.1	31	15,324	-70.5		80	12.9
100----	23	16,601	-63.0		268	19.4	30	16,598	-60.6		293	16.9	28	16,510	-55.3		234	17.9	27	16,613	-64.3		229	18.8	31	16,649	-69.6		87	15.7
80-----	22	17,983	-60.4		261	8.1	30	17,996	-58.2		309	10.2	28	17,932	-55.8		225	9.2	25	17,987	-60.6		208	5.4	31	17,992	-65.5		84	16.1
60-----	22	19,795	-56.4		254	.4	28	19,821	-54.4		340	7.3	28	19,771	-54.4		141	3.7	25	19,795	-56.4		91	6.5	31	19,766	-60.4		86	22.4
50-----	22	20,959	-54.4		54	3.4	27	20,994	-52.3		339	3.3	28	20,942	-53.5		115	4.8	25	20,956	-54.7		82	7.7	31	20,911	-57.5		87	27.5
40-----	22	22,398	-51.6		78	11.0	27	22,445	-50.0		77	8.5	24	22,378	-52.0		95	6.8	24	22,387	-52.7		81	9.2	29	22,329	-54.5		96	29.5
30-----	21	24,282	-48.8		86	13.7	27	24,337	-47.4		91	10.0	23	24,249	-49.7		80	8.1	20	24,251	-49.9		88	11.6	28	24,189	-50.9		88	33.4
25-----	21	25,485	-47.2		85	14.9	27	25,548	-45.9		92	12.1	20	25,450	-48.5		89	11.3	13	25,448	-48.3				28	25,382	-48.8		86	36.0
20-----	21	26,969	-44.8		79	14.9	25	27,035	-44.5		84	14.1	6	26,939	-46.3										17	26,838	-47.5			
15-----	19	28,905	-42.2		81	17.0	25	28,972	-42.2		88	16.4																		

Standard pressure surface (mb.)	2/ SAN DIEGO, CALIF. (998 MB.)						3/ SAN JUAN, P. R. (1015 MB.)						SANTA MARIA, CALIF. (1006 MB.)						SANTA MONICA, CALIF. (1010 MB.)						4/ S. STE. MARIE, MICH. (993 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	124	18.4	92	342	0.7	31	6	25.7	85	110	4.9	31	74	12.6	90	269	0.7	31	38	18.8	81	48	0.6	31	221	12.2	91	352	1.8
1,000--	31	109					31	142	25.1	82	101	10.4	31	122	12.6	89	294	.5	31	121	18.4	81	100	1.2	31	157				
950----	31	553	19.9	62	139	1.2	31	593	22.6	81	93	16.7	31	565	17.9	63	32	4.6	31	570	19.4	61	105	2.7	31	589	14.7	69	299	3.6
900----	31	1,020	22.5	27	271	.6	31	1,063	19.9	80	95	17.6	31	1,025	21.7	30	37	4.2	31	1,030	21.5	32	140	1.4	31	1,048	12.5	67	301	8.0
850----	31	1,516	21.1	23	258	4.0	31	1,555	17.2	76	95	18.4	31	1,519	19.6	26	22	1.5	31	1,524	19.9	26	224	2.7	31	1,526	9.9	65	299	9.9
800----	31	2,037	18.3	27	230	5.8	31	2,071	14.8	65	95	17.7	31	2,038	16.6	27	235	2.8	31	2,044	17.0	29	225	6.0	31	2,028	7.8	55	297	13.5
750----	31	2,579	14.7	31	216	8.1	31	2,608	12.1	53	94	16.1	31	2,583	13.5	22	236	6.6	31	2,587	14.1	26	229	8.9	31	2,555	5.3	50	294	15.9
700----	31	3,166	10.8	33	216	8.2	31	3,191	8.9	49	96	15.8	31	3,161	10.0		231	8.7	31	3,170	10.2	31	221	10.3	31	3,119	2.7	51	295	19.7
650----	31	3,771	6.4	39	209	7.5	31	3,799	5.3	45	96	15.0	31	3,768	6.0		228	9.8	31	3,780	6.2	28	216	10.3	31	3,712	- .3	45	298	24.4
600----	31	4,431	1.8	41	201	8.0	31	4,451	1.6	45	91	14.6	31	4,424	1.8		235	10.2	31	4,434	1.7	30	211	10.9	31	4,353	- 4.0	43	297	26.6
550----	31	5,120	- 3.0	44	214	8.1	31	5,142	- 2.4	43	86	11.6	31	5,114	- 2.8		229	11.6	31	5,123	- 3.2	32	219	11.5	31	5,027	- 8.3	40	298	29.2
500----	31	5,876	- 7.6	39	216	8.7	31	5,899	- 6.4	35	88	9.4	31	5,869	- 8.0		236	14.0	31	5,878	- 8.6	34	226	10.9	31	5,769	-12.9	35	299	33.6
450----	31	6,682	-12.8		220	10.5	31	6,706	-11.8	33	92	7.3	31	6,672	-13.8		234	15.8	31	6,684	-14.0		227	13.8	31	6,561	-18.4	38	299	34.9
400----	31	7,578	-18.9		221	12.1	31	7,608	-18.4	31	101	8.4	31	7,565	-20.5		237	19.0	31	7,573	-20.5		227	15.7	31	7,434	-24.7	38	300	38.7
350----	31	8,559	-26.1		221	16.9	31	8,590	-25.6		112	8.2	31	8,539	-28.3		240	21.6	31	8,547	-27.8		225	19.6	31	8,392	-32.0	36	300	46.0
300----	31	9,656	-34.4		222	21.9	31	9,689	-34.3		136	5.9	31	9,626	-36.7		235	27.1	31	9,635	-36.3		223	27.2	31	9,463	-40.0		298	49.7
250----	31	10,907	-43.5		221	26.6	31	10,938	-44.5		150	5.2	31	10,866	-45.7		230	36.7	31	10,877	-44.9		223	31.7	31	10,688	-47.5		300	60.3
200----	31	12,376	-53.8		215	30.0	31	12,396	-55.9		113	3.5	31	12,323	-54.5		223	35.2	31	12,338	-54.3		223	35.4	31	12,143	-53.5		298	67.1
175----	31	13,224	-59.2		212	31.4	31	13,235	-61.3		126	3.9	31	13,170	-58.4		223	36.8	31	13,184	-59.1		219	36.5	31	12,998	-55.5		299	61.7
150----	31	14,179	-64.3		216	29.0	31	14,181	-65.9		106	1.7	30	14,130	-62.3		226	32.3	31	14,141	-63.5		220	31.9	31	13,979	-56.5		299	48.3
125----	31	15,284	-67.9		217	20.7	30	15,277	-69.6		102	5.0	28	15,253	-66.0		228	23.6	31	15,250	-67.2		225	23.7	31	15,133	-57.5		296	38.1
100----	31	16,624	-67.3		189	7.4	29	16,601	-71.8		77	11.2	25	16,618	-65.4		218	7.0	31	16,596	-66.7		216	10.1	31	16,544	-57.1		296	26.4
80-----	31	17,975	-64.9		110	7.0	29	17,926	-68.5		74	23.0	24	17,986	-62.6		117	8.8	31	17,951	-64.5		121	6.2	31	17,960	-56.1		302	16.5
60-----	30	19,753	-59.4		94	14.7	29	19,675	-62.9		84	32.6	20	19,779	-58.8		92	14.7	31	19,730	-59.8		93	12.0	31	19,803	-52.9		311	8.5
50-----	30	20,899	-57.4		91	18.9	29	20,807	-59.8		87	35.0	20	20,931	-56.3		90	18.7	31	20,874	-57.5		89	15.0	30	20,985	-51.1		336	4.1
40-----	30	22,318	-54.7		88	23.5	28	22,213	-56.2		88	36.1	19	22,360	-53.5		95	23.0	30	22,293	-55.0		89	19.8	30	22,443	-49.3		78	6.3
30-----	29	24,172	-51.5		86	29.7	28	24,060	-52.1		86	36.2	11	24,219	-51.1				30	24,147	-51.2		85	25.8	29	24,341	-46.8		95	10.6
25-----	29	25,361	-49.4		90	28.2	26	25,248	-50.0		89	37.7	8	25,402	-50.0				29	25,335	-49.5		87	27.8	28	25,559	-45.3		99	11.4
20-----	28	26,831	-47.5		93	30.4	25	26,716	-47.5		87	38.9							27	26,804	-47.3		89	29.1	26	27,052	-43.4		94	12.8
15-----	21	28,743	-44.9		88	32.8	19	28,627	-42.7		84	50.3							13	28,715	-45.3				23	28,986	-41.0		91	12.2

Standard pressure surface (mb.)	5/ SEATTLE, WASH. (1003 MB.)						6/ SHREVEPORT, LA. (1008 MB.)						7/ SPOKANE, WASH. (932 MB.)						8/ SWAN ISLAND, W. I. (1012 MB.)						TAMPA, FLA. (1016 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	124	12.6	91	155	3.4	31	76	22.8	87	166	1.2	31	722	13.2	58	145	3.3	31	10	26.9	90	71	8.9	31	7	24.0	91	95	2.6
1,000--	31	149			145	2.8	31	144	23.3	82	184	2.7	31	119					31	116	26.1	89	73	9.9	31	146	24.7	85	113	2.7
950----	31	581	12.6	77	165	1.5	31	594	23.2	67	207	7.0	31	559					31	567	23.0	87	88	12.8	31	593	22.5	81	185	3.1
900----	31	1,034	10.4	74	238	2.0	31	1,065	20.5	68	203	6.1	31	1,016	16.3	45	162	3.4	31	1,039	20.2	81	94	15.3	31	1,066	19.8	75	207	4.9
850----	31	1,508	7.8	72	269	2.2	31	1,558	17.8	65	208	3.1	31	1,501	13.8	42	215	4.4	31	1,532	17.5	73	96	17.1	31	1,557	16.9	69	210	5.4
800----	31	2,006	4.9	69	247	3.3	31	2,075	14.6	65	236	1.1	31	2,008	9.7	48	230	6.5	31	2,049	14.7	66	97	17.3	31	2,072	14.2	62	227	4.4
750----	31	2,529	1.9	64	230	5.1	31	2,614	11.6	58	33	1.2	31	2,540	5.4	54	235	8.8	31	2,593	11.9	57	99	16.7	31	2,614	11.3	58	221	4.5
700----	31	3,084	- 1.1	56	233	9.2	31	3,194	8.4	54	33	3.5	31	3,101	1.4	54	230	12.4	31	3,168	8.7	50	99	15.2	31	3,188	8.1	59	230	3.9
650----	31	3,670	- 4.2	43	237	13.0	31	3,799	5.1	48	27	4.3	31	3,692	- 1.9	44	227	20.1	31	3,775	5.1	48	98	14.4	31	3,794	4.6	60	243	5.0
600----	31	4,299	- 7.9	36	238	15.9	31	4,453	1.6	45	29	3.7	31	4,326	- 6.1	44	227	26.4	31	4,428	1.4	43	96	13.4	31	4,445	1.3	51	269	4.2
550----	31	4,966	-12.3	36	241	19.3	31	5,143	- 2.2	40	7	3.6	31	4,994	-10.6	43	226	29.6	31	5,119	- 2.8	41	97	11.7	31	5,133	- 2.7	47	289	2.8
500----	31	5,693	-17.2	33	239	23.1	31	5,903	- 6.6		16	3.9	31	5,729	-15.6	45	226	33.5	31	5,874	- 7.4	40	94	10.1	31	5,891	- 7.2	50	337	2.9
450----	31	6,467	-22.9		242	26.6	31	6,713	-11.6		19	4.9	31	6,505	-20.8	40	228	36.8	31	6,683	-12.4	39	97	9.3	31	6,698	-12.1	42	29	2.4
400----	30	7,325	-29.4		242	30.6	31	7,612	-17.5		20	6.5	31	7,376	-27.2	39	228	40.3	31	7,578	-18.5	36	92	7.8	31	7,597	-18.0	37	20	3.6
350----	30	8,265	-36.4		243	35.3	31	8,599	-24.7		23	5.9	31	8,324	-34.3	40	230	45.6	31	8,561	-25.6	36	82	7.4	31	8,581	-25.4	34	29	3.4
300----	30	9,317	-43.9		243	39.5	31	9,702	-32.9		16	7.4	31	9,385	-42.2		229	49.2	31	9,660	-33.9		55	7.8	31	9,682	-33.7		16	3.4
250----	30	10,524	-49.8		242	44.3	31	10,959	-42.9		34	6.5	31	10,598	-49.7		234	50.2	31	10,912	-43.9		28	4.3	31	10,935	-43.5		34	6.5
200----	30	11,982	-49.8		242	41.3	31	12,424	-54.8		15	8.4	31	12,049	-51.4		241	45.0	31	12,373	-55.5		339	6.2	30	12,402	-54.7		29	9.6
175----	30	12,856	-49.8		241	37.3	31	13,266	-60.8		18	9.7	31	12,916	-51.7		240	38.3	31	13,212	-61.7		346	7.0	30	13,245	-60.5		31	13.4
150----	30	13,862	-50.9		239	29.8	31	14,212	-66.3		30	9.8	31	13,915	-52.4		240	33.0	30	14,153	-67.2		16	6.0	30	14,193	-65.8		50	13.2
125----	30	15,044	-52.4		236	23.2	31	15,305	-70.4		50	9.1	30	15,090	-53.9		238	29.7	29	15,243	-70.3		44	9.3	29	15,292	-69.7		54	13.9
100----	30	16,484	-53.3		230	15.5	31	16,628	-70.0		63	10.2	30	16,522	-54.4		236	18.1	27	16,562	-72.2		65	15.2	29	16,622	-68.8		73	14.9
80-----	30	17,918	-53.7		222	6.8	31	17,970	-65.3		76	11.9	30	17,949	-55.3		228	8.5	23	17,884	-69.8		84	23.9	28	17,966	-65.4		72	16.9
60-----	30	19,769	-52.9		131	2.7	31	19,748	-59.5		83	19.4	30	19,791	-54.1		209	4.2	23	19,627	-63.6		84	31.7	27	19,735	-61.1		85	27.8
50-----	30	20,947	-52.2		88	4.9	31	20,896	-56.7		90	23.0	30	20,965	-52.9		169	1.4	20	20,752	-60.7		86	32.7	27	20,876	-58.1		90	34.4
40-----	30	22,395	-50.7		82	6.4	31	22,324	-53.3		91	23.6	29	22,406	-51.6		81	3.4	19	22,150	-58.0		91	35.6	26	22,291	-54.9		95	36.4
30-----	28	24,284	-47.9		71	9.2	30	24,196	-49.1		86	26.8	28	24,284	-48.9		81	3.8	18	23,977	-53.6		91	35.9	26	24,146	-50.9		91	36.5
25-----	26	25,485	-46.6		[illegible]	9.6	29	25,401	-46.9		89	29.5	26	25,485	-47.8		101	4.7	18	25,157	-50.9		93	38.1	26	25,338	-49.0		88	36.7
20-----	22	26,970	-44.2		85	10.7	26	26,889	-44.4		[illegible]	32.5	25	26,965	-46.0		123	5.4	17	26,619	-47.7		92	36.4	24	26,810	-47.3		85	39.9
15-----	20	28,904	-41.4		85	14.2	23	28,828	-40.9		87	39.9	25	28,889	-43.7		130	6.6	16	28,530	-44.7		89	41.0	16	28,719	-44.5		83	44.4

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

1/ 10 mb., 15 obs., 31,729 m., -39.4°C.
2/ 10 mb., 9 obs., 31,431 m., -41.6°C.
3/ 10 mb., 5 obs., 31,361 m., -38.7°C.
4/ 10 mb., 9 obs., 31,708 m., -38.0 C
5/ 10 mb., 7 obs., 31,648 m., -38.1°C.
6/ 10 mb., 14 obs., 31,580 m., -37.0°C.
7/ 10 mb., 21 obs., 31,630 m., -40.3°C., 123 dir., 8.9 speed
7 mb., 18 obs., 34,067 m., -37.5°C., 106 dir., 5.8 speed
5 mb., 6 obs., 36,296 m., -37.5°C.
8/ 10 mb., 15 obs., 31,258 m., -40.9°C.
7 mb., 10 obs., 33,666 m., -39.1°C.
† 10 mb., 8 obs., 31,675 m., -37.3°C.

RAWINSONDE DATA

Average monthly values

AUGUST 1957

1/ TATOOSH IS. WASH
(1013 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	31	13.3	93	148	3.0
1,000--	30	143	13.1	88	190	3.3
950----	30	572	11.4	80	250	4.5
900----	30	1,026	9.5	74	222	3.9
850----	30	1,499	6.9	74	219	4.4
800----	30	1,996	3.8	74	218	4.7
750----	30	2,514	.9	66	231	5.6
700----	30	3,071	- 2.0	57	231	7.6
650----	30	3,650	- 5.3	54	239	8.6
600----	30	4,282	- 8.9	48	243	10.5
550----	30	4,940	-13.2	44	253	13.3
500----	30	5,671	-18.0	42	255	14.4
450----	30	6,440	-23.6	42	256	18.3
400----	30	7,303	-30.2	44	257	23.3
350----	30	8,239	-37.2	43	258	29.2
300----	30	9,287	-44.8		261	31.6
250----	30	10,490	-49.8		256	33.4
200----	30	11,952	-48.9		253	30.4
175----	30	12,827	-49.2		249	27.2
150----	30	13,838	-50.4		246	22.2
125----	30	15,023	-51.7		242	18.8
100----	28	16,465	-52.5		238	12.0
80-----	26	17,904	-52.7		220	7.9
60-----	25	19,761	-52.9		147	2.2
50-----	23	20,937	-52.4		94	3.1
40-----	21	22,381	-51.1		87	6.7
30-----	19	24,267	-49.2		98	5.0
25-----	19	25,468	-47.4		82	7.0
20-----	19	26,950	-45.3		86	10.5
15-----	17	28,877	-42.9		76	11.5

TONOPAH, NEV.
(836 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,650	13.3	31	359	5.5
1,000--	31	99				
950----	31	543				
900----	31	1,014				
850----	31	1,504				
800----	31	2,021	18.4	29	172	1.8
750----	31	2,570	15.1	32	208	8.6
700----	31	3,150	10.7	34	201	11.2
650----	31	3,761	5.9	38	198	10.9
600----	31	4,414	.9	37	185	13.2
550----	31	5,100	- 3.7	33	194	14.6
500----	31	5,854	- 8.6	27	220	16.0
450----	31	6,654	-14.5		226	19.3
400----	31	7,546	-21.1		229	23.5
350----	31	8,518	-28.4		229	27.7
300----	31	9,605	-36.7		229	33.5
250----	31	10,845	-45.4		229	40.9
200----	31	12,307	-53.6		224	47.4
175----	31	13,158	-57.7		226	47.9
150----	31	14,123	-61.2		227	40.1
125----	29	15,247	-63.8		232	29.8
100----	28	16,619	-64.3		223	15.1
80-----	22	17,987	-61.4		201	8.5
60-----	19	19,788	-57.6		102	4.9
50-----	19	20,944	-55.3		82	9.3
40-----	19	22,372	-53.2		77	14.4
30-----	16	24,231	-50.2		83	16.0
25-----	16	25,427	-47.4		83	17.8
20-----	15	26,906	-45.5		84	18.7
15-----	5	28,801	-44.5			

TOPEKA, KANS.
(986 MB)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	270	19.9	84	101	2.3
1,000--	31	142				
950----	31	588	22.3	65	185	8.5
900----	31	1,061	21.4	57	218	9.6
850----	31	1,554	18.8	53	244	9.1
800----	31	2,073	15.9	54	264	9.2
750----	31	2,613	12.6	52	285	7.1
700----	31	3,195	8.9	54	290	6.9
650----	31	3,800	5.0	50	301	5.6
600----	31	4,454	1.0	44	303	8.2
550----	31	5,142	- 3.0	39	300	10.3
500----	31	5,899	- 7.1	38	295	12.1
450----	31	6,706	-12.2	34	296	12.8
400----	30	7,605	-18.3	34	297	15.2
350----	30	8,588	-25.3		302	18.1
300----	30	9,689	-33.6		304	22.5
250----	30	10,942	-43.3		301	27.3
200----	30	12,408	-54.4		299	31.3
175----	30	13,252	-60.0		301	28.4
150----	30	14,204	-64.6		305	22.8
125----	30	15,309	-67.8		304	15.9
100----	27	16,650	-66.5		317	8.4
80-----	26	18,014	-62.8		10	4.8
60-----	26	19,810	-57.3		78	8.6
50-----	25	20,971	-54.2		96	12.3
40-----	24	22,412	-51.1		91	12.1
30-----	18	24,298	-48.2		93	15.6
25-----	11	25,498	-46.5			
20-----						
15-----						

TUCSON, ARIZ.
(926 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	781	23.8	66	148	5.3
1,000--	31	96				
950----	31	547				
900----	31	1,027	24.6	55	155	6.1
850----	31	1,527	22.6	50	157	3.4
800----	31	2,052	19.0	55	160	1.6
750----	31	2,600	15.0	61	189	1.0
700----	31	3,185	10.7	68	167	3.1
650----	31	3,794	6.5	69	181	4.1
600----	31	4,453	2.0	70	191	5.3
550----	31	5,145	- 2.3	65	193	4.4
500----	31	5,903	- 6.6	53	208	5.7
450----	31	6,715	-11.4	52	211	8.0
400----	31	7,616	-17.0	49	211	8.9
350----	31	8,604	-24.1	49	205	10.0
300----	31	9,711	-32.5	44	198	13.4
250----	31	10,970	-42.4		196	14.9
200----	31	12,442	-53.8		200	15.6
175----	31	13,289	-59.6		210	16.1
150----	31	14,240	-65.2		213	14.0
125----	28	15,335	-70.0		209	9.9
100----	27	16,661	-69.4		167	6.4
80-----	24	18,001	-65.4		94	9.1
60-----	22	19,773	-60.0		96	15.9
50-----	22	20,919	-57.5		92	19.1
40-----	22	22,336	-55.1		90	24.6
30-----	19	24,185	-52.4		90	28.0
25-----	11	25,360	-50.2			
20-----	5	26,793	-48.7			
15-----						

2/ WASHINGTON, D. C.
(1008 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	88	19.2	80	344	2.1
1,000--	31	153	19.2	76	357	2.9
950----	31	594	18.9	63	350	6.6
900----	31	1,058	16.5	63	335	6.6
850----	31	1,543	13.4	67	321	9.5
800----	31	2,052	10.3	65	319	11.7
750----	31	2,586	7.5	53	314	12.4
700----	31	3,153	5.0	47	315	15.5
650----	31	3,752	2.0	43	308	16.9
600----	31	4,397	- 1.5	41	303	18.1
550----	31	5,079	- 5.4	40	302	18.7
500----	31	5,828	- 9.6		300	19.8
450----	31	6,629	-14.9		293	20.8
400----	31	7,516	-21.1		294	21.0
350----	31	8,488	-28.2		290	25.1
300----	31	9,576	-36.3		287	27.8
250----	31	10,816	-45.2		291	32.4
200----	31	12,276	-53.9		297	34.4
175----	31	13,127	-57.2		298	31.9
150----	31	14,094	-60.5		297	28.8
125----	31	15,223	-62.6		298	20.8
100----	31	16,601	-61.8		298	12.0
80-----	31	17,990	-59.1		316	4.9
60-----	31	19,813	-54.9		68	7.0
50-----	31	20,985	-52.9		91	11.9
40-----	31	22,432	-50.7		91	16.5
30-----	31	24,319	-47.8		93	18.7
25-----	31	25,529	-45.8		89	18.5
20-----	27	27,018	-43.6		87	21.2
15-----	25	28,965	-40.6		93	23.9

WINNEMUCCA, NEV.
(870 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,310	9.8	34	141	1.9
1,000--	31	125				
950----	31	564				
900----	31	1,024				
850----	31	1,506	18.5	23	193	1.9
800----	31	2,024	16.4	22	256	5.7
750----	31	2,568	12.9	24	253	9.0
700----	31	3,145	8.8	24	227	12.8
650----	31	3,751	4.3	29	218	18.6
600----	31	4,399	- .6	37	219	23.1
550----	31	5,087	- 5.7	34	222	27.7
500----	30	5,827	-10.4		227	24.8
450----	30	6,626	-16.0		232	25.5
400----	30	7,508	-22.6		232	27.5
350----	30	8,474	-29.9		235	31.2
300----	30	9,555	-38.0		235	35.9
250----	30	10,787	-46.7		234	41.5
200----	28	12,238	-53.5		229	45.7
175----	27	13,091	-56.3		230	45.5
150----	27	14,066	-58.2		231	37.6
125----	26	15,209	-60.2		233	27.9
100----	25	16,597	-60.0		230	15.4
80-----	20	17,998	-59.6		200	8.2
60-----	18	19,821	-55.7		151	6.3
50-----	16	20,982	-54.4		123	6.1
40-----	15	22,414	-52.8		91	8.9
30-----	14	24,287	-50.1		96	11.4
25-----	11	25,482	-48.5			
20-----	5	26,945	-47.0			
15-----						

YAKUTAT, ALASKA
(1015 MB)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	12	10.5	94	85	2.9
1,000--	31	137	13.2	84	102	2.9
950----	31	570	13.2	73	153	1.3
900----	31	1,024	11.2	68	179	.8
850----	31	1,500	8.9	65	171	1.1
800----	31	2,000	6.0	64	143	2.0
750----	31	2,525	2.6	67	144	3.3
700----	31	3,081	- .8	65	124	2.7
650----	31	3,665	- 4.4	61	146	3.2
600----	31	4,296	- 7.9	52	148	4.2
550----	31	4,962	-11.9	44	147	4.8
500----	31	5,693	-16.7	42	128	4.7
450----	31	6,466	-22.1	42	130	5.9
400----	31	7,334	-28.4	38	115	6.0
350----	31	8,277	-35.8		109	4.5
300----	31	9,331	-44.2		51	4.9
250----	31	10,530	-53.0		48	4.7
200----	31	11,960	-53.1		32	5.9
175----	31	12,825	-51.3		5	2.3
150----	30	13,829	-51.4		7	6.7
125----	30	15,014	-51.4		347	3.0
100----	30	16,465	-50.8		352	2.5
80-----	30	17,921	-50.3		349	1.7
60-----	30	19,800	-49.9		359	1.6
50-----	29	20,996	-49.6		24	2.4
40-----	28	22,457	-49.0		35	3.0
30-----	27	24,346	-47.8		61	3.5
25-----	26	25,550	-47.0		69	3.9
20-----	23	27,022	-45.8		85	5.8
15-----	16	28,970	-43.1		75	7.9

Note: All observations scheduled at 1200, G.C.T. "Number of observations" refers to those of dynamic height only. Temperature, humidity or wind data may be missing for one or more pressure surfaces of some observations. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Relative humidity data are not published for standard pressure surfaces having less than 16 actual observations.

Relative humidity data beginning with October 1, 1948, were computed and expressed in these tables on the basis of vapor-pressure over water. Upper air values of relative humidity at levels with temperatures less than 0°C, have formerly been computed and expressed on the basis of the vapor-pressure over ice. All relative humidity observations are obtained by electric hygrometer and have been adjusted to compensate for the value occurring below the operating range of the humidity element

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

1/ 10 mb., 13 obs., 31,647 m., -38.7°C.
2/ 10 mb., 13 obs., 31,764 m., -36.6°C.

SOLAR RADIATION DATA

Solar radiation intensities, tabulated in langleys per minute on a surface normal to the direction of the sun

AUGUST 1957

ALBUQUERQUE, N. MEX.

Date	A. M. 78.7°	A. M. 75.7°	A. M. 70.7°	A. M. 60.0°	* 0.0°	P. M. 60.0°	P. M. 70.7°	P. M. 75.7°	P. M. 78.7°
Air mass	4.19	3.35	2.51	1.67	*Solar Noon	1.67	2.51	3.35	4.19
Aug.									
2------	----	----	----	----	1.45	----	----	----	----
3------	----	----	0.99	1.12	1.31	----	----	----	----
10-----	0.74	----	.99	1.17	1.30	----	----	----	----

Recorder Inoperative after Aug. 12

WASHINGTON, D. C. (WBCO)

Date	A. M. 78.7°	A. M. 75.7°	A. M. 70.7°	A. M. 60.0°	* 0.0°	P. M. 60.0°	P. M. 70.7°	P. M. 75.7°	P. M. 78.7°
Air mass	5.00	4.00	3.00	2.00	*Solar Noon	2.00	3.00	4.00	5.00
Aug.									
2------	----	----	----	----	----	----	0.85	----	----
3------	0.31	0.40	0.48	0.71	----	----	----	----	----
6------	.67	----	.90	----	----	----	----	----	----
7------	----	----	1.01	1.13	----	----	----	----	----
18-----	.39	.55	.69	----	----	----	----	----	----
21-----	.41	.49	----	----	----	----	----	----	----
23-----	.54	.69	.83	----	----	0.94	.79	0.67	0.52
Averages	.46	.53	.78	.92	----	.94	.82	.67	.52

TUCSON, ARIZ.

Date	A. M. 78.7°	A. M. 75.7°	A. M. 70.7°	A. M. 60.0°	* 0.0°	P. M. 60.0°	P. M. 70.7°	P. M. 75.7°	P. M. 78.7°
Air mass	4.56	3.65	2.74	1.83	*Solar Noon	1.83	2.74	3.65	4.56
Aug.									
2-----	----	----	----	----	1.20	1.02	0.77	0.69	0.58
6-----	----	----	----	----	----	1.17	1.01	.88	.85
7-----	----	----	----	----	----	1.16	.98	.90	.82
8-----	0.83	0.91	1.02	1.18	1.31	----	----	----	----
11----	.53	.65	.79	.99	----	----	----	----	----
13----	.64	.74	.86	1.03	1.21	----	----	----	----
21----	.75	.84	1.01	1.12	1.35	----	----	----	----
24----	----	----	----	----	1.29	----	----	----	----
28----	.67	.79	.92	1.10	----	----	----	----	----
30----	.79	.86	.97	1.12	----	----	----	----	----
31----	.76	.85	.97	1.16	----	----	----	----	----
Averages	.68	.80	.93	1.10	1.27	1.11	.92	.82	.75

MADISON, WIS.

Date	A. M. 78.7°	A. M. 75.7°	A. M. 70.7°	A. M. 60.0°	* 0.0°	P. M. 60.0°	P. M. 70.7°	P. M. 75.7°	P. M. 78.7°
Air mass	4.84	3.87	2.90	1.94	*Solar Noon	1.94	2.90	3.87	4.84
Aug.									
1-----	----	----	----	K+0.70	----	----	----	----	----
4-----	0.87	0.95	Ac	----	----	----	----	----	----
5-----	.91	1.02	1.14	1.27	Ci	1.25	1.09	0.97	0.87
6-----	.90	1.01	1.11	S1.18	----	----	----	----	----
7-----	S.80	S.90	S1.01	S1.21	Ci	----	----	----	----
12----	----	----	----	S1.04	Ci	S.93	S.71	S.45	S.31
19----	S.89	S.98	S1.08	S1.22	Ci	----	----	----	----
25----	I.74	M.84	M.97	S1.14	Ci	----	----	----	----
Averages	.85	.95	1.06	1.11	----	1.09	.90	.71	.59

BLUE HILL, MASS.

Date	A. M. 78.7°	A. M. 75.7°	A. M. 70.7°	A. M. 60.0°	* 0.0°	P. M. 60.0°	P. M. 70.7°	P. M. 75.7°	P. M. 78.7°
Air mass	4.89	3.92	2.94	1.96	*Solar Noon	1.96	2.94	3.92	4.89
Aug.									
2-----	----	----	0.92	1.08	----	----	0.86	0.77	0.68
6-----	0.65	0.75	.94	1.17	1.38	----	----	----	----
8-----	.74	.83	.97	----	----	----	----	----	----
9-----	.53	.63	.76	----	1.20	----	----	----	----
11----	----	----	----	1.10	1.35	----	----	----	----
12----	----	----	----	----	----	----	----	----	.75
13----	.90	1.00	1.11	1.25	1.41	----	----	----	----
17----	.92	1.01	1.14	1.27	1.43	----	----	----	----
22----	----	----	----	----	----	1.12	.98	.84	.74
23----	.88	.97	1.10	1.24	1.31	1.14	----	----	----
24----	.86	.96	1.08	1.24	----	----	---	---	----
Averages	.78	.88	1.00	1.19	1.35	1.13	.92	.80	.72

K Smoke
S Slight haze - indeterminable
M Moderate haze - indeterminable
I Intense haze - indeterminable
* Values corresponding to solar noon

Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station listed above appears in the February 1957 issue, Vol. 8, No. 2, page 63, of this publication.

SOLAR RADIATION DATA

AUGUST 1957

Daily totals and average daily totals by weeks of solar and sky radiation, plus the radiation reflected from the ground, as received on a vertical surface facing south at Blue Hill, Mass. during the month

								Avg								Avg								Avg
Date	6	7	8	9	10	11	12		13	14	15	16	17	18	19		20	21	22	23	24	25	26	
Langleys	270	221	258	292	70	305	252	238	335	147	189	251	340	219	244	246	266	303	211	354	353	70	58	231
Date	27	28	29	30	31	1	2																	
Langleys	339	369	272	43	286	313	208	266																

Daily totals and average daily totals by weeks of diffuse (sky) radiation as received on a horizontal surface at Blue Hill, Mass. during the month

								Avg								Avg								Avg
Date	6	7	8	9	10	11	12		13	14	15	16	17	18	19		20	21	22	23	24	25	26	
Langleys	134	167	310	183	135	153	176	180	98	234	232	180	97	165	203	173	221	217	187	82	148	111	104	153
Date	27	28	29	30	31	1	2																	
Langleys	207	108	280	102	175	119	210	171																

Note Langley is the unit used to denote one gram calorie per square centimeter

NET RADIATION

Net radiation in langleys per day (midnight to midnight) at Raleigh, N. C., during the month

AUGUST 1957

Date.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langleys. . .	*254	334	377	*164	409	399	351	315	356	290	341	322	244	*289	*144	340	*234	*66	*16	282	313	337	240	*156	*62	*296	305	267	261	306	312	270

* Estimated values owing to occurrence of rain during period. While rain is falling, radiation is assumed to be zero.

The measurement is made with a Beckman and Whitley net exchange radiometer over a plot of Bermuda grass. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the North Carolina State College at Raleigh. The instrument with which they were measured has not been checked by the Weather Bureau.

SOLAR RADIATION DATA

Daily totals and weekly averages of solar radiation (direct and diffuse) received on a horizontal surface, tabulated in langleys. AUGUST 1957

	Aklavik, MacKenzie	Albuquerque, N.Mex.	Annette, Alaska	Apalachicola, Fla.	Astoria, Oreg.	Atlanta, Ga.	Barrow, Alaska	Bethel, Alaska	Bismarck, N. D.	Blue Hill, Mass.	Boise, Idaho	Boston, Mass.	Brownsville, Tex.	Canton Island Pacific Area	Cape Hatteras, N.C.	Caribou, Me.	Charleston, S. C.	Cleveland, Ohio	Columbia, Mo.	Corvallis, Oreg.	Dodge City, Kans.	E. Lansing, Mich.	Edmonton, Alberta	El Paso, Tex.	Ely, Nev.	Fairbanks, Alaska	Ft. Worth, Tex.	Fresno, Calif.	Gainesville, Fla.	Glasgow, Mont.
1957																														
Aug. 6------	238	553	137	374	337	678	397	432	614	579	660	538	604	---	419	468	598	782	696	295	686	603	(433)	744	747	182	694	636	155	407
Aug. 7------	95	617	466	314	317	705	230	280	598	473	627	517	420	597	753	487	659	686	682	321	672	679	491	604	740	496	701	638	190	682
Aug. 8------	419	712	542	265	472	682	270	213	178	539	647	466	473	252	657	634	611	540	620	357	669	656	509	685	747	498	590	636	400	505
Aug. 9------	481	690	368	412	527	647	161	323	617	550	648	564	418	537	360	437	574	470	629	532	391	406	336	749	753	345	529	627	279	652
Aug. 10------	467	692	403	699	333	643	172	223	643	161	656	131	633	581	---	209	616	412	515	480	665	554	70	746	741	363	380	621	551	636
Aug. 11------	433	634	456	677	584	540	243	120	605	594	652	549	626	539	677	614	592	463	---	596	655	583	86	619	641	---	545	627	569	597
Aug. 12------	353	714	199	635	536	494	455	197	490	392	646	417	624	557	538	472	573	452	570	677	603	678	472	717	707	---	604	633	528	551
Average-------	355	659	367	482	444	627	275	255	535	470	648	455	543	510	567	474	603	544	619	465	620	594	(342)	695	725	377	578	631	382	576
Aug. 13------	324	699	366	464	430	658	188	194	611	677	643	640	635	619	604	558	537	651	611	526	655	591	(521)	726	716	---	618	614	498	660
Aug. 14------	168	669	538	670	664	443	320	183	491	302	637	304	635	624	561	276	360	450	572	651	650	364	468	690	508	407	651	579	505	654
Aug. 15------	412	588	548	617	390	539	242	76	446	337	632	387	629	647	244	429	558	462	558	642	637	433	257	724	598	367	442	632	506	555
Aug. 16------	422	705	585	632	280	627	297	166	340	453	624	530	579	629	551	457	584	532	403	635	234	556	443	617	696	406	521	603	472	563
Aug. 17------	176	563	350	81	292	429	283	144	553	642	590	647	636	629	600	627	391	676	---	528	400	546	531	665	674	---	521	597	430	359
Aug. 18------	201	621	145	325	537	239	138	237	553	397	615	573	577	597	253	524	313	383	---	617	532	607	523	536	658	335	561	593	120	598
Aug. 19------	123	695	211	317	312	388	(201)	280	589	412	609	390	466	523	404	574	232	353	---	---	632	589	482	720	479	246	629	614	129	529
Average-------	261	648	392	444	415	475	(238)	183	512	460	622	496	594	610	460	492	425	501	536	600	534	527	(461)	668	619	352	563	605	380	560
Aug. 20------	245	687	546	583	384	496	323	303	607	444	610	415	357	516	407	434	502	474	---	639	656	539	(441)	531	494	301	644	605	264	596
Aug. 21------	130	631	296	629	613	517	174	220	355	489	572	511	548	568	597	640	604	467	429	628	604	524	(342)	717	(246)	220	631	594	455	594
Aug. 22------	396	612	64	645	622	558	386	504	178	408	582	397	492	573	420	625	420	450	534	627	494	632	(550)	649	639	---	627	578	440	363
Aug. 23------	350	405	415	566	381	649	---	485	558	613	588	600	632	(616)	277	594	356	513	332	566	523	504	(497)	713	(533)	272	615	565	385	611
Aug. 24------	229	506	307	673	455	532	---	458	617	550	573	536	628	(620)	103	464	228	103	482	619	654	126	(203)	671	624	351	569	569	430	515
Aug. 25------	176	578	523	635	---	515	117	113	592	132	462	108	542	620	406	416	515	---	608	641	(545)	379	268	701	466	384	604	415	569	---
Aug. 26------	376	629	561	429	552	639	110	172	222	143	473	106	486	596	585	218	497	---	515	635	(435)	541	187	699	562	---	582	574	521	---
Average-------	272	578	387	594	501	558	222	322	447	397	552	382	527	(587)	399	484	446	402	483	622	(559)	464	(355)	669	(509)	306	610	557	438	536
Aug. 27------	333	---	407	429	604	637	80	151	92	508	435	522	573	575	684	342	579	---	390	611	603	467	225	639	568	141	621	561	353	---
Aug. 28------	304	592	358	530	514	617	106	118	121	576	430	568	459	458	614	525	581	307	496	616	606	85	508	611	670	279	587	584	426	151
Aug. 29------	116	505	447	470	437	625	---	90	65	424	360	423	503	480	664	557	531	355	516	574	525	237	495	614	667	272	580	542	56	---
Aug. 30------	233	463	210	226	540	606	---	242	259	113	393	151	390	655	625	---	522	325	551	564	541	233	469	511	608	287	(566)	583	251	70
Aug. 31------	139	410	39	617	561	579	175	219	316	457	569	---	558	(641)	586	349	546	207	414	571	529	164	141	593	461	151	441	570	395	---
Sept. 1------	250	575	493	623	472	612	(159)	286	248	504	567	---	622	609	522	543	512	513	293	535	545	388	407	668	645	236	563	553	476	314
Sept. 2------	346	677	484	596	291	580	---	247	308	336	---	296	575	641	644	339	498	435	545	445	626	290	440	616	649	113	374	547	488	539
Average-------	246	537	348	499	488	608	(130)	193	201	417	459	392	526	(580)	620	443	538	357	458	559	568	266	384	608	610	211	(533)	563	349	268

Note.--Langley is the unit used to denote one gram calorie per square centimeter.
Values in parentheses are interpolated.

SOLAR RADIATION DATA

Daily totals and weekly averages of solar radiation (direct and diffuse) received on a horizontal surface, tabulated in langleys. Continued AUGUST 1957

1957	Grand Junction, Colo.	Grand Lake, Colo.	Great Falls, Mont.	Greensboro, N. C.	Griffin, Ga.	Indianapolis, Ind.	Inyokern, Calif.	Ithaca, N. Y.	Lake Charles, La.	Lander, Wyo.	Las Vegas, Nev.	Lemont, Ill.	Lexington, Ky.	Little Rock, Ark.	Los Angeles, Calif. (urban)	Los Angeles, Calif.	Madison, Wis.	Matanuska, Alaska	Medford, Oreg.	Miami, Fla.	Midland, Tex.	Moosonee, Ontario	Nashville, Tenn.	New Port, R. I.	New York, New York	North Omaha, Nebr.	Oak Ridge, Tenn.	Oklahoma City, Okla.	Ottawa, Ontario	Phoenix, Ariz.
Aug. 6------	194	235	488	686	538	---	849	528	658	---	729	696	814	713	641	645	661	264	643	599	---	621	743	662	637	649	723	753	654	673
Aug. 7------	573	532	648	640	666	---	832	711	648	528	736	701	798	588	639	616	658	537	624	570	632	441	---	641	561	624	692	811	649	683
Aug. 8------	700	397	585	548	684	---	824	351	653	688	738	666	701	627	673	663	591	574	602	498	669	457	556	525	589	630	588	759	460	703
Aug. 9------	677	476	633	608	625	---	826	349	---	731	729	478	611	564	684	651	165	563	620	504	647	380	682	590	575	472	578	732	486	433
Aug. 10------	624	531	590	539	625	---	838	272	378	720	675	170	640	626	650	605	491	560	616	455	---	456	607	117	136	248	601	629	568	596
Aug. 11------	662	420	384	528	509	---	827	617	679	452	552	393	346	431	637	564	644	539	643	433	656	249	591	597	622	552	622	720	438	657
Aug. 12------	625	285	626	448	---	---	820	616	639	361	684	570	476	228	645	646	635	326	628	553	---	306	406	270	388	596	527	680	331	579
Average-------	579	411	565	571	608	---	831	492	609	580	692	525	627	540	653	627	549	480	625	516	651	416	597	486	501	539	619	726	512	618
Aug. 13------	682	437	569	546	601	---	775	692	565	---	657	521	611	161	668	648	285	424	617	598	---	396	574	659	697	477	636	633	620	649
Aug. 14------	588	525	640	345	441	---	752	351	603	---	667	388	467	563	662	663	652	539	605	584	---	177	246	379	382	566	417	405	280	652
Aug. 15------	348	324	611	337	532	---	796	631	655	---	696	554	450	352	666	647	546	539	593	522	---	224	502	79	298	600	435	524	218	637
Aug. 16------	671	488	589	572	599	---	767	583	654	---	649	398	645	378	653	653	444	500	589	619	---	372	606	512	441	311	608	502	615	448
Aug. 17------	634	352	456	476	412	---	770	609	560	---	647	628	456	265	650	636	553	414	588	390	---	430	104	644	657	535	281	263	519	437
Aug. 18------	658	429	485	68	283	---	742	574	508	---	589	334	730	595	440	432	367	---	483	520	---	434	418	574	453	545	81	247	573	631
Aug. 19------	528	322	582	95	332	---	730	586	574	---	323	613	686	544	586	578	577	---	595	258	---	208	649	343	241	498	616	643	518	299
Average-------	587	411	562	348	457	---	762	575	588	---	604	491	578	408	618	608	489	483	581	499	---	320	443	456	453	504	439	460	478	536
Aug. 20------	184	---	604	494	536	---	660	650	638	---	271	498	735	545	554	607	576	85	571	617	---	582	670	506	450	261	661	643	530	485
Aug. 21------	384	384	583	560	561	---	752	503	637	---	132	541	511	601	378	320	505	269	549	250	636	556	---	422	596	420	322	632	609	646
Aug. 22------	400	336	275	565	616	---	772	654	586	---	625	590	653	600	624	644	550	---	554	459	648	371	577	502	531	286	527	605	591	588
Aug. 23------	636	470	558	543	645	---	739	636	601	---	625	373	634	557	657	647	42	459	548	325	605	161	627	628	642	175	601	506	490	599
Aug. 24------	628	496	442	340	598	---	759	586	568	---	640	351	439	172	705	627	363	490	572	304	635	553	381	563	449	615	496	539	157	589
Aug. 25------	440	352	418	196	563	---	652	341	500	---	610	635	533	601	538	469	580	436	508	505	582	434	510	122	80	581	312	622	217	(602)
Aug. 26------	532	210	478	462	570	---	731	402	533	---	482	566	651	559	577	578	503	122	459	441	608	228	671	142	231	536	629	502	491	526
Average-------	458	375	480	451	584	---	724	539	580	---	483	508	594	519	576	556	446	310	537	414	619	412	572	412	426	410	507	579	441	(576)
Aug. 27------	561	365	322	575	622	---	647	445	584	---	577	222	678	623	575	564	155	64	---	515	623	221	634	501	561	368	625	567	562	638
Aug. 28------	484	367	388	554	595	---	769	364	508	---	604	152	---	596	597	597	51	98	542	161	606	300	620	590	542	267	593	541	272	542
Aug. 29------	247	240	333	503	586	568	742	111	400	---	653	375	657	501	564	554	192	161	538	601	609	204	568	508	292	316	540	573	427	---
Aug. 30------	173	168	414	532	553	(519)	752	149	436	---	657	520	598	518	633	599	193	269	551	590	620	429	596	98	170	422	525	566	408	575
Aug. 31------	401	367	359	508	566	518	751	508	509	---	659	546	555	501	547	595	495	155	575	549	540	436	570	519	468	530	533	531	541	646
Sep. 1------	636	376	466	510	594	---	752	610	486	---	656	436	570	185	539	557	405	164	559	533	545	428	537	557	587	510	504	519	535	624
Sep. 2------	636	498	479	489	535	423	743	320	386	---	640	351	506	354	643	601	426	182	484	206	585	358	531	388	383	590	397	---	44	625
Average-------	448	340	394	524	579	(507)	737	358	473	---	635	372	594	469	585	581	274	156	541	451	590	340	579	452	429	429	531	550	398	609

Note.--Langley is the unit used to denote one gram calorie per square centimeter.
Values in parentheses are interpolated.

SOLAR RADIATION DATA

Daily totals and weekly averages of solar radiation (direct and diffuse) received on a horizontal surface, tabulated in langleys.- Continued AUGUST 1957

1957	Portland, Me.	Raleigh, N. C.	Rapid City, S.Dak.	Resolute, N.W.T.	Riverside, Calif.	St. Cloud, Minn.	San Antonio, Tex.	Santa Maria, Calif.	S. Ste. Marie, Mich.	Sayville, N. Y.	Schenectady, N. Y.	Seabrook, N. J.	Seattle-Tacoma, Wash.	Shreveport, La.	Spokane, Wash.	State College, Pa.	Swan Island, W. I.	Tampa, Fla.	Toronto, Ontario	Tucson, Ariz.	Wake Island Pacific Area	Washington, D. C. (Silver Hill Obs.)	Winnipeg, Manitoba
Aug. 6------	523	679	(671)	313	681	777	548	716	722	742	548	653	---	742	366	599	513	200	611	679	718	616	599
Aug. 7------	473	626	(683)	76	652	623	535	693	649	640	574	545	255	690	---	701	739	207	631	629	681	628	562
Aug. 8------	515	569	(382)	198	702	430	605	678	234	667	505	607	438	667	410	380	750	403	302	670	646	501	533
Aug. 9------	610	607	(516)	155	692	598	612	---	464	668	351	193	566	631	573	326	723	524	283	379	675	353	606
Aug. 10------	63	516	(701)	140	621	740	663	717	684	133	199	166	314	276	637	337	625	501	596	553	345	265	452
Aug. 11------	592	554	(690)	204	600	654	569	700	674	703	441	626	522	297	624	686	298	580	524	585	608	625	412
Aug. 12------	509	522	(602)	486	662	683	661	712	597	370	425	364	631	616	675	535	713	508	641	619	703	518	55
Average-------	469	582	(606)	224	659	644	599	703	575	561	435	450	455	560	548	509	623	417	513	588	625	501	460
Aug. 13------	643	436	(690)	364	653	465	635	686	172	743	558	626	538	588	636	691	601	609	579	663	563	638	458
Aug. 14------	403	442	(683)	395	673	671	667	681	657	476	329	591	577	629	654	536	686	578	370	528	664	539	341
Aug. 15------	539	(268)	(276)	145	664	652	590	691	359	214	526	304	537	557	648	422	702	633	372	425	603	343	492
Aug. 16------	466	546	(384)	210	659	733	581	647	688	541	473	487	419	635	615	613	710	555	552	650	651	588	520
Aug. 17------	631	427	(274)	263	598	465	652	672	696	710	464	(554)	392	447	625	690	656	523	503	611	726	402	480
Aug. 18------	642	(89)	(540)	213	626	710	584	626	678	594	489	507	275	315	611	573	---	538	435	434	535	534	601
Aug. 19------	607	(80)	(524)	205	589	691	383	654	681	267	381	97	---	662	617	428	747	528	575	454	420	62	618
Average-------	561	(327)	(482)	256	637	627	584	665	562	506	460	(452)	456	548	629	564	684	566	484	538	595	444	501
Aug. 20------	522	431	(546)	192	556	426	613	657	253	521	456	392	---	606	631	517	716	417	411	663	721	376	583
Aug. 21------	757	549	(580)	419	519	535	628	655	---	625	368	563	596	627	621	526	645	553	473	672	780	516	481
Aug. 22------	717	565	(440)	376	632	434	609	655	635	649	516	414	595	637	604	662	635	424	593	435	700	407	441
Aug. 23------	631	391	(667)	393	615	476	594	651	66	718	498	600	320	604	523	644	279	377	518	585	656	639	460
Aug. 24------	620	(281)	(650)	309	639	503	609	634	407	576	490	444	---	548	566	583	490	540	88	587	407	394	569
Aug. 25------	121	(145)	(534)	90	629	579	614	366	659	140	199	132	394	621	557	293	628	598	162	387	596	79	501
Aug. 26------	113	515	(244)	74	473	300	609	596	418	290	198	196	540	558	---	449	589	590	446	636	262	369	447
Average-------	497	(411)	(523)	265	580	465	611	602	406	503	389	392	489	600	584	525	569	500	384	566	589	397	497
Aug. 27------	519	549	(278)	268	647	160	650	656	630	541	473	469	---	613	545	487	536	498	543	561	411	557	76
Aug. 28------	564	500	(409)	165	637	141	575	608	192	648	471	574	532	561	557	477	652	403	264	510	698	557	205
Aug. 29------	379	444	(532)	245	668	158	580	621	97	435	211	479	518	551	461	466	700	522	165	495	654	454	406
Aug. 30------	306	523	(456)	177	670	85	500	670	561	127	242	419	472	496	421	380	582	431	250	554	493	510	260
Aug. 31------	498	521	(358)	154	635	527	634	(613)	559	457	367	393	423	344	504	364	635	534	428	431	694	421	271
Sep. 1------	570	490	(433)	201	606	269	609	640	220	645	464	523	444	459	535	522	512	545	464	647	579	445	195
Sep. 2------	262	479	(646)	62	629	239	609	(586)	174	379	228	508	479	409	429	386	717	540	175	641	---	498	92
Average-------	443	501	(445)	182	642	226	594	(628)	347	462	351	481	478	490	493	440	619	496	327	548	588	492	215

Note.--Langley is the unit used to denote one gram calorie per square centimeter.
Values in parentheses are interpolated.

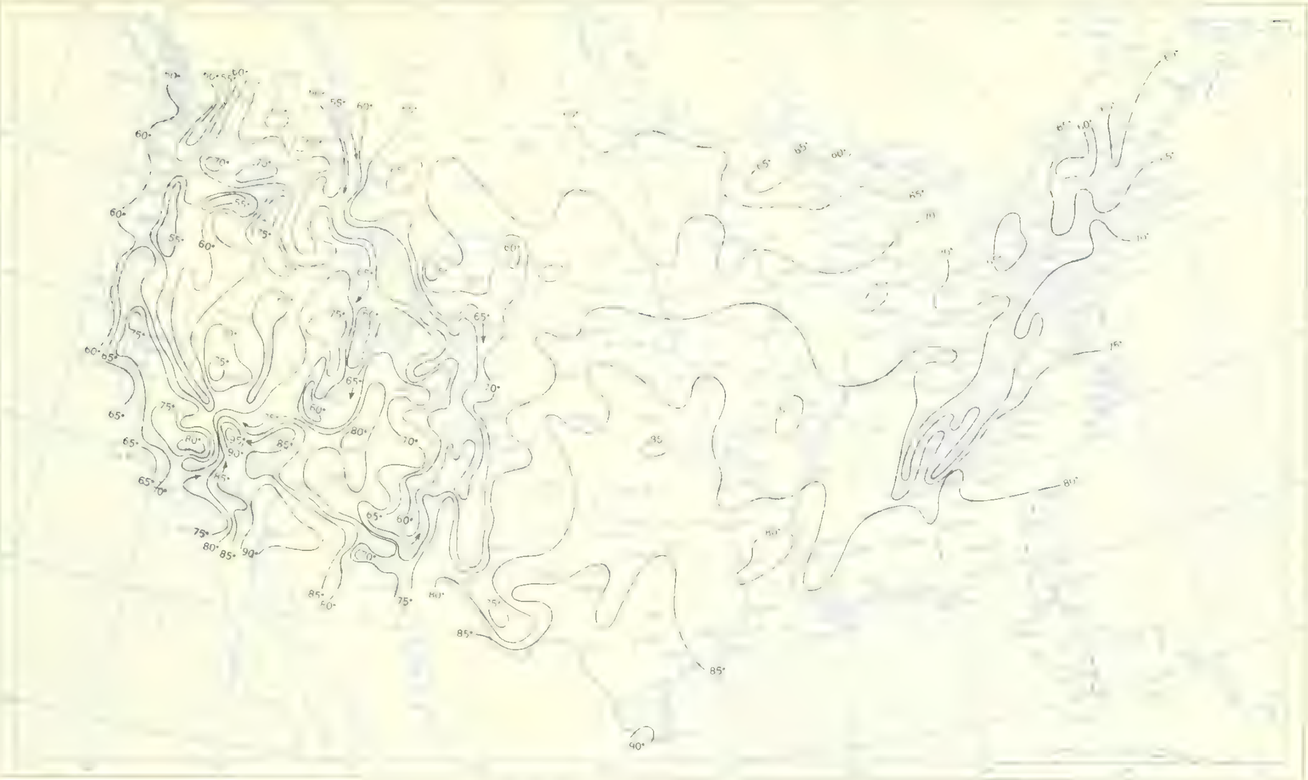
CHANGE IN CLIMATOLOGICAL CHARTS

Beginning on June 1, 1957, a change was made in surface observation times. This has had the following effect on the charts listed below. Charts not listed are not affected.

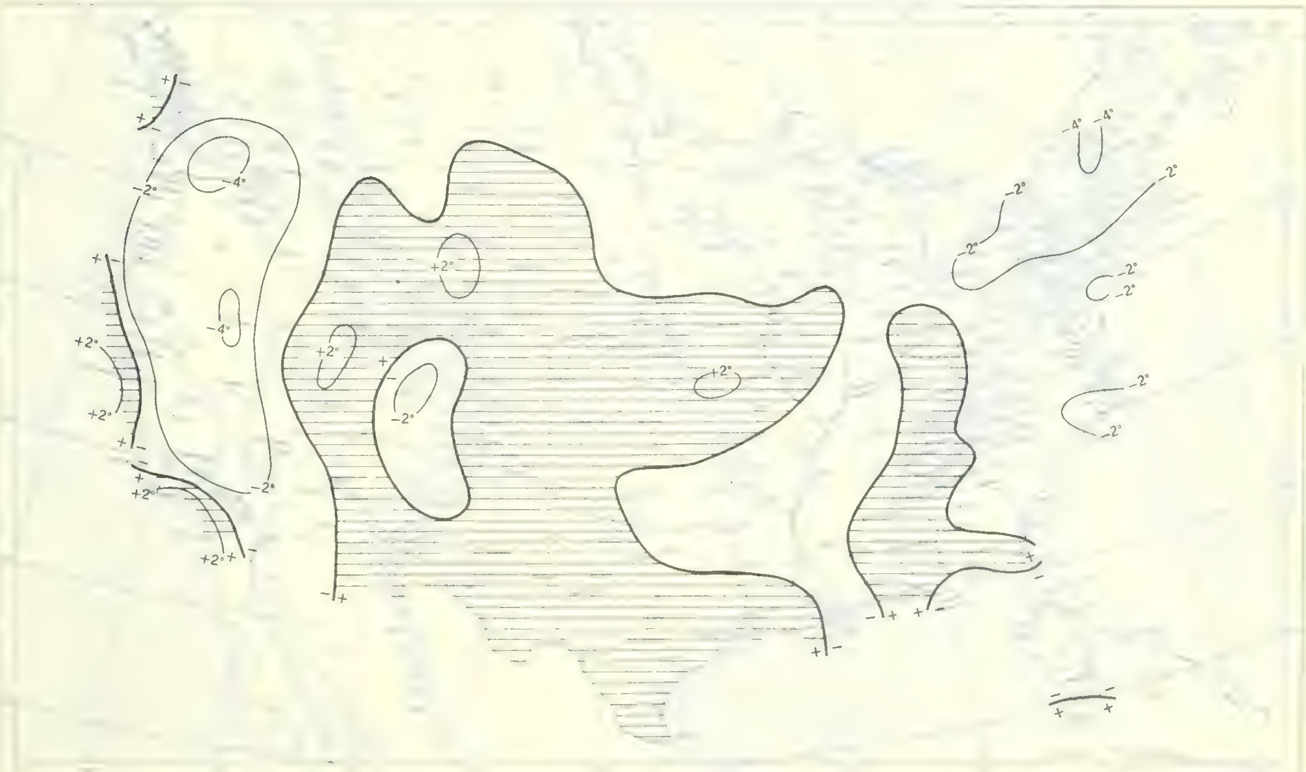
Chart V-B. Snow depth is now measured at 7 a.m. EST instead of 7:30.
Charts IX and X. Circle indicates cyclone and anticyclone positions at 7 a.m. EST instead of 7:30.
Chart XI. Average sea-level pressure is computed from the 7 a.m. and p.m. EST readings instead of 7:30 a.m. and p.m.
Charts XII-XVII. All the upper-air charts are now for 1200 GMT instead of 0300 GMT. All winds are based on rawinsonde observations. Use of pibal data has been discontinued in these charts.

NWRC, Asheville, N. C. --- 11/13/57 --- 1850

Chart I. A. Average Temperature (°F.) at Surface, August 1957.

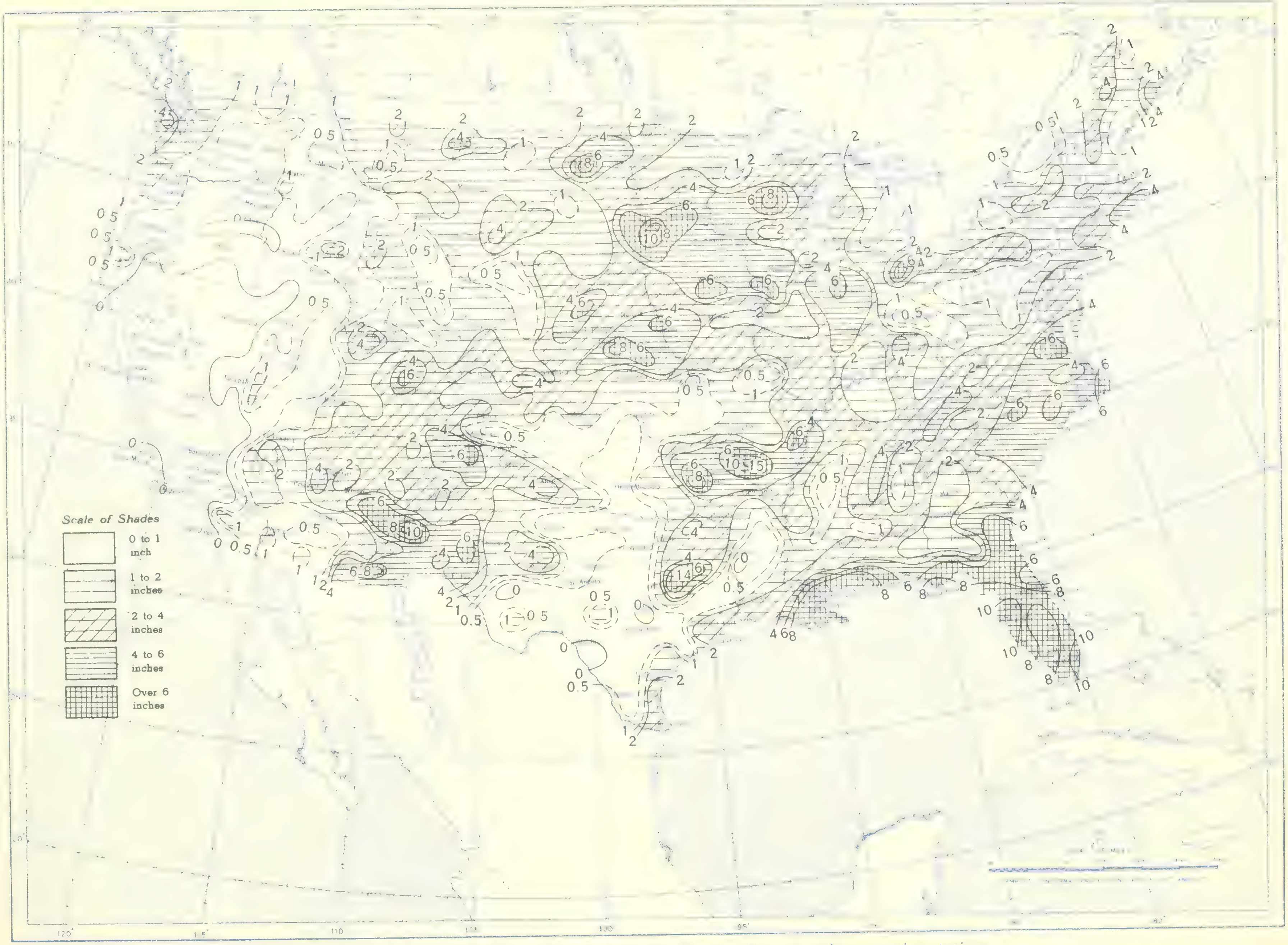


B. Departure of Average Temperature from Normal (°F.), August 1957.



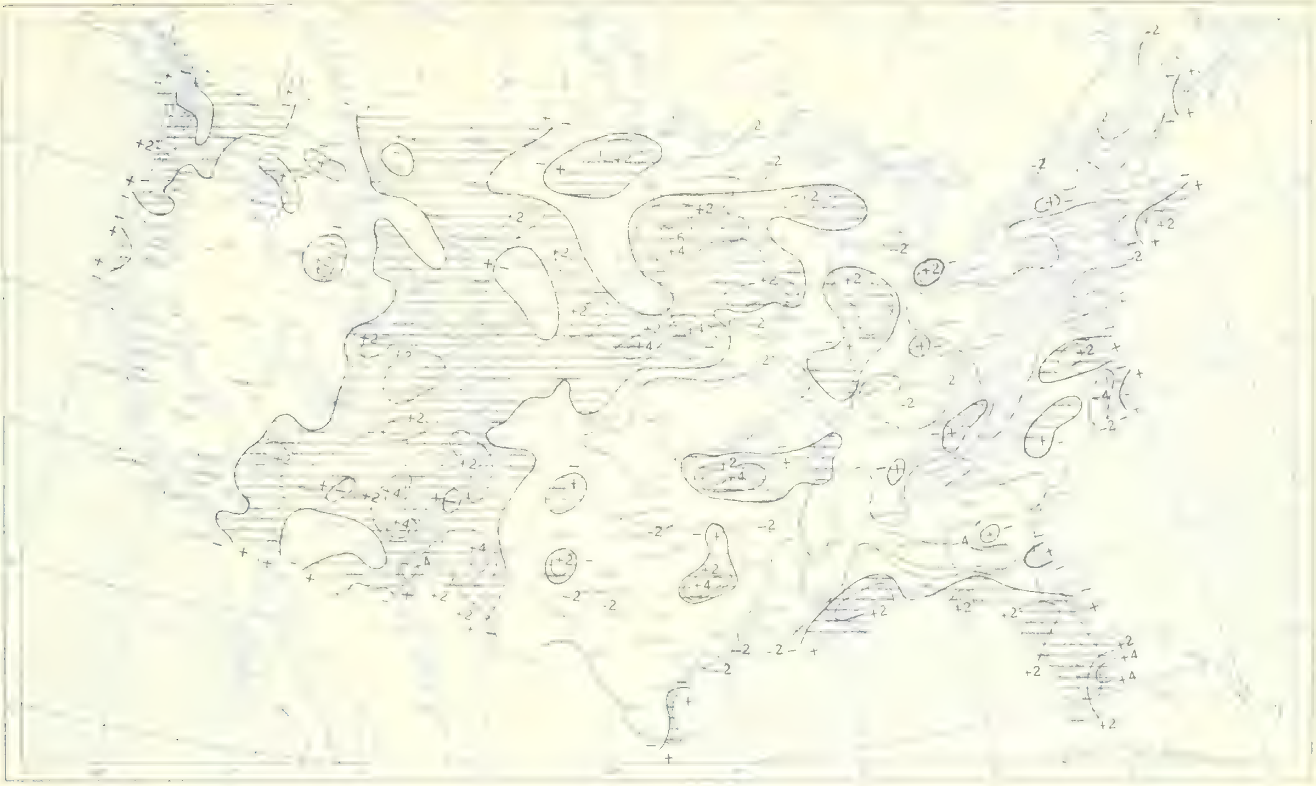
A. Based on reports from over 900 Weather Bureau and cooperative stations. The monthly average is half the sum of the monthly average maximum and monthly average minimum, which are the average of the daily maxima and daily minima, respectively.
B. Departures from normal are based on the 30-yr. normals (1921-50) for Weather Bureau stations and on means of 25 years or more (mostly 1931-55) for cooperative stations.

Chart II. Total Precipitation (Inches), August 1957.

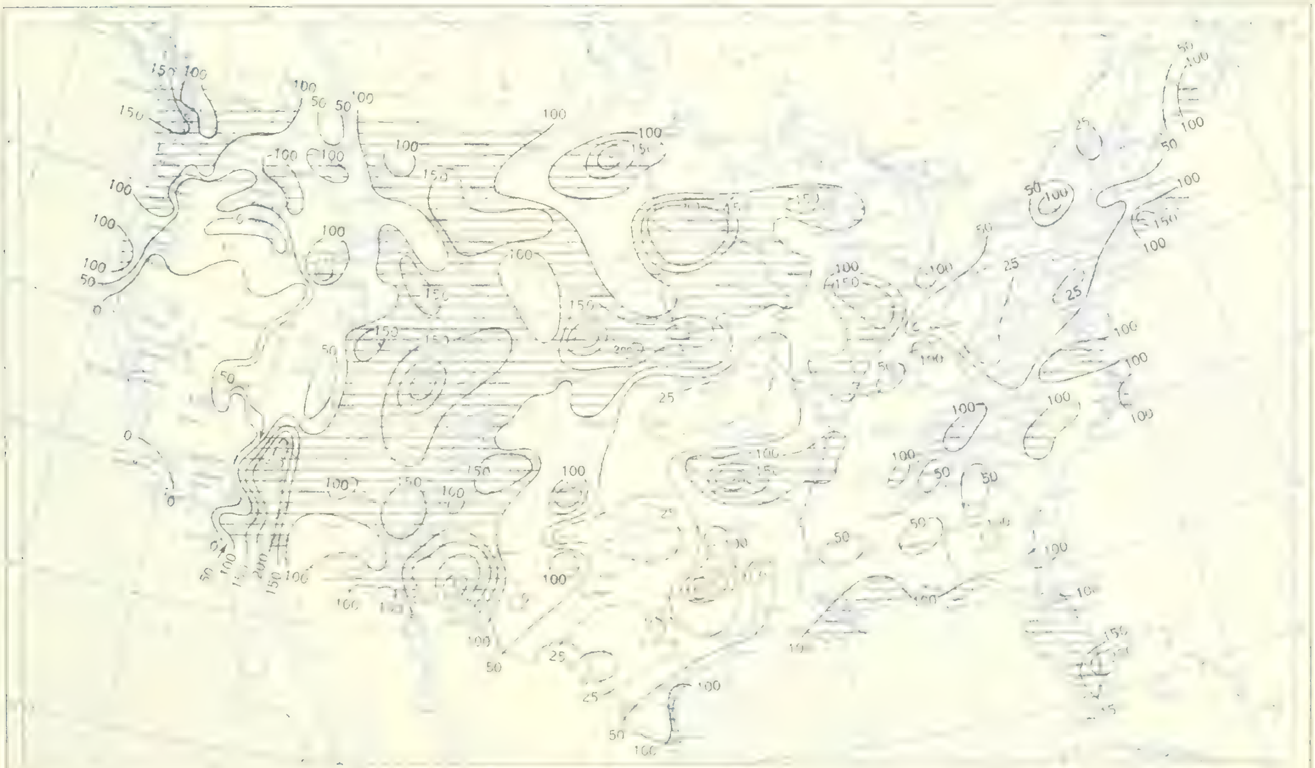


Based on daily precipitation records at about 800 Weather Bureau and cooperative stations.

Chart III. A. Departure of Precipitation from Normal (Inches), August 1957.

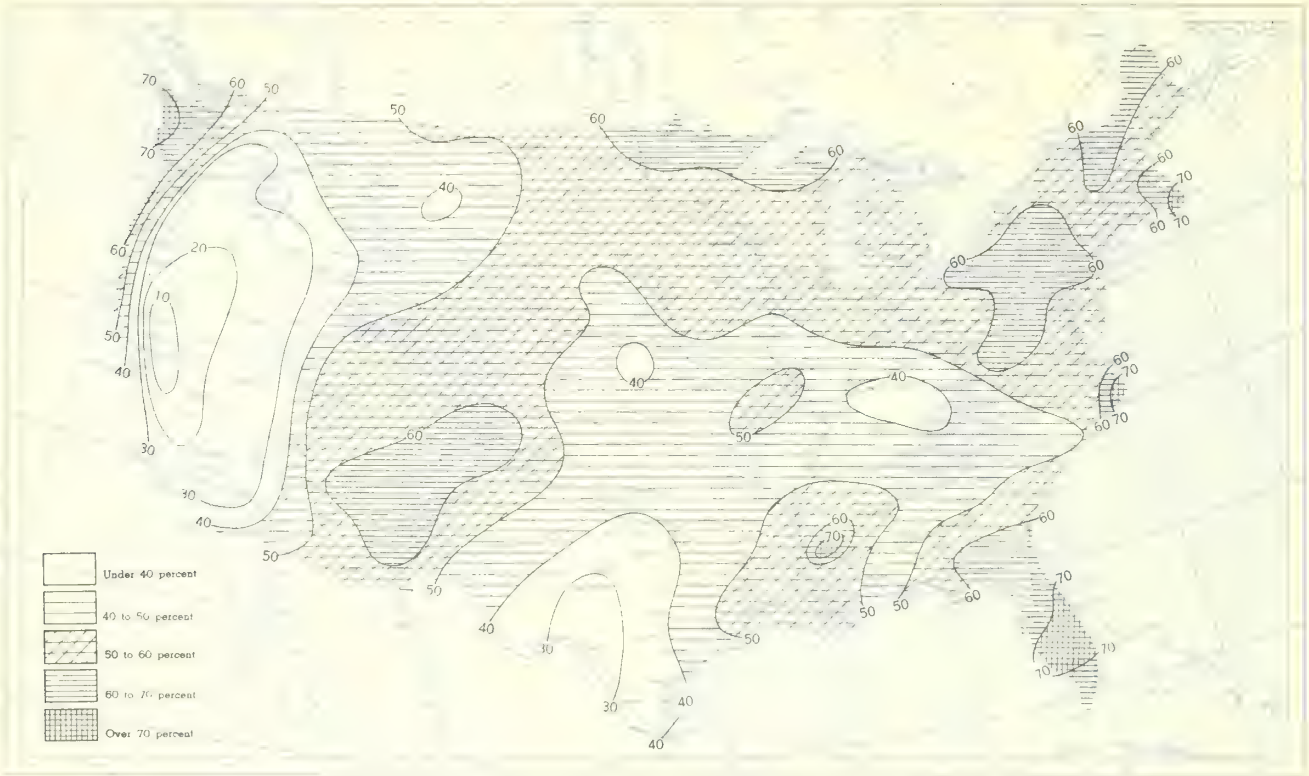


B. Percentage of Normal Precipitation, August 1957.

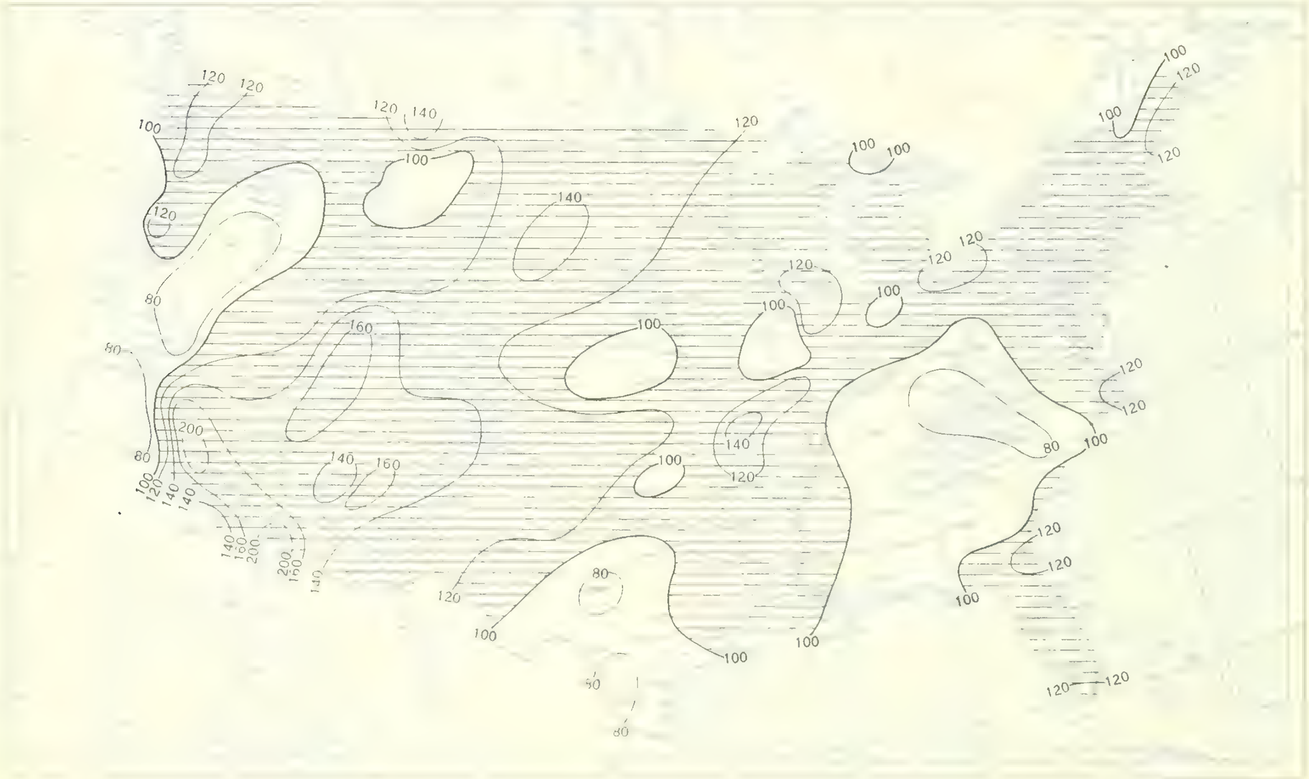


Normal monthly precipitation amounts are computed from the records for 1921-50 for Weather Bureau stations and from records of 25 years or more (mostly 1931-55) for cooperative stations.

Chart VI. A. Percentage of Sky Cover Between Sunrise and Sunset, August 1957.

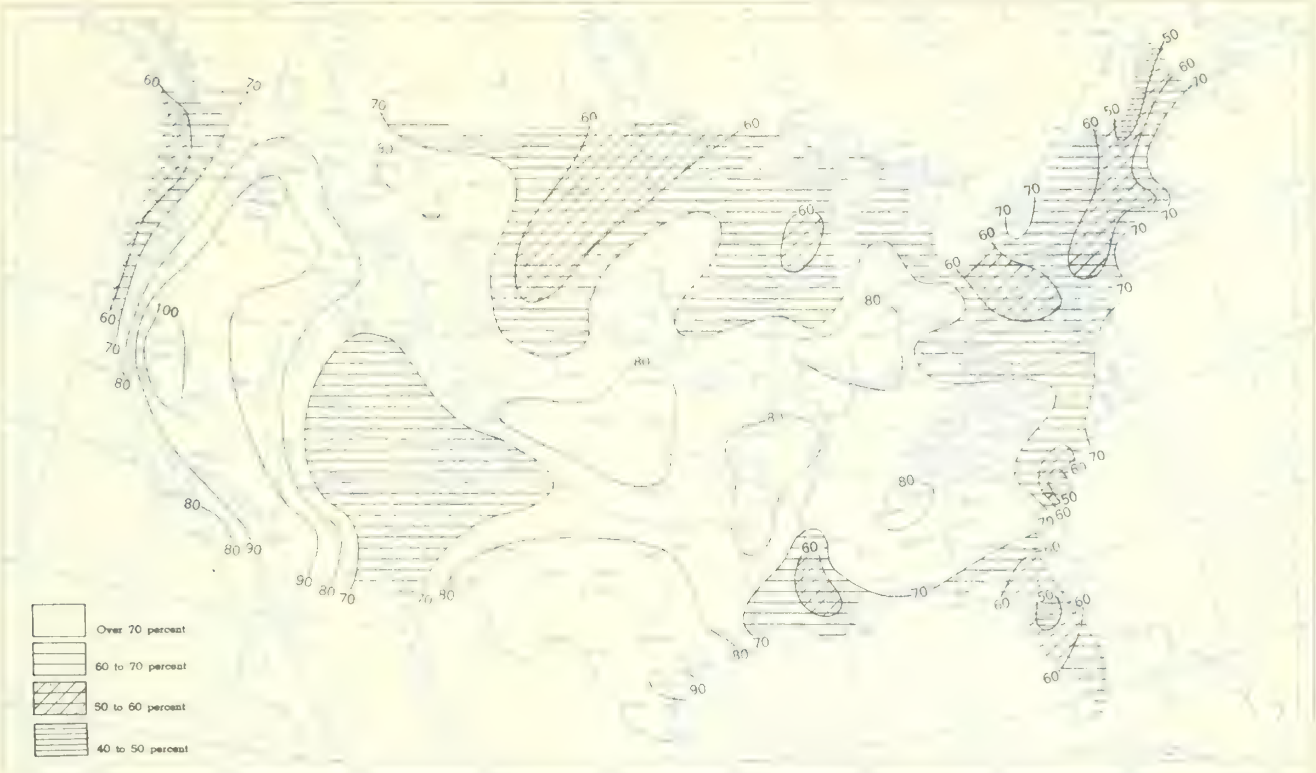


B. Percentage of Normal Sky Cover Between Sunrise and Sunset, August 1957.

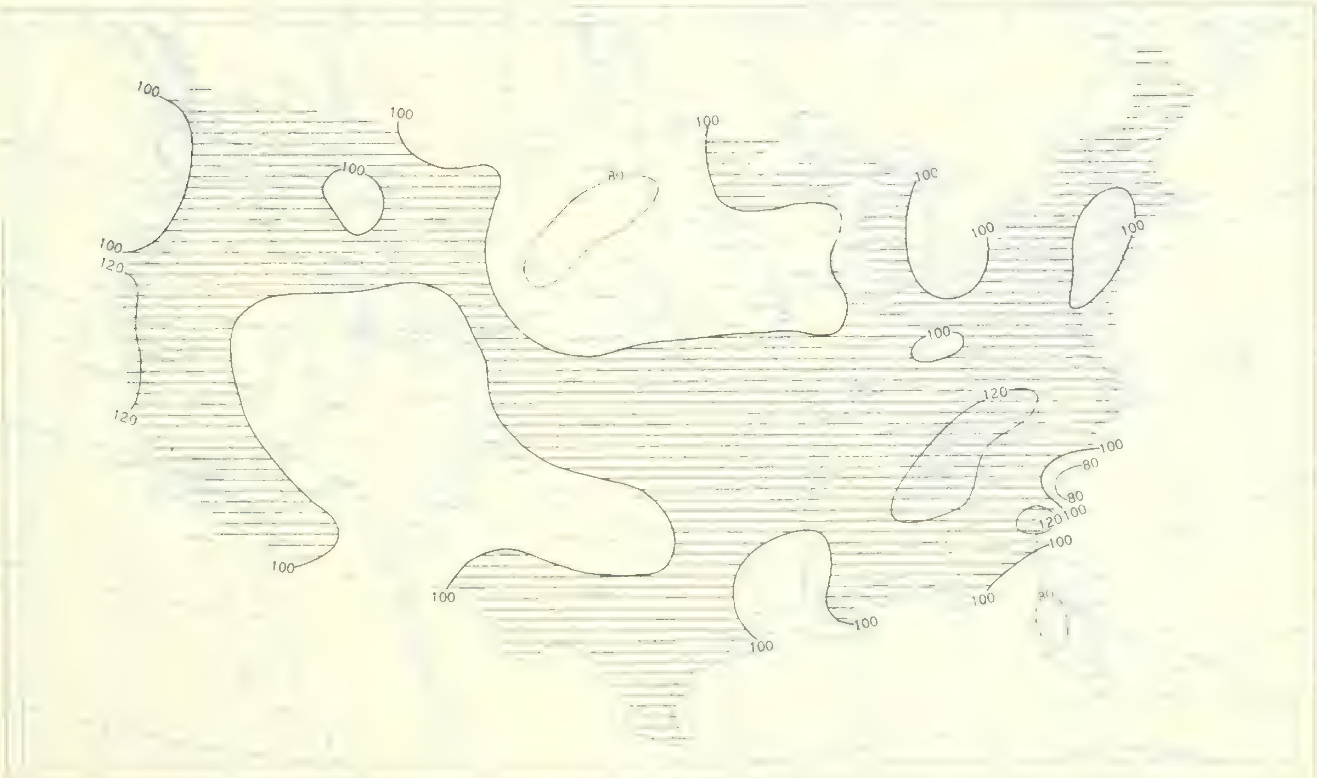


A. In addition to cloudiness, sky cover includes obscuration of the sky by fog, smoke, snow, etc. Chart based on visual observations made hourly at Weather Bureau stations and averaged over the month. B. Computations of normal amount of sky cover are made for stations having at least 10 years of record.

Chart VII. A. Percentage of Possible Sunshine, August 1957.



B. Percentage of Normal Sunshine, August 1957.



A. Computed from total number of hours of observed sunshine in relation to total number of possible hours of sunshine during month. B. Normals are computed for stations having at least 10 years of record.

Chart VIII. Average Daily Values of Solar Radiation, Direct + Diffuse, August 1957. Inset: Percentage of Mean Daily Solar Radiation, August 1957. (Mean based on period 1951-55.)

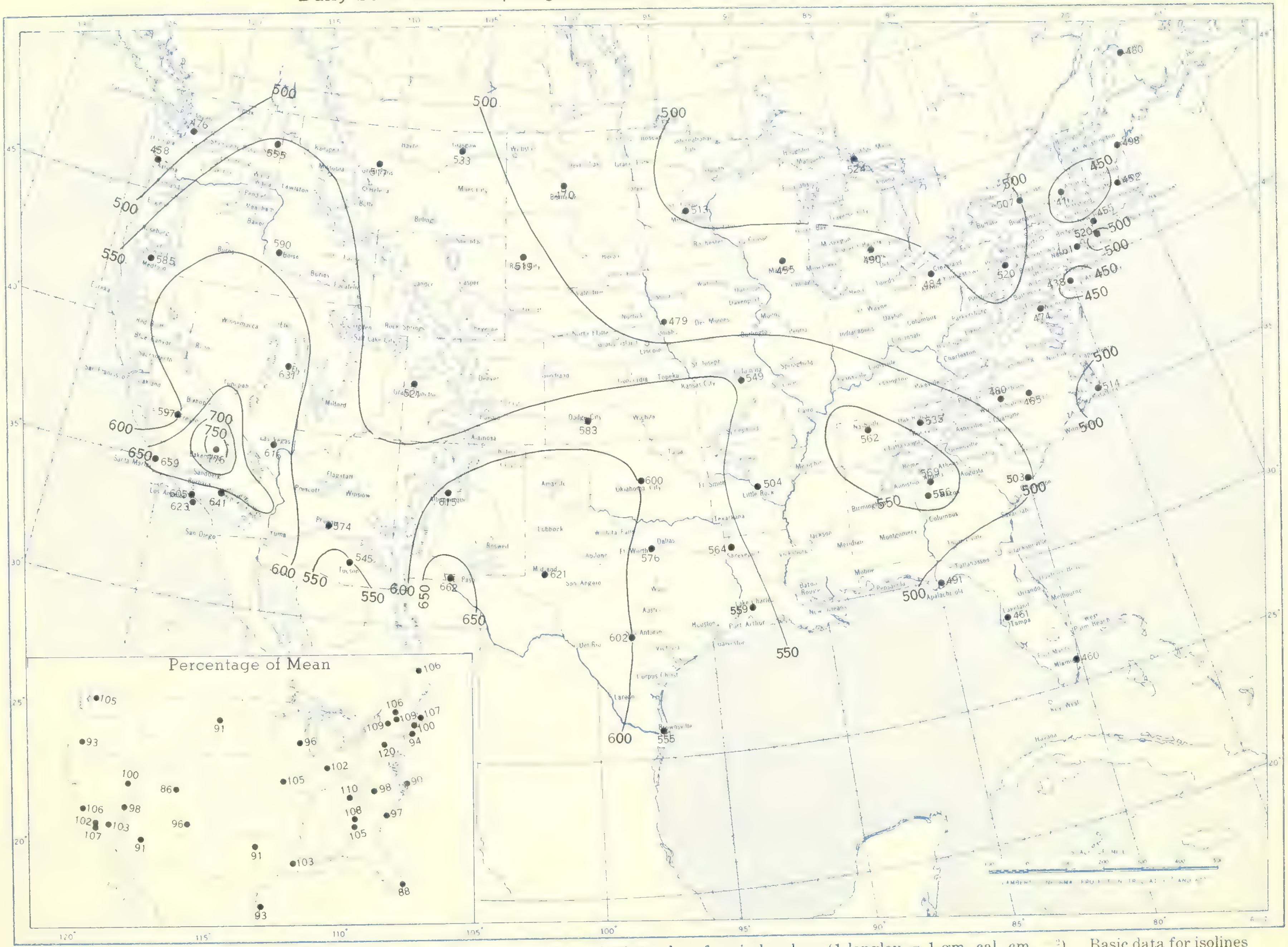
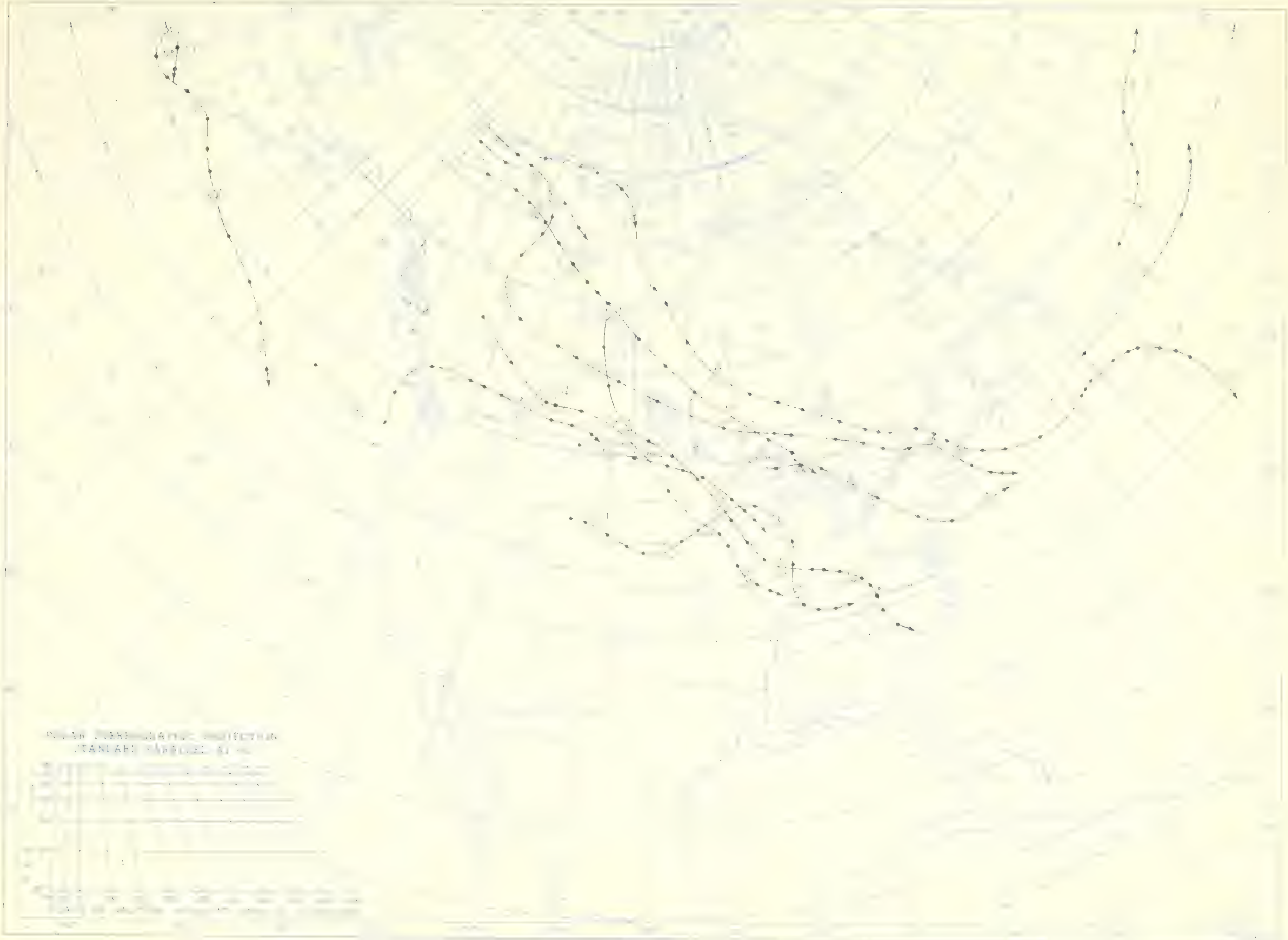


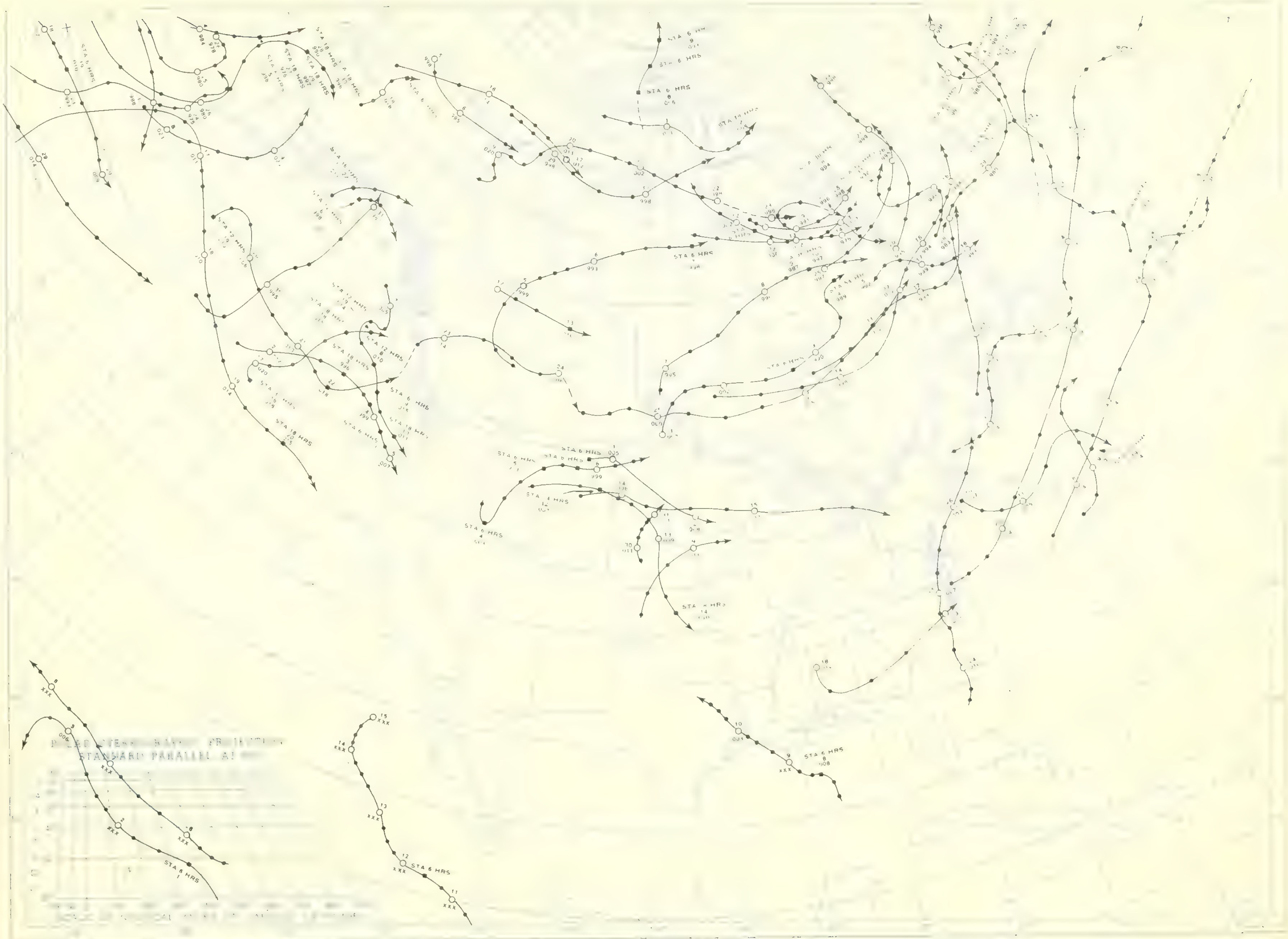
Chart shows mean daily solar radiation, direct + diffuse, received on a horizontal surface in langleys (1 langley = 1 gm. cal. cm.$^{-2}$). Basic data for isolines are shown on chart. Further estimates are obtained from supplementary data for which limits of accuracy are wider than for those data shown. The inset shows the percentage of the mean based on the period 1951-55.

Chart IX. Tracks of Centers of Anticyclones at Sea Level, August 1957.



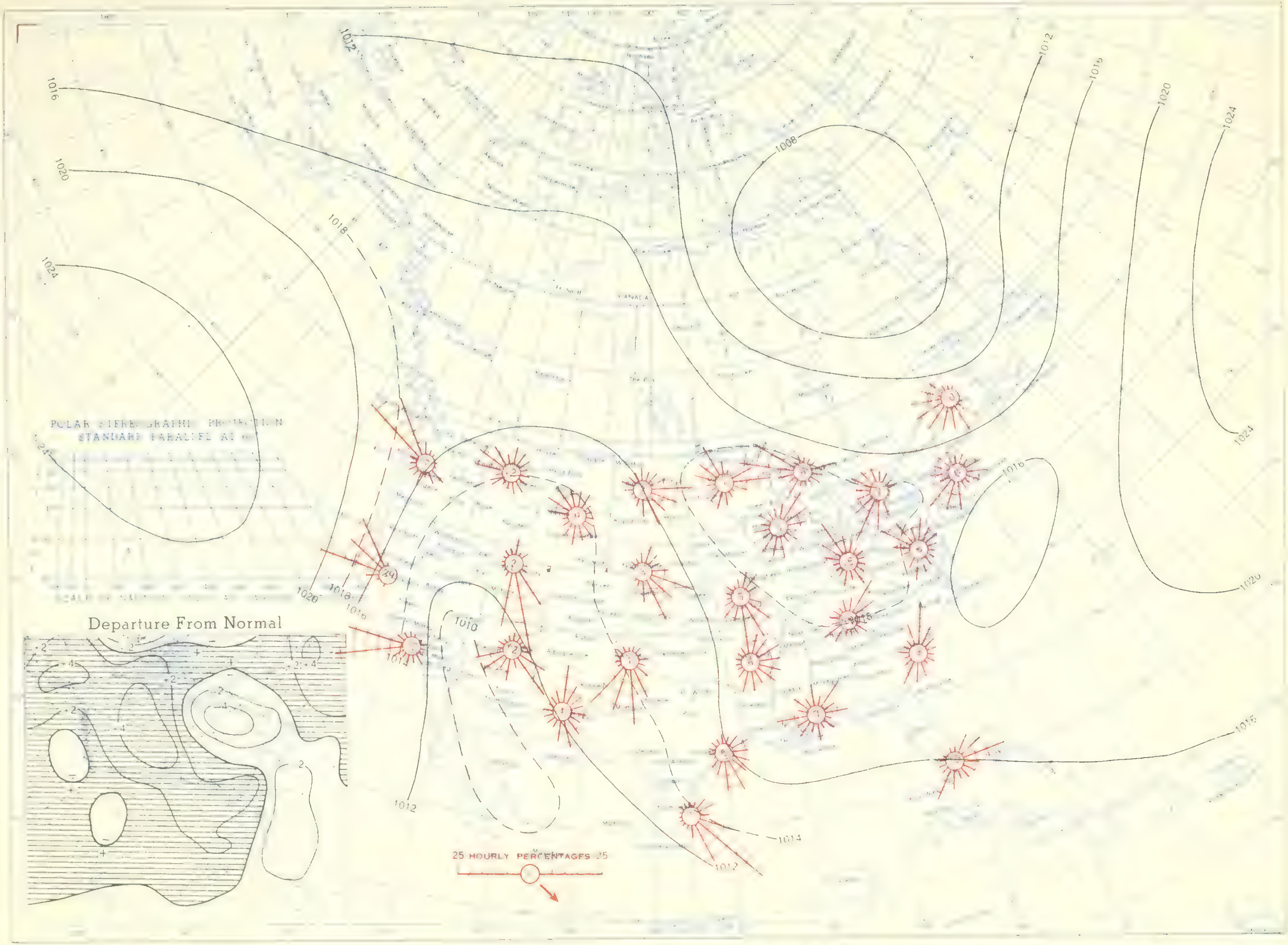
Circle indicates position of center at 7:00 a. m. E. S. T. Figure above circle indicates date, figure below, pressure to nearest millibar. Dots indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.

Chart X. Tracks of Centers of Cyclones at Sea Level, August 1957.



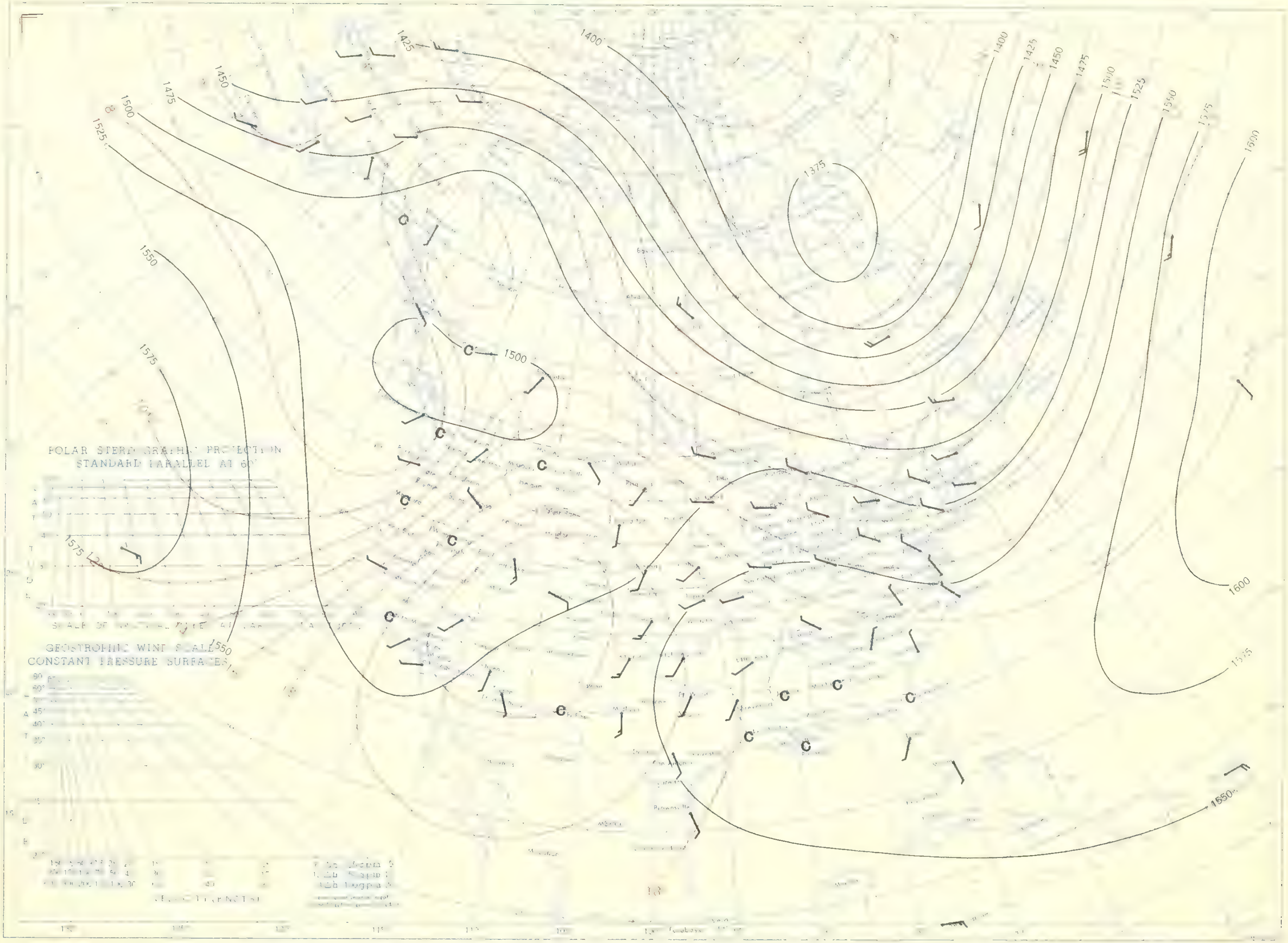
Circle indicates position of center at 7:00 a. m. E. S. T. See Chart IX for explanation of symbols.

Chart XI. Average Sea Level Pressure (mb.) and Surface Windroses, August 1957. Inset: Departure of Average Pressure (mb.) from Normal, August 1957.



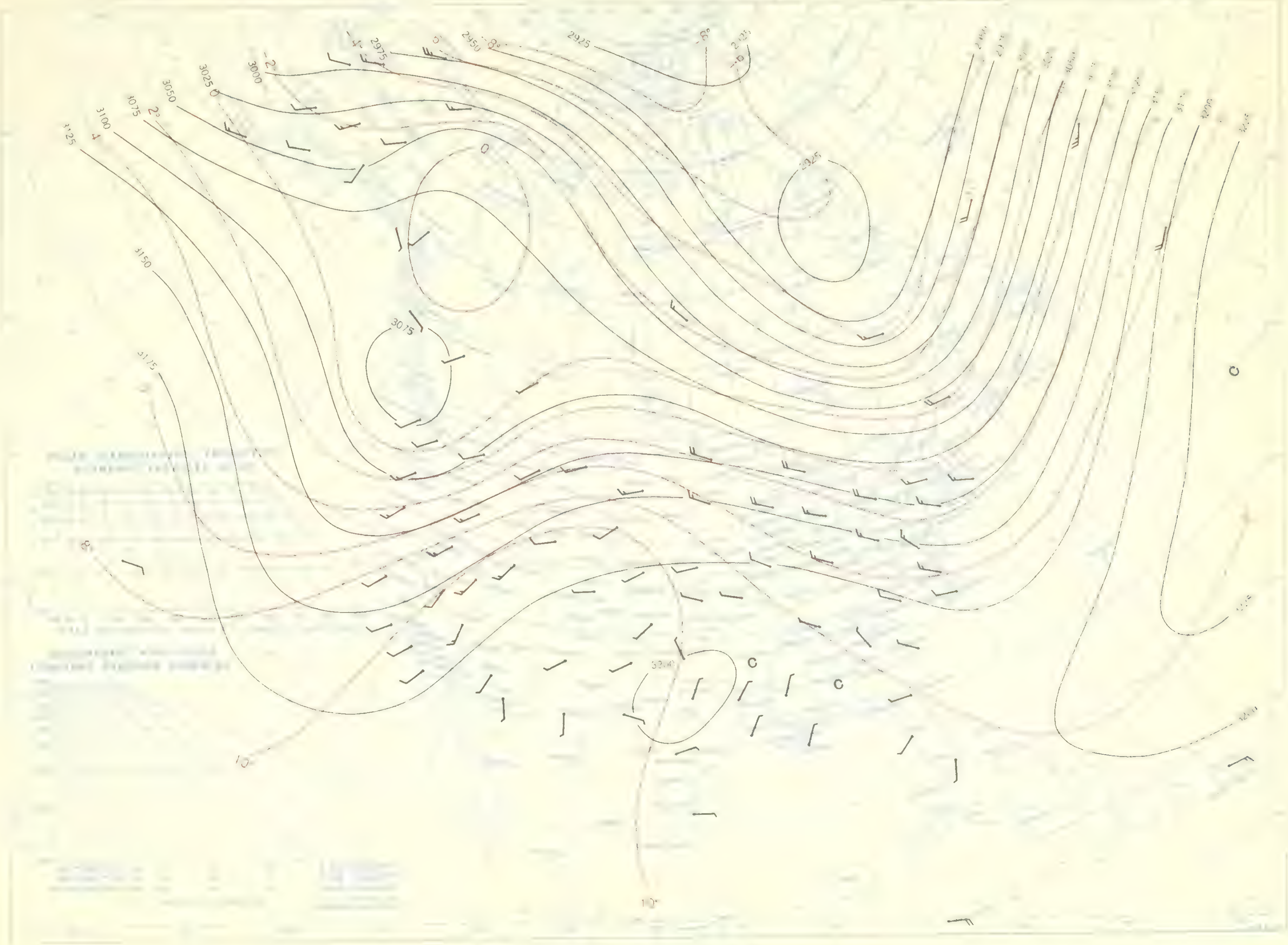
Average sea level pressures are obtained from the averages of the 7:00 a. m. and 7:00 p. m. E. S. T. readings. Windroses show percentage of time wind blew from 16 compass points or was calm during the month. Pressure normals are computed for stations having at least 10 years of record and for 10° intersections in a diamond grid based on readings from the Historical Weather Maps (1899-1939) for the 20 years of most complete data coverage prior to 1940.

Chart XII. 850-mb. Surface, 1200 GMT, August 1957. Average Height and Temperature, and Resultant Winds.



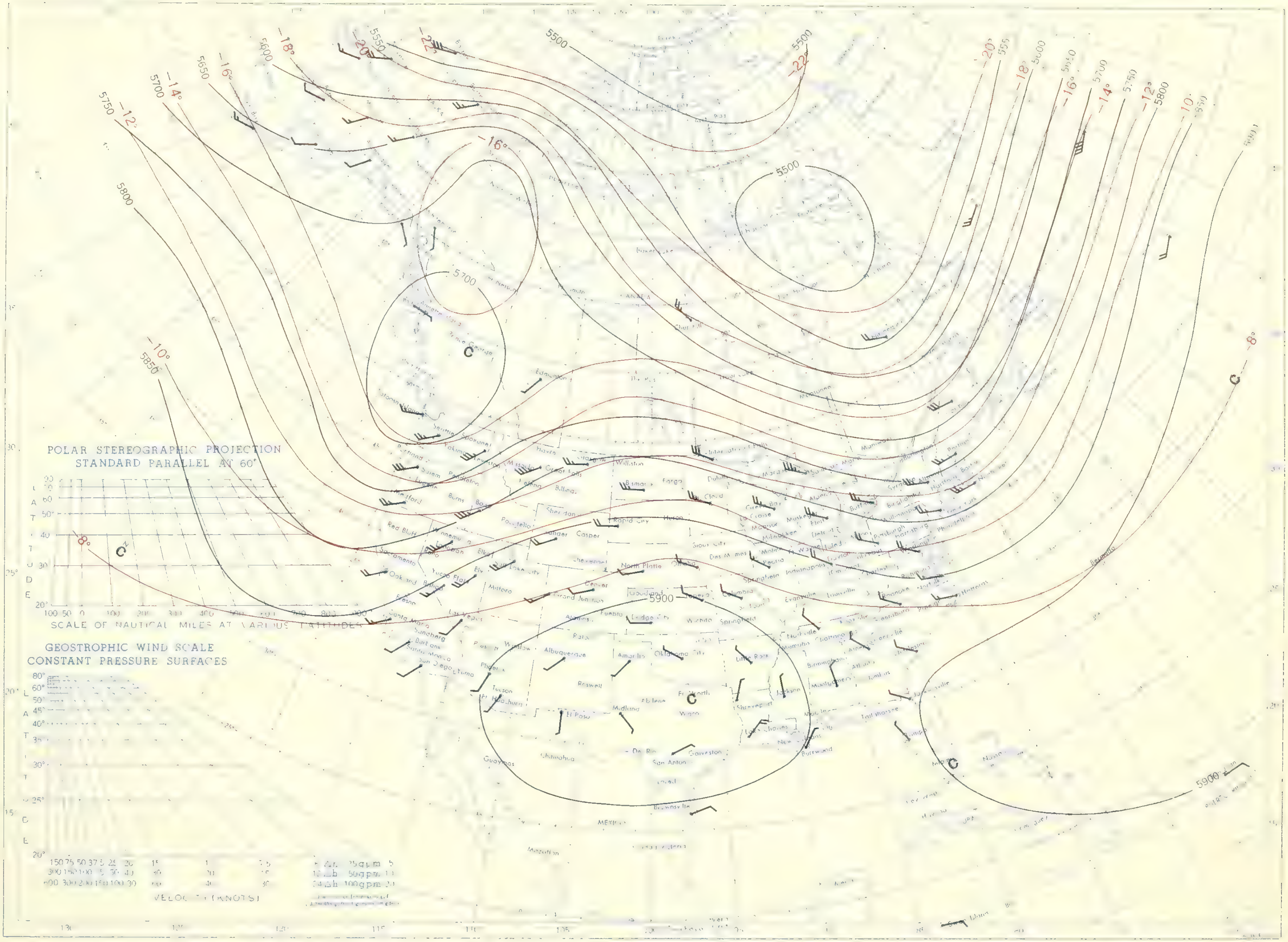
Height in geopotential meters (1 g.p.m. = 0.98 dynamic meters). Temperature in °C. Wind speed in knots; flag represents 50 knots, full feather 10 knots, and half feather 5 knots. All wind data are based on rawin observations.

Chart XIII. 700-mb. Surface, 1200 GMT, August 1957. Average Height and Temperature, and Resultant Winds.



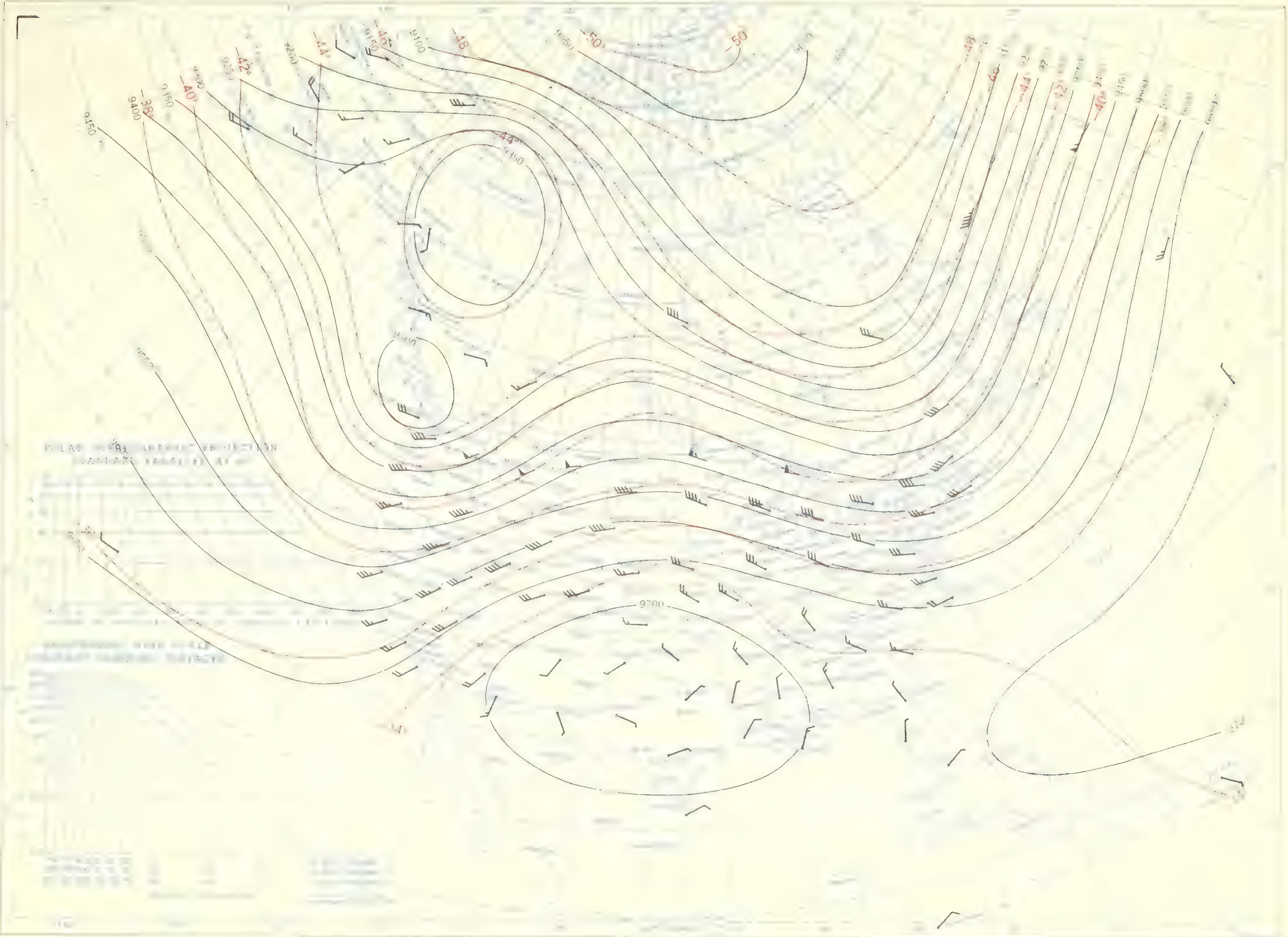
See Chart XII for explanation of map.

Chart XIV. 500-mb. Surface, 1200 GMT, August 1957. Average Height and Temperature, and Resultant Winds.



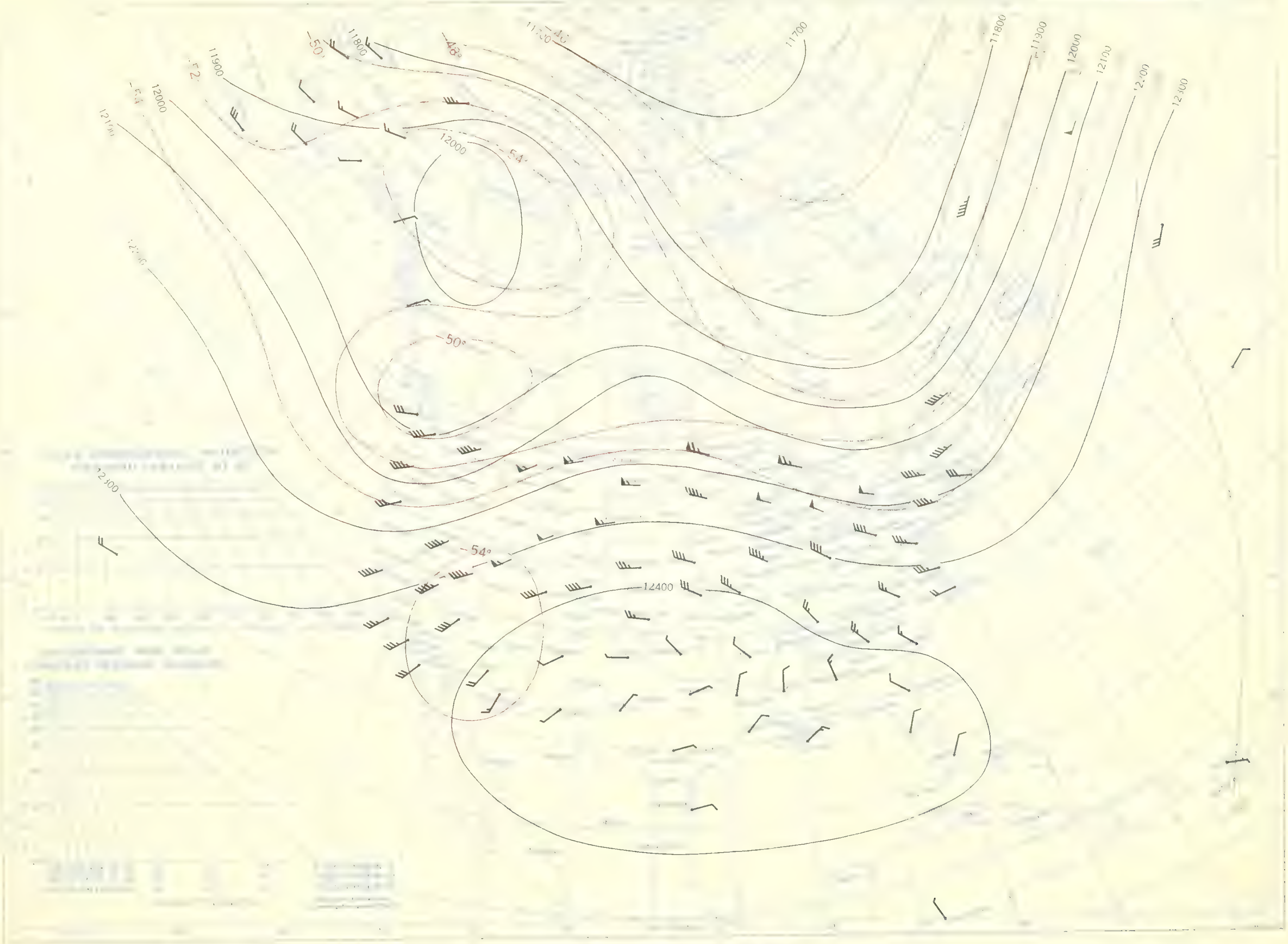
See Chart XII for explanation of map.

Chart XV. 300-mb. Surface, 1200 GMT, August 1957. Average Height and Temperature, and Resultant Winds.



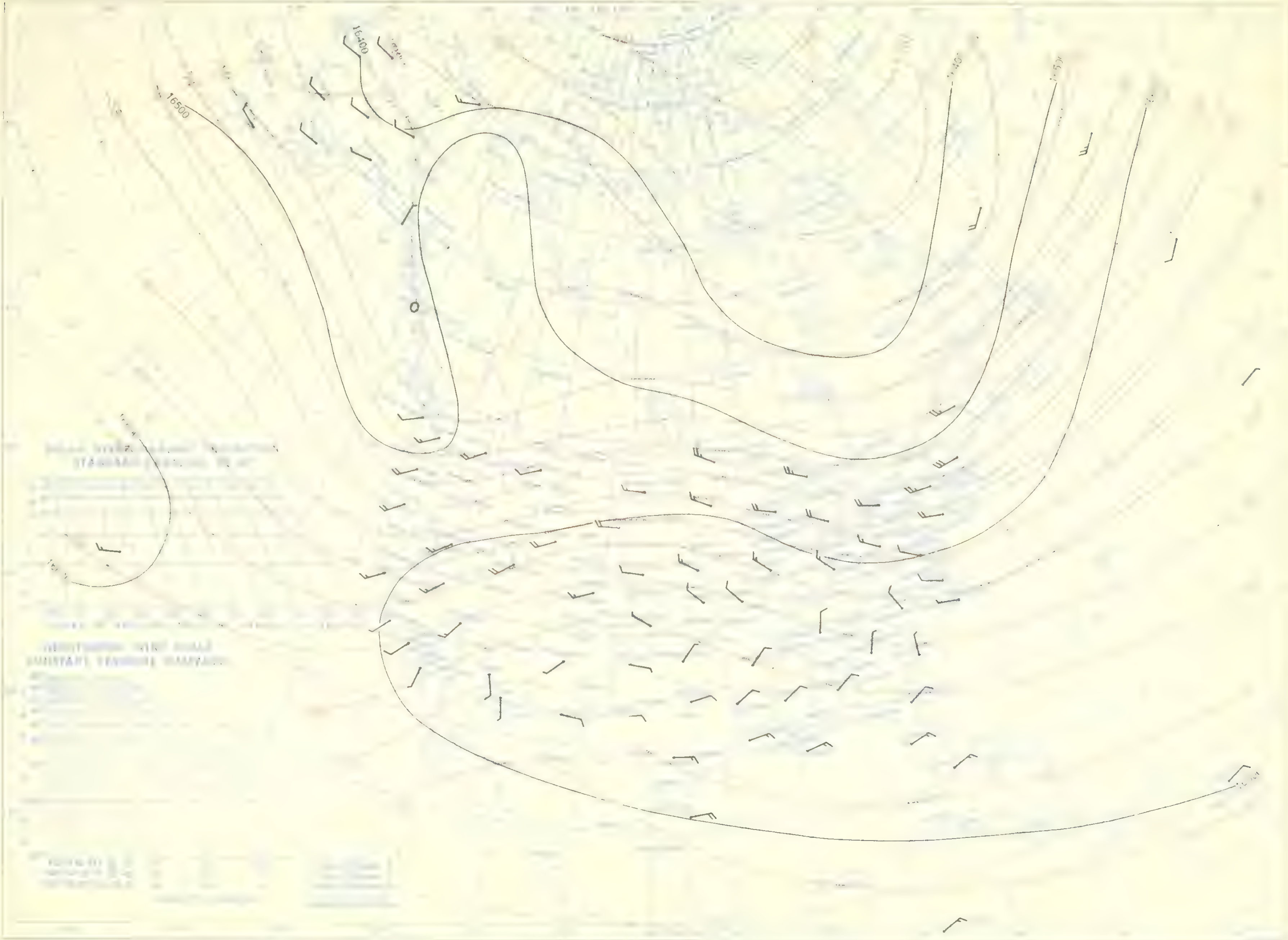
See Chart XII for explanation of map.

Chart XVI. 200-mb. Surface, 1200 GMT, August 1957. Average Height and Temperature, and Resultant Winds.



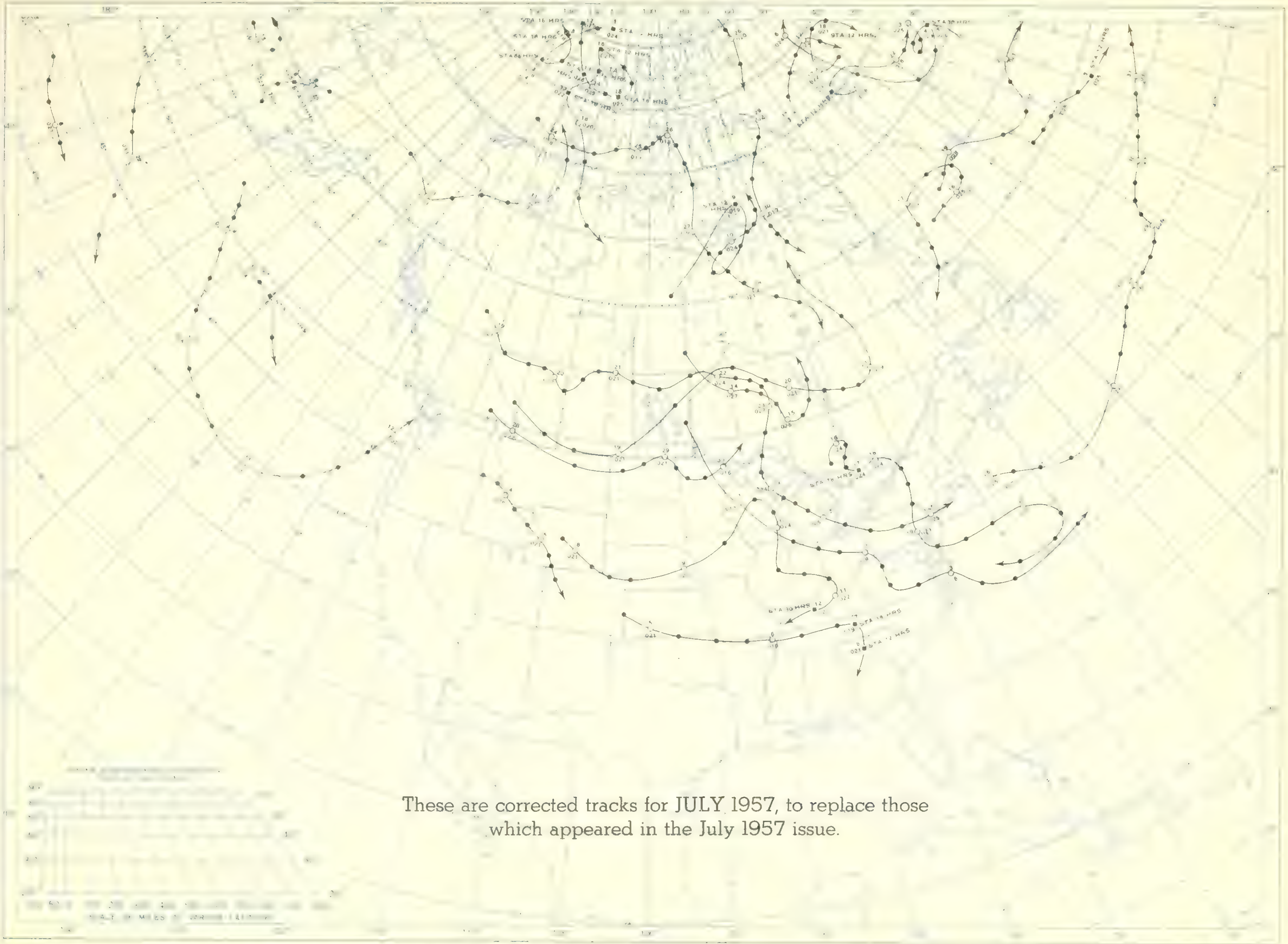
See Chart XII for explanation of map.

Chart XVII. 100-mb. Surface, 1200 GMT, August 1957. Average Height and Temperature, and Resultant Winds.



See Chart XII for explanation of map.

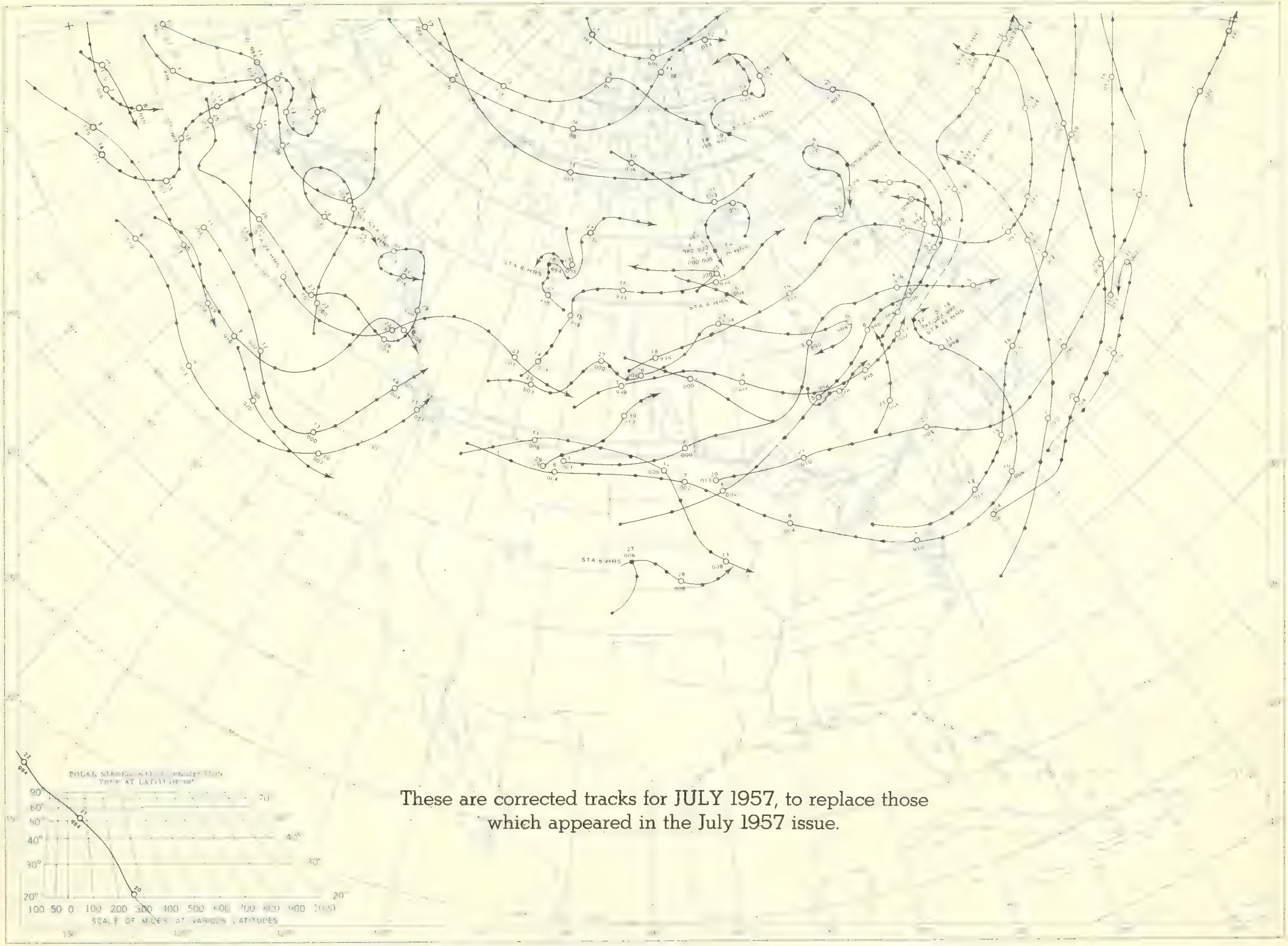
Chart IX. Tracks of Centers of Anticyclones at Sea Level, July 1957.



These are corrected tracks for JULY 1957, to replace those which appeared in the July 1957 issue.

Circle indicates position of center at 7:00 a. m. E. S. T. Figure above circle indicates date, figure below, pressure to nearest millibar. Dots indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.

Chart X. Tracks of Centers of Cyclones at Sea Level, July 1957.


POLAR STEREOGRAPHIC PROJECTION
TRUE AT LATITUDE 60°
SCALE OF MILES AT VARIOUS LATITUDES
STA 6 HRS
STA 24 HRS
STA 48 HRS

These are corrected tracks for JULY 1957, to replace those which appeared in the July 1957 issue.

Circle indicates position of center at 7:00 a. m. E. S. T. See Chart IX for explanation of symbols.

U. S. DEPARTMENT OF COMMERCE
SINCLAIR WEEKS, Secretary
WEATHER BUREAU
F. W. REICHELDERFER, Chief

JAN 6

CLIMATOLOGICAL DATA

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SEPTEMBER 1957

Volume 8 No. 9

ASHEVILLE: 1957

CONTENTS

SURFACE DATA — Page

General Summary of Weather Conditions — 413

Condensed Climatological Data - States — 414

Climatological Data - Stations — 415

Monthly and Seasonal Heating Degree Days — 419

Storm Data and Unusual Weather Phenomena — 420

General Summary of River and Flood Conditions — 438

Flood Stage Data — 438

Tropical Storms, September 1957 — 439

UPPER AIR DATA

Rawinsonde Data — 442

SOLAR RADIATION DATA

Solar Radiation Intensities — 448

Blue Hill Data — 448

Net Radiation — 448

Daily Totals and Average Daily Totals by Weeks — 449

CHARTS I-XVII

NOTE.--This publication contains all of the climatic data formerly printed in the MONTHLY WEATHER REVIEW.

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CLIMATOLOGICAL DATA

NATIONAL SUMMARY

Volume 8 No. 9

SEPTEMBER 1957

GENERAL SUMMARY OF WEATHER CONDITIONS

The month was quite cool in the central Great Plains and unusually warm along the Pacific coast. Elsewhere, departures of the monthly averages from normal were within the usual range for September. Freezing in northern areas was about on schedule and crop damage, although heavy in a few scattered areas, was not serious. Unusually heavy precipitation furnished beneficial moisture to most of northern California, the eastern Great Plains, and South, but caused some crop and flood damage in southeastern Texas. Elsewhere dry weather favored harvesting operations and continued the drought in southern New England. Unusually heavy snowfall for so early in the season occurred in the northern rockies on the 19th.

TEMPERATURE.--Between the Continental Divide and the Appalachians temperatures remained below seasonable levels almost all month and averaged as much as 4° below normal. The reverse was true along the Pacific coast where temperatures were persistently above seasonable levels and averaged as much as 4° above normal for the month. A monthly average of 68.9° at Portland, Oreg., was the highest there in 55 years.

In the East, temperatures generally remained slightly above normal during the first 3 weeks with daily maxima generally in the 70's and 80's; however, along the coast maxima in the 90's extended northward to New York City on the 3d and to southern New England on the 13th when Boston's 93° set a new record there for the date. Abnormally cool weather prevailed everywhere east of the Great Plains the last week, averaging as much as 10° below normal at some stations.

The last week was unusually warm for the season in the Rocky Mountain States, with weekly averages ranging up to 10° above normal. Scattered stations recorded their highest temperatures on record for so late in the season, including Missoula, Mont., 89° on the 27th, Pocatello, Idaho, 90° and Grand Junction, Colo., 88°, both on the 30th.

The last week was unusually cool throughout the eastern half of the country, thus ending a long period of rather hot, humid weather which had prevailed in the Atlantic coast States during the first 3 weeks. Most stations in the East recorded their lowest temperatures of the month during this period and freezing occurred in the Canadian Border States except along the coast and in the Appalachians as far south as western Virginia. At Rochester, N. Y., a low of 31° on the 27th was the lowest ever recorded there so early in the season.

PRECIPITATION.--Precipitation was less than 50 percent of normal in southern New England, Illinois, and nearby areas of adjacent states, extreme eastern Montana, the Far Southwest, much of the Great Basin, and most of extreme western and northern Washington State. In contrast, monthly totals exceeded 200 percent of normal in northern California and most of the eastern Great Plains and Southern States.

In southern New England, rainfall was generally less than 0.50 inch in extreme eastern portions and from 1.00 to 2.50 inches in central and western portions, bringing only slight relief from the prolonged dry spell in that area. In some eastern parts of this area the periods January through September and June through September were the driest of record. A total of 17.71 inches at Providence, R. I., for the period January through September was the least amount there for that period since the earliest records in 1832. With virtually no rain during the last week forest fire danger again became very high in eastern and central Massachusetts and southern parts of northern New England where many woods and brush fires continued to break out. In southern New Hampshire streamflow and ground water levels were unusually low and many wells dry. Soil moisture was short in nearly all sections of southern New England and pastures were declining rapidly at the end of the month. However, the dry, sunny weather favored harvesting operations.

In other sections of the country where September rainfall was deficient the shortage was not serious due to rains of previous months, although fall-seeded grains in some southwestern sections needed more moisture for best growth.

Heavy rainfall in the South ranged up to 400 percent of normal in parts of Mississippi and Alabama, and monthly totals exceeded 20 inches at some stations. Stations reporting record totals for September included Montgomery, Ala., 9.55 inches; Tallahassee, Fla., 20.32; and Chattanooga, Tenn., 12.19 inches. This heavy rainfall was well distributed through the month, with heavy amounts falling during each week. Tropical storm Debbie dumped heavy rains in northwestern Florida and other southeastern areas on the 7th. Crawford, Fla., measured a 9-inch total for this storm, and 2 to 4 inches were common in southern portions of Alabama, Georgia, and South Carolina. Another tropical storm, Esther, was responsible for torrential rains with falls exceeding 5 inches at many locations from southeastern Louisiana to northeastern Florida on the 18th and 19th.

California's heavy rainfall all occurred during the last week from San Francisco and Sacramento northward. At San Francisco, 1.15 inches fell on the 28th, greatest daily amount for so early in the season since 1918; Mt. Shasta had 4.85 inches and Crescent City 4.17, also early season records. These rains caused minor damage to prunes, grapes, tomatoes, and hay in the northern portion but benefited ranges and ended the fire hazard.

DESTRUCTIVE STORMS.--Numerous severe local storms occurred east of the Rocky Mountains during the first week as an area of low pressure with a trailing cold front moved eastward from the Great Plains. Hail, wind, and rain were responsible for damage of several hundred thousand dollars to crops in the northern Great Plains and upper Mississippi Valley on the 1st. Hail caused $100,000 damage or more to crops in Gaines County, Texas, on the 3d, Dundy County, Nebraska, on the 4th, and Hall and Childress Counties, Texas, on the 6th. Hail and wind combined damaged

SEPTEMBER 1957

crops to the extent of about $200,000 in Brown County, Kansas, on the 5th.

Frontal passages through the lower Great Plains again during the period September 10-14 triggered off numerous other storms of wind, rain, and hail which caused damage, mostly to crops, of a few million dollars in Texas and several hundred thousand in New Mexico and Oklahoma.

On the 18th and 19th heavy snowfall in Helena, Mont., and vicinity was responsible for a few thousand dollars damage. In Helena 13.4 inches of snow fell in 24 hours and a maximum depth of 9 inches was recorded, both new records there for September.

Crop damage from heavy rainfall occurred in southern Louisiana and Mississippi on the 18th and 19th when tropical storm Esther moved into the area from the Gulf of Mexico.

CONDENSED CLIMATOLOGICAL SUMMARY

SEPTEMBER 1957

Section	Temperature						Precipitation			
	Monthly extremes						Monthly extremes			
	Station	Highest	Date	Station	Lowest	Date	Station	Greatest	Station	Least
		°F			°F			In.		In.
Alabama	Ozark	103	3	2 Stations	42	24+	Fort Morgan	17.87	Colbert Steam Plant	2.76
Arizona	2 Stations	114	5+	Alpine	23	21	Whiteriver	1.75	134 Stations	.00
Arkansas	Hope 3NE	100	5	Fayetteville Exp Sta	36	29	Big Fork	10.96	Corning	.93
California	Cow Creek	118	8	2 Stations	18	20	Vollmers	12.25	182 Stations	.00
Colorado	Kit Carson	97	29	do	9	22	Holly	2.25	17 Stations	.00
Connecticut	Putnam	93	13	Coventry	19	28	West Hartland	3.59	Hartford Brainard Fld	1.20
Delaware	3 Stations	95	3+	2 Stations	34	27+	Newark Univ Farm	6.67	Middletown 2S	3.76
Florida	2 Stations	99	4+	4 Stations	58	9+	Sanborn Tower	30.20	West Palm Beach	2.89
Georgia	Rome	103	1	Blairsville Exp Sta	39	24+	Valdosta 4NW	16.06	Ball Ground	3.51
Idaho	Grand View	100	6+	Obsidian 2NNW	18	10+	Stibnite	1.25	7 Stations	.00
Illinois	3 Stations	95	1	Aledo 5NNE	29	29	Lawrenceville	4.53	Chenoa	.26
Indiana	Tell City Power Pl	98	2	Wheatfield	27	18+	Berne	6.40	Wheatfield	.23
Iowa	Columbus Junction	92	1	2 Stations	27	28	Audubon	5.49	Grundy Center 4NE	.97
Kansas	Columbus 6NW	102	2	Goodland WB AP	32	22	Ottawa	8.00	2 Stations	.26
Kentucky	3 Stations	100	1+	Williamstown 5WSW	39	28+	Edmonton	8.51	Owensboro Dam 46	.85
Louisiana	Plain Dealing	99	5	Converse	45	10	Quarantine	22.40	Haynesville	2.10
Maine	West Buxton 2NNW	92	16	Jackman	26	25	Greenville	5.19	Portland	.93
Maryland	Western Port	98	2	2 Stations	23	28	Randallstown Pol Brks	9.06	Western Port	1.92
Massachusetts	Framingham	95	14	West Cummington	20	28	Peru	4.51	Salem CG Air Station	.22
Michigan	Ontonagon	92	1	Kenton US Forest	18	26	Champion Van Riper Pk	9.91	Scottville 1NE	.78
Minnesota	Chaska 1NE	92	1	Itasca State Park Sch	20	26	Halstad	8.33	Waseca Uni Exp Farm	.99
Mississippi	2 Stations	98	2+	3 Stations	47	24	Gulfport Naval Center	21.83	Scott	3.09
Missouri	do	97	1	Louisiana Starks Nur.	27	29	Lampe Forest Serv	7.22	Weingarten	.50
Montana	do	97	7+	Summit	6	19	Unionville	3.26	Ennis	.05
Nebraska	Lodgepole	97	29	3 Stations	28	22	Arcadia	6.50	Lamar	.04
Nevada	No Las Vegas Doxarm	111	8	Wilkins	17	20	Arthur 5NW	1.35	7 Stations	.00
New Hampshire	Windham	92	13	Grafton	22	28+	Mount Washington	5.58	South Lyndebobo	1.09
New Jersey	3 Stations	96	3+	Layton 3NW	23	27	Deepwater	6.75	Clinton	1.49
New Mexico	2 Stations	99	18+	Gavilan	15	22	Clovis	5.26	41 Stations	.00
New York	Hempstead Garden City	93	3	Old Forge 2SW	18	28	Fredonia	6.62	Scotia	.98
North Carolina	2 Stations	100	1+	Celo 2S	31	25	Haywood Gap	19.52	Hamlet	2.75
North Dakota	Beulah	90	29	Willow City	17	23+	Larimore	11.69	Flaxton	.15
Ohio	Gallipolis 5W	100	2	Apco Ravenna Arsenal	24	28	Mansfield 6W	9.07	Philo	1.63
Oklahoma	2 Stations	104	3	2 Stations	37	30	Boswell 5NNW	16.18	Reydon	T
Oregon	Richland	103	5	The Poplars	18	20	Port Orford	4.84	2 Stations	.00
Pennsylvania	Marcus Hook	97	3	Kane 1NNE	17	27	West Grove 1E	7.15	Lebanon 3W	1.58
Rhode Island	2 Stations	91	13	Kingston	25	29	Greenville	1.79	Woonsocket	.73
South Carolina	do	103	1+	Caesars Head	39	28	Caesars Head	15.24	Bethera 4SW	3.12
South Dakota	Longvalley	94	28	Deerfield 5NW	21	11+	Alcester 7ESE	4.71	Longvalley	.04
Tennessee	2 Stations	101	1+	Mountain City 2	37	25	Big Springs	16.17	Martin Jr. College	1.66
Texas	do	107	2+	Vega	38	15	Flatonia	18.41	7 Stations	.00
Utah	La Verkin	107	8	Hardware Ranch	15	10+	Richmond	1.07	51 Stations	.00
Vermont	Vernon	91	14	Cavendish	20	28	Enosburg Falls	5.24	Montpelier CAA AP	2.23
Virginia	Woodstock	97	2	Berryville	29	28	Woolwine 4S	16.64	2 Stations	2.34
Washington	Trinidad 2SSE	99	15	LaCrosse 3ESE	20	19	Neah Bay 2E	3.71	Winthrop 1WSW	.03
West Virginia	2 Stations	100	2+	3 Stations	21	28	Flat Top	7.71	Petersburg	1.39
Wisconsin	Beaver Dam 3SW	92	1	Danbury 1SE	20	26	St. Croix Falls	8.33	Union Grove	.27
Wyoming	3 Stations	92	3+	Lamar RS	12	9+	Fort Washakie 2S	2.34	Saratoga 10S	.00
Puerto Rico	do	95	9+	Garzas Dam	55	22	Maricao Fish Hatchery	23.87	Mona Island	2.50

+ And also on a later date or dates.

Note: Dates in Table 1 apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for times of observations).

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure		Temperature												Precipitation							Wind					No. of days (sunrise to sunset)				
												No. of days							No. of days		Snow, Sleet				Fastest mile							
		Station ø	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F or above	Min. 32° F or below	Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max. depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy	Sky cover, tenths (sunrise to sunset)	Possible sunshine
	Ft.	Mb	Mb.	°F	°F	°F.	°F	°F.		°F.				°F.	%	In.	In.	In			In	In.	M p. h.		M p h.			0–3	4–7	8–10	0–10	%
ALABAMA																																
Birmingham	610	991.1	1016.3	82	65	73.5	-1.3	97	2	53	24+	8	0	64	77	9.59	6.88	3.92	15	2	0.0	0	7.6	ENE	26	SE	19+	4	8	18	7.3	49
Mobile	211	1006.9	1015.1	83	69	75.5	-2.2	91	2	56	29	3	0	70	86	13.61	7.83	4.89	17	12	.0	0	9.7	E	---	---	--	0	8	22	8.4	--
Montgomery	198	1007.6	1015.8	84	67	75.5	-1.6	97	1+	55	28+	14	0	67	79	9.55	6.04	3.18	15	6	.0	0	6.8	E	32	S	11	3	6	21	8.0	44
ARIZONA																																
Flagstaff	6993	------	------	77	38	57.4	.4	85	8	29	21	0	3	--	--	T	-1.85	T	0	1	.0	0	---	---	---	---	--	21	6	3	2.6	--
Phoenix	1114	971.2	1009.3	98	68	83.2	.5	105	5	60	18+	29	0	49	32	.00	-1.00	.00	0	0	.0	0	4.6	E	*17	WSW	8+	22	6	2	2.2	97
Prescott	5014	847.6	1011.9	85	52	68.6	.4	92	7+	44	18+	3	0	35	--	.07	-2.09	.07	1	1	.0	0	7.8	SSW	34	S	17	21	7	2	2.7	91
Tucson	2558	923.5	1009.4	96	66	81.3	1.2	100	4+	58	19	30	0	42	28	T	-1.48	T	0	2	.0	0	7.0	ESE	26	E	23+	25	3	2	1.6	98
Winslow	4880	851.7	1010.2	87	53	69.8	1.2	95	8+	44	22	8	0	30	24	.00	-1.12	.00	0	0	.0	0	7.0	WSW	*28	W	9+	22	3	5	2.3	--
Yuma	199	1003.4	1008.4	104	73	88.0	-.3	112	6	63	18	30	0	51	32	.00	-.64	.00	0	0	.0	0	6.0	SW	26	S	7	21	8	1	2.1	99
ARKANSAS																																
Fort Smith	458	999.3	1016.0	83	61	71.8	-3.2	93	4	48	29+	5	0	63	79	5.88	2.17	2.90	8	5	.0	0	6.3	NE	25	NW	21	10	9	11	5.2	73
Little Rock	257	1003.1	1016.2	82	63	72.6	-2.2	92	2	55	24+	5	0	62	75	1.96	-.89	1.14	8	5	.0	0	7.8	NNE	22	NW	15	7	12	11	6.2	59
Texarkana	361	------	------	85	63	74.1	-3.1	97	4	53	24	9	0	--	--	4.18	1.39	2.99	7	10	.0	0	6.9	NE	---	---	--	--	--	--	---	--
CALIFORNIA																																
Bakersfield	489	994.6	1012.3	92	63	77.6	2.0	105	8	56	19	19	0	51	43	T	-.07	T	0	0	.0	0	5.6	NW	*17	NW	1+	28	2	0	.8	--
Bishop	4108	873.0	1011.[illegible]	89	47	67.8	.5	99	7+	39	26	12	0	--	--	.05	-.14	.05	1	0	.0	0	---	---	---	---	--	27	2	1	1.2	--
Blue Canyon	5280	840.2	1012.5	72	54	63.1	-.4	89	6+	43	30	0	0	--	--	1.43	.87	1.05	4	3	.0	0	---	---	---	---	--	21	1	8	3.1	--
Burbank	699	986.8	1013.2	86	59	72.3	1.1	97	22+	55	11+	8	0	55	62	.00	-.29	.00	0	0	.0	0	4.0	S	*15	W	24	19	11	0	2.3	--
Eureka (U)	43	1012.5	1014.9	65	54	59.3	3.1	70	16+	49	22+	0	0	--	--	1.37	.70	1.10	6	0	.0	0	5.2	---	26	NW	19	6	8	16	6.6	48
Fresno	331	1000.0	1011.7	90	59	74.2	.7	102	7+	54	1+	15	0	52	51	.19	.14	.19	1	1	.0	0	5.6	NW	18	NW	16	26	4	0	1.1	97
Los Angeles (U)	312	------	------	83	62	72.2	1.2	90	24	58	26+	1	0	58	68	.00	-.27	.00	0	0	.0	0	5.2	---	17	W	1+	20	7	3	2.9	84
Los Angeles	99	1009.5	1013.2	77	61	69.0	2.3	82	24	57	23+	0	0	59	75	.00	-.21	.00	0	0	.0	0	7.2	WSW	*22	WSW	1	16	12	2	3.6	--
Mt. Shasta (R)	3544	892.0	1014.[illegible]	78	45	61.6	1.8	91	6	32	19	3	1	--	--	6.83	6.07	5.90	6	2	.0	0	---	---	---	---	--	19	5	6	2.9	--
Oakland	3	1013.5	1013.9	75	59	66.9	3.6	94	7	51	1	1	0	56	72	.67	.58	.60	2	1	.0	0	8.3	WNW	*21	SSE	26	15	10	5	3.9	--
Red Bluff	341	999.7	1012.2	89	60	74.2	-.8	109	6+	54	29	16	0	45	44	2.47	2.14	1.41	5	2	.0	0	7.7	SSE	32	SE	27	18	7	5	3.0	84
Sacramento	17	1010.8	1011.9	85	57	71.4	1.1	103	7	52	20	11	0	54	60	1.08	1.02	.70	2	1	.0	0	10.2	SW	29	SW	14	23	2	5	2.4	92
Sandberg (R)	4517	862.9	1011.9	78	58	67.8	-1.6	90	6+	46	17	2	0	--	--	T	-.23	T	0	1	.0	0	10.6	---	*31	NNW	15	26	4	0	1.3	--
San Diego	19	1009.5	1012.[illegible]	77	64	70.1	1.4	80	8+	60	21+	0	0	62	76	.37	.20	.37	1	2	.0	0	6.6	WNW	22	NW	6	16	12	2	3.6	75
San Francisco (U)	52	------	------	70	58	63.6	2.0	88	7	51	1+	0	0	--	--	1.46	1.33	1.24	3	1	.0	0	9.3	---	25	SW	12	--	--	--	---	67
San Francisco	8	1013.2	1014.1	75	56	65.6	3.6	93	7	49	1	1	0	55	73	1.06	.95	.84	3	1	.0	0	10.0	NW	32	WSW	5	17	7	6	3.4	--
Santa Maria	238	1005.4	1012.8	75	53	64.0	1.9	92	7	47	17	1	0	55	78	.02	-.10	.01	2	1	.0	0	5.2	WNW	*28	WNW	18	22	8	0	2.7	--
COLORADO																																
Alamosa	7536	774.5	1017.5	74	33	53.5	-1.2	81	9	25	19+	0	14	--	--	.01	-.68	.01	1	1	.0	0	---	---	---	---	--	20	8	2	3.0	--
Colorado Springs	6173	813.4	1016.0	75	44	59.6	-2.4	86	4+	33	22	0	0	36	48	1.25	.18	.59	6	5	.8	T	7.8	SSE	*30	NNW	13	18	7	5	3.4	--
Denver	5292	840.2	1015.4	76	47	61.4	-1.3	89	[illegible]	35	22	0	0	35	44	.42	-.66	.32	4	2	T	0	10.8	SSW	29	NW	18	17	7	6	3.7	80
Grand Junction	4849	860.5	1014.5	80	50	65.2	-2.1	88	8+	39	22	0	0	32	32	.09	-.93	.09	1	0	.0	0	9.7	ESE	30	NE	13	20	8	2	2.6	94
Pueblo	4639	858.5	1015.7	81	47	63.6	-1.2	91	29	37	23	3	0	38	47	.40	-.35	.18	6	3	.0	0	6.4	SE	49	N	8	15	9	6	3.4	86
CONNECTICUT																																
Bridgeport	7	1018.0	------	76	58	67.0	1.8	89	3+	36	28	0	0	--	--	2.24	-1.31	.90	11	6	.0	0	---	---	---	---	--	9	7	14	6.0	--
Hartford	169	1012.4	1018.4	76	52	63.7	-.1	91	13	30	27+	1	2	53	71	1.22	-2.22	.62	10	4	.0	0	10.1	S	39	NW	26	8	6	16	6.6	51
Middletown (U)	133	1013.2	------	75	53	63.9	----	90	13	32	28+	1	2	--	--	2.34	----	.92	12	1	.0	0	---	---	†37	NNW	26	--	--	--	---	--
New Haven	6	1017.8	1018.3	75	57	65.6	2.0	85	13	34	28	0	0	--	--	2.79	-.67	.94	14	5	.0	0	6.4	---	19	E	10	7	8	15	6.2	63
DELAWARE																																
Wilmington	78	1015.3	1018.6	78	60	68.7	.7	93	3	37	27	1	0	59	75	6.55	2.75	2.01	9	5	.0	0	8.9	N	---	---	--	7	5	18	6.7	--
DIST. OF COLUMBIA																																
Washington (U)	72	------	------	80	64	71.9	2.0	93	3	44	27+	3	0	--	--	3.67	-.69	2.20	8	3	.0	0	6.0	---	31	W	12	--	--	--	---	--
Wash. Nat'l. AP	14	1013.9	1018.5	80	64	71.9	2.3	94	3	45	27+	3	0	61	73	3.57	-.55	2.14	7	4	.0	0	9.4	SSW	36	W	12	4	8	18	7.1	47
FLORIDA																																
Apalachicola (U)	13	1013.0	------	84	74	78.9	.0	91	23	66	30	1	0	--	--	17.79	10.14	3.54	18	10	.0	0	8.8	---	33	SE	8	6	11	13	6.3	60
Daytona Beach	31	1014.9	1016.8	88	72	80.0	.6	92	6	69	29	6	0	73	84	10.65	4.13	3.49	15	11	.0	0	9.0	E	*35	E	4	6	12	12	6.2	--
Fort Myers	15	1014.5	------	90	73	81.6	.3	93	9	71	2+	22	0	--	--	8.77	.18	2.00	18	24	.0	0	8.6	---	*29	SW	2	3	16	11	6.5	--
Jacksonville	24	1015.1	1016.6	90	73	81.2	2.0	96	2+	64	26	19	0	72	81	8.33	1.37	1.93	16	11	.0	0	8.8	SE	46	S	9	5	10	15	6.7	56
Key West (U)	9	1013.3	------	91	77	84.1	1.4	93	6+	73	26	24	0	--	--	3.00	-3.05	.73	16	6	.0	0	6.9	---	19	S	4+	3	20	7	6.0	68
Lakeland (U)	214	------	------	89	72	80.5	.4	92	20+	69	3+	13	0	--	--	8.87	2.50	2.34	19	18	.0	0	6.2	---	---	---	--	3	13	14	6.9	49
Miami (U)	8	------	------	86	76	80.8	-.2	91	24	70	26	1	0	--	--	5.80	-.92	1.33	19	11	.0	0	11.1	---	33	S	7+	7	15	8	5.5	62
Miami	8	1014.0	1015.3	88	75	81.4	-.3	91	24+	71	23	3	0	74	81	3.32	-5.01	.84	18	15	.0	0	7.4	ESE	17	SE	1+	4	15	11	6.4	--
Miami Beach	9	------	------	87	78	82.1	.2	94	24	70	26	1	0	--	--	6.76	.91	1.69	17	--	.0	0	---	---	---	---	--	--	--	--	---	--
Orlando	106	1011.6	1016.1	90	72	81.0	.3	93	3+	69	26	21	0	72	83	7.47	.32	1.74	18	13	.0	0	8.0	E	*27	SE	12+	4	13	13	6.3	--
Pensacola (U)	13	1012.3	------	82	72	77.0	-1.3	90	2	60	29	1	0	--	--	15.15	9.37	2.55	19	7	.0	0	‡9.3	---	31	SE	18	--	--	--	---	36
Tallahassee	64	1012.8	1015.6	85	70	77.7	-.3	93	2	63	29+	10	0	70	83	20.32	14.96	4.09	17	15	.0	0	5.8	ESE	---	---	--	2	12	16	7.3	--
Tampa	19	1014.2	1015.8	88	73	80.5	.0	92	1+	70	8+	10	0	72	83	5.95	-.50	2.40	19	16	.0	0	8.8	E	*35	S	8	0	15	15	7.2	57
West Palm Beach	15	1014.3	1015.4	90	75	82.4	1.2	93	24	71	2	21	0	74	78	4.92	-4.20	1.73	16	13	.0	0	10.0	ESE	*29	NE	11	6	10	14	6.6	--
GEORGIA																																
Athens	798	988.1	1017.2	82	64	73.2	-2.0	99	1+	47	28	7	0	65	82	6.53	3.47	1.46	13	2	.0	0	8.6	S	*29	NE	28	4	6	20	7.6	--
Atlanta	975	975.3	1016.4	81	66	73.3	-1.1	97	1+	49	28	6	0	64	79	5.30	2.34	1.17	13	2	.0	0	9.8	SE	30	NE	28	4	8	18	7.4	44
Augusta	143	1010.0	1016.8	86	66	75.8	.0	101	2	50	25+	9	0	68	83	7.17	3.96	1.60	15	10	.0	0	6.1	SE	*21	NNE	2+	4	9	17	7.4	--
Columbus	385	1002.1	------	85	67	76.0	-.2	99	1+	54	25+	12	0	--	--	3.88	1.52	.94	13	3	.0	0	---	---	---	---	--	4	4	22	7.8	--
Macon	356	1002.6	1016 3	86	67	76.7	-.8	102	[illegible]	53	25	16	0	66	77	5.56	2.64	1.59	12	3	.0	0	9.3	NNE	26	SE	6	3	10	17	7.3	49
Rome	637	993.6	------	84	63	73.5	-.7	101	1	47	25	10	0	--	--	9.97	6.99	3.62	15	5	.0	0	---	---	---	---	--	4	7	19	7.5	--
Savannah	48	1014.1	1016.7	86	69	77.3	.6	97	1+	56	25	10	0	69	81	10.15	3.65	2.69	15	10	.0	0	8.1	NE	29	N	6	4	12	14	6.8	57
Thomasville (U)	283	------	------	87	69	78.1	.2	98	1+	60	29	17	0	--	--	12.41	7.46	2.66	15	7	.0	0	---	---	---	---	--	--	--	--	---	--
IDAHO																																
Boise	2842	919.1	1014.1	81	50	65.3	2.9	93	30	39	9+	3	0	37	37	.06	-.40	.06	1	1	.0	0	7.6	SE	47	W	27	19	6	5	2.8	94
Idaho Falls 46W (R)	4933	850.3	1016.9	77	36	56.2	.2	91	7	24	22	1	6	--	--	.06	-.30	.06	1	0	.0	0	5.1	---	a31	SW	18	--	--	--	---	--
Idaho Falls 42NW (R)	4790	------	------	77	35	55.7	.3	92	7	23	22	1	11	--	--	.07	-.52	.07	1	--	---	---	7.0	---	a34	SSW	18	--	--	--	---	--
Lewiston	1413	963.4	1014.4	82	50	65.9	2.7	93	6	32	19	3	1	--	--	.12	-.84	.12	1	1	.0	0	---	---	---	---	--	16	7	7	3.8	--
Pocatello	4444	863.9	1015.6	79	41	59.9	.1	92	7	30	22	2	2	34	40	.02	- 88	.02	1	0	T	0	9.2	SW	36	W	18	20	5	5	3.2	88
ILLINOIS																																
Cairo (U)	314	1003.4	------	80	63	71.3	-1.7	88	1+	49	28	0	0	--	--	1.57	-1.75	1.01	7	1	.0	0	6.9	S	19	S	12+	5	12	13	6.4	55
Chicago	610	994.6	1017.4	73	55	64.2	-1.4	93	1	41	24+	1	0	52	68	1.08	-2.15	.73	7	1	0	0	6.6	SW	36	W	3	11	10	9	4.7	62
Moline	589	994.9	1017.2	73	50	61.9	-3.5	89	1	33	28+	0	0	52	73	1.16	-2.93	63	8	1	0	0	7.2	E	33	SW	3	14	6	10	4.6	64
Peoria	654	994.9	1017.3	76	54	64.8	-1.5	90	1	39	28	1	0	52	69	1.21	-2.52	.66	7	2	.0	0	8.7	ENE	42	W	3	14	8	8	4.4	65
Springfield	589	994.2	1017.5	77	54	65.2	-1.7	89	1	38	28	0	0	53	70	1.31	-2.59	77	7	2	.0	0	8.0	ENE	32	W	3	14	4	12	4.7	72
INDIANA																																
Evansville	383	1001.4	1017.2	80	58	68.8	-1.7	93	1	44	28	2	0	58	72	1.43	-1.97	.85	8	1	.0	0	7.6	NE	29	S	15	7	9	14	6.5	48
Fort Wayne	801	986.5	1017.4	74	52	62.8	-1.8	90	1	35	27+	1	0	53	75	2.83	-.24	1.35	9	6	.0	0	9.7	SW	38	SW	3	11	8	11	5.5	67
Indianapolis	793	988.2	1018.1	75	55	64.6	-2.6	88	1	39	28	0	0	55	72	2.22	-1.45	1.05	8	3	0	0	10.8	NE	27	SW	3	8	6	16	6.3	73
South Bend	768	989.2	1017.5	72	51	61.5	-3.0	90	1	34	27	1	0	53	77	1.59	-2.12	53	8	2	.0	0	9.0	SSW	*26	SW	3	10	11	9	4.9	--

See footnotes at end of table.

CLIMATOLOGICAL DATA

SEPTEMBER 1957

State and station	Elevation (ground)	Pressure		Temperature												Precipitation							Wind					No. of days (sunrise to sunset)			Sky cover, tenths (sunrise to sunset)	Possible sunshine
												No of days							No. of days		Snow, Sleet				Fastest mile							
		Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F or above	Min 32° F or below	Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max. depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy		
	Ft	Mb	Mb	°F	°F	°F	°F	°F		°F				°F.	%	In.	In.	In			In.	In.	M p. h.		M. p. h.			0–3	4–7	8–10	0–10	%
IOWA																																
Burlington	694	991.9	1017.7	75	52	63.6	-3.1	88	19	40	28+	0	0	52	70	2.27	-1.86	1.58	7	1	0.0	0	8.2	S	33	W	3	14	7	9	4.2	76
Des Moines	948	986.5	1017.7	73	51	62.0	-3.8	89	1	40	28	0	0	52	73	1.79	-1.85	.72	10	4	.0	0	10.1	S	52	NW	19	12	9	9	4.9	64
Dubuque	1065	991.9	1017.5	70	49	59.5	-2.8	85	1	33	27	0	0	49	69	1.33	-2.85	1.00	6	0	.0	0	---	---	--	---	--	11	10	9	4.9	--
Sioux City	1094	975.6	1016.9	72	51	61.6	-2.8	90	1	42	16+	1	0	50	70	5.09	1.85	1.83	8	6	.0	0	11.6	SSE	66	S	17	14	8	8	4.9	67
Waterloo	870	------	------	71	49	59.9	-3.3	87	1	34	28+	0	0	--	--	1.18	-3.34	.56	10	1	.0	0	8.8	---	--	---	--	--	--	--	---	--
KANSAS																																
Concordia (U)	1375	966.5	------	77	55	65.6	-3.9	93	1	47	22	1	0	--	67	2.07	-.39	1.55	7	7	.0	0	6.3	S	21	SE	17+	17	4	9	3.5	77
Dodge City	2594	928.9	1015.9	78	54	65.7	-4.2	93	3	46	22+	2	0	49	63	3.76	2.05	1.96	7	7	.0	0	14.3	SSE	45	N	13	17	4	9	3.9	75
Goodland	3645	889.6	1015.4	78	44	61.4	-3.2	91	29	32	22	2	1	43	57	.31	-1.06	.25	6	3	.0	0	10.2	S	*29	NW	18	16	8	6	3.4	--
Topeka	877	981.4	1017.3	77	53	65.0	-4.0	91	1	38	29	1	0	55	73	5.11	1.67	1.57	8	6	.0	0	8.0	ENE	31	N	6	15	5	10	4.4	70
Wichita	1321	967.8	1016.2	77	55	66.1	-5.6	95	1+	46	30	2	0	55	69	5.05	1.82	2.05	9	10	.0	0	9.7	SSE	34	W	14	16	5	9	4.1	76
KENTUCKY																																
Lexington	979	982.0	1017.6	79	60	69.4	-.1	96	1	43	28	3	0	59	74	3.18	.35	1.30	9	3	.0	0	9.6	S	--	---	--	7	7	16	6.7	--
Louisville	474	997.7	1017.0	79	60	69.9	-.3	95	1	45	28	2	0	59	72	2.80	.10	1.72	9	0	.0	0	8.5	NE	23	SW	2+	7	10	13	6.5	62
LOUISIANA																																
Baton Rouge	64	1011.5	1014.7	84	68	76.0	-1.5	95	6	58	25+	9	0	68	82	6.48	2.16	3.60	9	8	.0	0	8.1	N	--	---	--	2	7	21	8.2	--
Lake Charles	12	1012.5	1012.6	84	69	76.7	-1.9	92	2+	60	29	9	0	69	82	6.35	1.82	3.19	12	5	.0	0	6.9	NNE	*20	S	12+	4	9	17	7.3	--
New Orleans (U)	9	1011.9	------	83	72	77.6	-2.7	92	7	59	29	5	0	--	--	10.90	5.08	6.63	16	10	.0	0	5.8	---	22	E	18+	1	10	19	7.9	36
New Orleans	3	1011.9	1013.9	83	71	76.7	-2.8	91	7	60	29	3	0	70	84	10.21	5.15	5.46	14	8	.0	0	6.7	NE	*25	ENE	18	0	11	19	8.0	--
Shreveport	252	1006.1	1015.2	84	65	74.6	-4.2	95	21	56	24+	8	0	64	76	4.17	1.95	2.39	9	4	.0	0	7.8	NNE	--	---	--	6	10	14	6.4	63
MAINE																																
Caribou	624	991.4	1014.9	65	46	55.5	2.3	78	4	33	27+	0	0	49	81	3.79	.29	1.47	15	2	.0	0	9.9	WSW	*46	W	27	4	10	16	7.1	--
Portland	61	1013.4	1017.2	73	48	60.3	1.7	86	3+	27	29	0	3	52	77	1.02	-2.06	.41	9	2	.0	0	9.7	S	28	W	5+	9	6	15	6.0	59
MARYLAND																																
Baltimore (U)	14	------	------	80	66	73.0	2.6	94	3	45	28	5	0	--	--	7.77	4.31	4.55	8	--	---	--	---	---	--	---	--	--	--	--	---	--
Baltimore	146	1014.0	1018.9	78	61	69.6	1.7	93	3	39	27	2	0	61	77	5.63	2.17	2.42	11	4	.0	0	9.5	S	29	W	10	4	8	18	7.2	47
Frederick	294	------	------	77	58	67.5	-1.0	91	2+	35	27+	4	0	--	--	5.27	1.71	1.71	12	1	.0	0	---	---	--	---	--	--	--	--	---	--
MASSACHUSETTS																																
Blue Hill Obs.(R)	629	994.6	1017.8	75	55	64.0	2.8	91	13	33	27	1	0	--	69	.97	-2.80	.54	7	0	.0	0	13.6	WNW	32	WNW	26	8	5	17	6.4	55
Boston	15	1012.6	1017.1	76	59	67.3	3.0	93	13	40	27+	1	0	54	67	.35	-2.64	.16	8	0	.0	0	12.0	SW	*43	NNW	13	9	15	6	6.1	69
Nantucket	43	1018.0	1018.6	71	58	64.1	2.1	79	14	44	27	0	0	58	81	2.37	-1.00	.93	8	3	.0	0	11.9	SSW	31	NW	26	10	4	16	6.4	67
Pittsfield	1153	975.2	------	71	48	59.2	.9	84	13	28	27	0	2	--	--	4.31	.08	2.10	11	2	.0	0	---	---	--	---	--	--	--	--	---	--
Worcester	986	981.8	------	72	52	62.4	1.3	89	13	30	27	0	2	--	--	.83	-2.78	.35	8	1	.0	0	12.1	---	*30	SW	3+	9	7	14	6.1	--
MICHIGAN																																
Alpena (U)	587	994.2	------	66	48	57.2	-1.2	87	2	33	27	0	0	--	73	2.90	-.30	.77	15	3	.0	0	8.8	---	28	W	23	11	7	12	5.5	57
Detroit	619	990.9	1017.8	72	53	62.9	-1.4	88	2	35	28	0	0	52	72	2.91	.13	1.11	11	3	0	0	9.2	SW	45	WSW	23	13	5	12	5.0	60
Detroit (Willow Run)	722	988.8	1017.1	73	53	63.1	-1.2	87	2	36	27+	0	0	52	72	2.00	-1.02	.68	8	2	.0	0	9.5	SW	*28	WNW	23	14	6	10	4.9	--
East Lansing (U)	856	------	------	73	50	61.6	-.2	89	1	33	27	0	0	--	--	1.08	-1.97	.27	9	0	.0	0	3.7	W	13	W	23	--	--	--	---	65
Escanaba (U)	594	993.6	------	63	47	55.3	-2.1	74	2	30	27	0	1	--	80	3.27	.15	1.29	11	4	.0	0	9.0	---	42	N	3	11	10	9	5.2	62
Flint	761	989.5	1017.5	71	47	59.2	-2.4	85	1+	27	27+	0	4	51	78	.94	-2.54	.40	9	0	.0	0	6.6	SW	*26	W	23	13	9	8	4.8	--
Grand Rapids	681	992.2	1017.4	71	49	59.6	-2.3	89	1	32	27+	0	2	51	75	3.43	-.01	2.01	11	2	.0	0	8.7	WSW	32	W	3	12	8	10	5.0	64
Marquette (U)	677	988.2	------	65	49	56.8	-1.0	85	1	34	27	0	0	--	70	4.37	.94	1.60	12	3	T	T	8.5	---	26	S	29	5	12	13	6.5	57
Muskegon	627	993.9	1017.4	69	50	59.2	-2.1	87	1	31	28	0	1	51	73	1.45	-1.89	.70	8	2	.0	0	---	---	--	---	--	13	8	9	4.7	--
Sault Ste. Marie	721	993.2	1016.3	63	46	54.4	-.8	81	2	29	28	0	2	48	82	3.31	-.18	1.59	14	2	.0	0	9.0	WNW	32	WNW	23	8	8	14	6.4	49
MINNESOTA																																
Duluth	1409	974.3	1015.8	63	42	52.6	-2.8	80	1	28	20+	0	4	45	79	2.98	-.24	.82	15	4	.0	0	11.4	WNW	33	E	18	8	8	14	6.2	55
Intern'l. Falls	1179	972.9	1014.8	63	39	51.0	-2.3	78	1	22	26	0	8	43	77	3.47	.67	2.00	16	4	.0	0	11.0	W	*25	NW	8	6	9	15	6.5	--
Minneapolis	830	985.4	1016.9	69	50	59.4	-2.8	90	1	38	26+	1	0	48	71	1.65	-1.20	.55	9	2	.0	0	10.9	S	33	W	3	11	10	9	5.0	63
Rochester	1017	979.3	1016.9	70	48	58.8	-2.0	88	1	30	27	0	1	47	66	1.44	-2.61	.55	11	5	.0	0	8.7	S	--	---	--	10	12	8	4.9	--
St. Cloud	1034	977.7	1015.9	67	45	56.3	-2.5	81	1	32	20+	0	2	47	76	3.88	.88	2.07	9	3	.0	0	---	---	--	---	--	10	10	10	5.3	--
MISSISSIPPI																																
Jackson	305	1003.5	1015.5	81	65	73.3	-3.4	93	2	53	25	7	0	66	83	8.29	6.19	2.85	17	6	.0	0	6.3	NE	32	NE	18	2	7	21	7.9	34
Meridian	294	1002.3	------	83	65	74.3	-1.6	95	3+	54	25+	12	0	--	--	10.24	7.63	3.32	15	7	.0	0	---	---	--	---	--	3	9	18	7.6	--
Vicksburg (U)	234	1005.9	------	80	66	72.9	-4.1	90	2+	57	29	3	0	--	--	4.97	3.20	1.17	18	7	.0	0	7.5	---	25	NE	18	3	7	20	7.8	26
MISSOURI																																
Columbia	778	988.5	1017.2	79	54	66.7	-2.0	91	19	38	29	2	0	53	68	1.45	-3.17	1.11	6	1	.0	0	7.3	ENE	35	N	2	13	6	11	4.7	66
Kansas City	741	982.7	1017.5	78	58	67.9	-2.7	94	1	45	29	2	0	53	64	5.26	1.41	3.73	8	2	.0	0	8.5	NE	35	NW	2	14	7	9	4.3	74
St. Joseph	809	981.7	------	76	54	64.8	-5.1	91	1	41	29	1	0	--	--	3.21	-1.08	1.21	8	5	.0	0	8.6	N	*24	WNW	3+	16	6	8	4.0	--
St. Louis (U)	465	------	------	78	61	69.6	-1.8	89	3	45	28	0	0	--	--	.80	-2.58	.38	4	1	.0	0	7.1	SW	22	SW	3+	11	6	13	5.4	57
St. Louis	552	996.6	1017.2	79	58	68.4	-2.0	89	1+	42	29	0	0	55	66	.88	-2.66	.65	4	2	.0	0	7.7	ENE	--	---	--	11	6	13	5.1	--
Springfield	1265	969.5	1017.0	77	56	66.2	-2.9	90	3	40	29	1	0	56	73	3.18	-.68	1.35	10	4	.0	0	9.1	S	31	N	6	12	8	10	4.7	73
MONTANA																																
Billings	3568	893.3	1016.7	72	47	59.3	-.7	92	7	32	18+	1	2	42	56	1.24	-.08	.78	8	2	5.6	1	10.6	SW	32	NE	17	10	9	11	5.2	73
Butte	5530	832.4	1019.2	68	34	51.0	1.0	85	7	21	18+	0	12	35	--	1.02	-.18	.45	8	3	5.0	5	6.4	SSE	*31	NW	3	11	9	10	5.0	--
Glasgow (U)	2277	941.4	1015.8	71	45	57.7	.5	91	7	28	19	1	2	--	57	.51	-.71	.22	9	2	.4	T	---	---	--	---	--	10	8	12	5.8	--
Great Falls	3664	889.9	1016.2	71	48	59.3	2.4	91	7	26	19	1	2	36	46	1.68	.24	.78	7	1	3.6	1	12.6	SW	56	W	7	11	9	10	5.0	86
Havre (U)	2488	927.9	1016.6	72	45	58.5	1.5	96	7	28	19	1	2	--	--	.98	-.17	.71	8	2	.7	T	7.6	---	32	NW	7	9	11	10	5.3	73
Helena	3893	875.7	1017.4	71	41	56.2	1.3	92	7	27	18+	1	2	37	55	1.85	.69	1.42	10	3	13.4	9	6.9	SW	40	SW	3	10	10	10	4.8	66
Kalispell	2965	------	------	73	38	55.4	.9	86	6+	27	19	0	5	--	--	.20	-1.10	.15	4	1	T	0	---	---	--	---	--	13	12	5	4.4	--
Miles City	2629	932.3	1016.6	73	45	59.3	-1.1	92	7	36	14+	1	0	41	--	.58	-.62	.39	4	1	.0	0	9.6	NW	*29	W	1	8	13	9	5.3	--
Missoula	3200	903.5	1017.6	76	42	59.2	3.4	90	6	33	10+	1	0	37	48	.21	-.86	.14	4	1	T	0	5.3	SE	38	N	11	14	7	9	4.4	78
NEBRASKA																																
Grand Island	1841	950.6	1016.5	73	50	61.6	-5.2	85	1	40	22	0	0	50	72	3.36	.79	1.66	7	5	.0	0	11.9	S	--	---	--	15	7	8	4.2	--
Lincoln (U)	1166	------	------	75	54	64.4	-3.7	92	1	45	16+	1	0	--	--	1.55	-1.37	.82	7	2	.0	0	9.4	NE	49	SW	1	20	2	8	3.5	74
Norfolk	1544	961.1	1016.6	73	50	61.1	-3.4	90	1	39	20+	1	0	50	67	4.91	2.14	2.47	8	5	.0	0	---	---	--	---	--	13	6	11	5.0	--
North Platte	2779	917.4	1015.8	73	45	59.2	-4.6	85	30	33	22	0	0	48	70	2.68	.93	1.18	7	6	.0	0	9.1	SSE	38	NE	9	15	8	7	3.9	67
Omaha	978	977.3	1017.2	74	53	63.4	-3.6	88	1	43	16	0	0	53	73	2.44	-.72	.86	9	5	.0	0	9.0	SSE	36	N	19	15	6	9	4.3	65
Omaha,N.Omaha AP	1323	968.8	------	71	51	61.2	-4.0	87	1	43	28	0	0	--	--	3.41	.25	.98	9	4	.0	0	---	---	--	---	--	15	6	9	4.6	--
Scottsbluff	3950	880.8	1016.0	75	43	58.9	-3.3	91	28	31	22	1	1	42	60	.30	-.99	.08	7	3	.0	0	9.4	WNW	*27	NNE	8+	15	6	9	4.0	--
Valentine (U)	2587	924.8	------	74	45	59.2	-2.4	87	28+	33	22	0	0	--	--	1.70	.50	1.03	4	4	.0	0	9.7	---	37	NE	18	14	11	5	4.0	77
NEVADA																																
Elko	5075	845.9	1015.3	80	35	57.3	-.5	92	6+	21	20	3	11	26	34	.24	-.15	.16	2	2	.0	0	5.6	SW	*22	S	27	19	8	3	2.8	--
Ely	6257	810.7	1015.9	77	35	56.4	-1.4	88	7	21	20	0	8	23	30	.02	-.66	.02	1	0	.0	0	10.5	S	54	S	5	19	9	2	2.7	84
Las Vegas	2162	945.1	1009.4	96	65	80.1	-.6	108	8	55	21+	25	0	33	20	T	-.34	T	0	0	.0	0	8.4	SW	*29	SW	17	24	5	1	1.6	96
Reno	4397	862.2	1014.7	82	41	61.5	1.0	95	7	32	20	3	1	36	46	.61	.39	.46	3	4	.0	0	5.5	SW	37	WNW	29	20	8	2	2.5	94
Winnemucca	4299	867.6	1013.9	83	38	60.1	.2	95	6+	22	20	4	5	28	32	.26	-.08	.20	3	3	.0	0	7.2	NE	40	S	29	19	7	4	2.9	85
NEW HAMPSHIRE																																
Concord	339	1006.7	1017.5	75	47	61.4	2.6	89	16	28	29	0	3	52	74	2.56	-.83	.77	10	4	.0	0	6.5	NW	24	NW	26	9	8	13	5.9	57

See footnotes at end of table.

CLIMATOLOGICAL DATA

SEPTEMBER 1957

State and station	Elevation (ground) Ft.	Pressure ø Station Mb.	Pressure Sea level Mb.	Temperature Average maximum °F	Temperature Average minimum °F	Temperature Average °F.	Temperature Departure from normal °F.	Temperature Highest °F.	Temperature Date	Temperature Lowest °F	Temperature Date	Temperature No. of days Max. 90° F. or above	Temperature No. of days Min. 32° F. or below	Temperature Average dew point °F.	Average relative humidity %	Precipitation Total In.	Precipitation Departure from normal In.	Precipitation Greatest in 24 hours In.	Precipitation No. of days .01 inch or more	Precipitation No. of days With thunderstorms	Snow, Sleet Total In.	Snow, Sleet Max. depth on ground In.	Wind Average hourly speed M. p. h.	Wind Prevailing direction	Wind Fastest mile Speed M. p. h.	Wind Fastest mile Direction	Wind Fastest mile Date	No. of days (sunrise to sunset) Clear 0–3	No. of days (sunrise to sunset) Partly cloudy 4–7	No. of days (sunrise to sunset) Cloudy 8–10	Sky cover, tenths (sunrise to sunset) 0–10	Possible sunshine %
NEW HAMPSHIRE (Cont'd.)																																
Mt. Washington	6262	808.7	------	47	37	42.0	0.9	60	22	12	28	0	8	--	90	5.58	-0.98	1.69	13	1	T	T	30.1	W	†100	WNW	27	5	2	23	8.0	38
NEW JERSEY																																
Atlantic City (U)	8	1016.1	------	75	65	69.6	1.3	84	3	43	27+	0	0	--	--	2.14	-1.37	.83	8	2	.0	0	15.1	---	35	S	23	9	10	11	5.8	58
Newark	11	1017.1	1018.5	79	60	69.5	2.7	93	3+	39	28	4	0	57	68	3.80	-.09	1.45	12	6	.0	0	8.9	SSW	*29	NW	2	9	2	19	6.3	--
Trenton (U)	56	1011.2	1017.9	77	61	69.0	2.0	92	3	40	27+	2	0	--	--	2.11	-1.64	.80	8	6	.0	0	7.9	---	25	E	18	9	5	16	6.1	53
NEW MEXICO																																
Albuquerque	5310	849.3	1011.7	85	56	70.3	.4	92	9	47	23	3	0	35	31	T	-1.05	T	0	2	.0	0	6.9	S	40	E	22	20	6	4	2.8	90
Clayton	4969	847.3	1014.2	79	48	63.4	-2.5	88	5	42	19+	0	0	--	--	.33	-1.54	.18	3	4	.0	0	---	---	--	---	--	20	6	4	2.8	--
Raton	6379	809.0	1015.2	77	43	60.3	-.5	84	4+	33	24	0	0	--	--	.05	-1.96	.05	1	5	.0	0	---	---	--	---	--	17	9	4	3.6	--
Roswell	3612	893.7	1012.5	88	53	70.4	-.9	96	5	43	25	13	0	46	46	1.18	-.82	1.15	2	4	.0	0	9.0	---	40	W	9	22	5	3	2.6	--
NEW YORK																																
Albany	277	1013.5	1017.5	75	50	62.3	.7	88	3+	30	27	0	3	52	74	1.61	-1.54	.94	9	0	.0	0	7.0	S	31	NW	27	8	7	15	6.4	45
Binghamton	1601	959.4	1018.6	71	50	60.6	.8	84	3+	31	27	0	1	50	72	2.69	-.57	1.50	11	3	.0	0	9.5	WNW	33	SW	4	6	11	13	6.4	60
Buffalo	693	989.6	1017.8	72	53	62.4	.0	84	2	32	28	0	1	53	74	3.84	.83	.82	11	4	.0	0	9.9	S	47	W	23	9	10	11	5.8	62
New York (U)	10	1017.1	------	76	63	69.3	2.0	88	3+	43	27	0	0	--	--	2.25	-1.42	1.08	10	4	.0	0	---	---	40	NW	26	10	6	14	5.9	65
New York	19	1016.4	1018.5	78	63	70.3	1.9	92	13	44	27	2	0	57	65	4.40	.85	2.41	12	4	.0	0	11.4	SSW	37	W	4	9	6	15	6.0	--
Rochester	543	998.9	1017.4	73	50	61.2	-.8	85	12	31	27+	0	2	52	77	2.46	-.20	.73	11	3	.0	0	11.0	SW	37	SW	3	8	9	13	5.9	60
Schenectady	217	------	------	74	53	63.5	1.7	88	22	35	27+	0	0	--	--	.99	-2.27	.43	9	0	.0	0	---	---	--	---	--	16	9	5	3.9	--
Syracuse	424	996.1	1018.3	73	52	62.6	-.8	88	21	33	28	0	0	53	73	2.28	-.63	.86	13	2	.0	0	9.5	S	37	NW	26	7	12	11	6.1	59
NORTH CAROLINA																																
Asheville (U)	2203	939.4	------	78	60	69.0	1.1	90	1+	42	28	2	0	--	--	4.26	1.54	1.28	19	9	.0	0	7.3	---	26	SE	27	5	6	19	7.4	46
Cape Hatteras (R)	9	1017.3	1017.8	83	70	76.3	1.0	88	4+	52	26	0	0	69	79	4.04	-2.05	2.23	13	4	.0	0	10.2	SSW	37	E	30	11	8	11	5.6	64
Charlotte	725	990.3	1018.2	83	64	73.4	.8	99	1	48	28+	7	0	65	81	4.74	1.09	1.48	11	4	.0	0	7.9	NNE	27	NE	28	4	9	17	7.4	46
Greensboro	891	987.3	1019.1	80	62	71.0	.3	94	2+	45	29	3	0	64	83	5.27	1.61	1.13	15	7	.0	0	8.0	NE	29	NE	29	4	9	17	7.2	52
Raleigh	433	1004.5	1018.3	81	64	72.4	-.2	92	3	48	28+	4	0	66	85	4.58	.09	2.15	12	4	.0	0	7.0	S	*20	NNE	30	4	6	20	7.5	57
Wilmington	30	1016.4	------	85	68	76.5	1.1	94	3	53	25	10	0	--	--	13.25	7.30	6.15	14	4	.0	0	9.9	---	40	NE	29	5	15	10	6.3	60
Winston-Salem	967	983.4	1018.6	80	63	71.1	.2	95	3	44	29	3	0	63	80	6.33	2.84	1.82	16	4	.0	0	9.9	NE	39	NNE	29	7	4	19	7.0	--
NORTH DAKOTA																																
Bismarck	1650	956.0	1016.2	70	42	56.1	-2.4	84	28+	27	26	0	1	43	65	.74	-.69	.35	9	0	T	T	10.6	WNW	36	NW	15	8	11	11	5.9	62
Devils Lake (U)	1471	961.7	------	64	43	53.6	-2.7	79	29	26	26	0	5	--	72	2.26	.19	.94	13	3	.0	0	7.8	S	29	W	14	8	12	10	5.7	54
Fargo	895	981.4	1016.2	66	46	56.1	-2.8	83	29	28	26	0	2	47	75	6.13	4.41	3.97	12	3	T	0	14.3	S	47	W	2	9	8	13	6.1	50
Williston (U)	1877	948.2	1016.0	69	46	57.3	.1	87	28	28	19	0	1	42	60	.71	-.50	.28	7	0	.0	0	7.1	NW	31	NW	14	5	13	12	6.5	60
OHIO																																
Akron	1210	980.6	1018.8	74	52	62.7	-1.9	91	2	33	27	1	0	54	78	3.33	-.30	1.34	9	2	.0	0	8.6	S	--	---	--	7	10	13	6.3	--
Cincinnati Obs.	761	------	------	78	58	68.2	-.7	95	1	40	28	2	0	--	--	3.67	.70	2.06	11	2	.0	0	5.2	---	18	SW	2	--	--	--	---	55
Cincinnati	869	985.7	1017.6	77	57	67.3	.0	93	1	41	28	2	0	56	71	3.20	.23	1.55	9	1	.0	0	8.7	NE	23	WSW	2	3	9	18	7.5	--
Cleveland (U)	787	989.8	1017.8	74	55	64.9	-.6	92	2	40	28	1	0	55	73	2.62	-.51	.72	10	0	.0	0	11.6	S	33	W	23	10	7	13	5.9	58
Columbus (U)	724	------	------	77	57	67.0	-.8	94	1	41	27+	2	0	--	--	2.75	.17	1.31	8	4	.0	0	---	---	--	---	--	--	--	--	---	--
Columbus	815	988.1	1018.2	78	55	66.4	-.1	95	1	37	27	2	0	56	72	2.99	.08	1.06	10	3	.0	0	6.9	SSW	29	SW	2	7	9	14	6.4	62
Dayton	1002	981.7	1017.9	76	56	65.9	-1.0	92	1	39	28	2	0	54	68	2.75	-.05	.75	9	3	.0	0	9.2	SSW	40	W	2	7	10	13	6.5	59
Sandusky (U)	603	995.3	------	73	56	64.9	-1.6	92	2	41	24+	1	0	--	--	3.93	.67	1.24	11	2	.0	0	7.0	---	26	W	2	12	11	7	4.4	67
Toledo	676	992.3	------	74	52	62.9	-1.3	91	1	34	28	1	0	--	--	2.17	-.85	.61	12	3	.0	0	8.1	---	38	SW	3	13	5	12	5.2	60
Youngstown	1178	976.2	1018.9	74	51	62.3	-2.4	90	2	29	27	1	2	52	75	2.64	-.94	.97	10	0	.0	0	10.0	SW	*24	NNW	22	9	10	11	6.2	--
OKLAHOMA																																
Oklahoma City	1280	972.6	1015.9	81	58	69.3	-4.7	97	2	48	8+	4	0	58	71	5.58	2.15	3.61	7	7	.0	0	10.4	SSE	43	NW	14	11	12	7	4.9	70
Tulsa	672	991.9	1016.1	82	60	70.9	-2.9	99	3	47	30	4	0	58	69	5.33	1.08	2.30	7	7	.0	0	5.8	N	34	N	6	11	9	10	5.0	58
OREGON																																
Astoria	8	1014.9	1015.4	73	51	62.0	1.7	91	13	42	19	1	0	55	78	.82	-2.22	.20	9	0	.0	0	5.4	SE	*21	SW	30	13	7	10	5.2	--
Burns (U)	4140	874.0	1015.2	80	43	61.3	3.0	93	6	32	20	1	1	34	39	.60	.17	.57	2	1	.0	0	---	---	--	---	--	22	2	6	2.6	--
Eugene	361	1001.4	1014.9	80	49	64.8	3.9	95	13	38	19+	5	0	--	--	1.03	-.57	.92	3	1	.0	0	7.6	---	*26	WSW	14	14	6	10	4.6	--
Meacham	4050	------	------	72	46	59.2	3.5	86	6+	28	19	0	2	--	--	1.11	-.35	.44	4	1	.0	0	---	---	--	---	--	15	9	6	4.2	--
Medford	1312	966.8	1014.0	85	50	67.4	3.0	96	9+	38	19	16	0	46	53	.80	.15	.79	3	3	.0	0	4.5	WNW	*32	SE	26	19	5	6	3.4	--
Pendleton	1492	962.1	1015.2	80	52	66.3	1.7	92	6	34	19	2	0	42	45	.71	.00	.43	3	2	.0	0	8.4	SE	*30	WNW	26	17	7	6	3.6	--
Portland	21	1009.5	1015.0	79	51	65.3	3.0	92	14	39	19+	3	0	52	64	.49	-1.35	.42	2	0	.0	0	7.0	WNW	23	SE	26	13	7	10	4.8	74
Roseburg	505	995.6	1013.9	81	49	65.4	3.6	98	22	38	19	8	0	--	--	1.98	.87	.98	5	2	.0	0	4.5	---	20	S	27	14	6	10	4.5	73
Salem	195	1007.1	1014.7	82	49	65.3	2.9	95	13	38	19	5	0	50	64	.96	-.53	.74	4	2	.0	0	6.9	S	*25	NNE	13	14	6	10	4.7	--
Sexton Summit(R)	3836	------	------	73	54	63.7	3.9	86	14	45	19+	0	0	--	--	2.45	1.28	2.07	4	1	.0	0	---	---	--	---	--	17	5	8	3.6	--
PENNSYLVANIA																																
Allentown	376	1004.7	1019.0	77	55	65.9	1.2	90	3	33	27	1	0	56	75	2.06	-1.41	.90	8	6	.0	0	7.7	SSW	--	---	--	9	5	16	6.3	--
Erie	732	------	------	71	53	61.8	-1.4	85	2	33	27	0	0	--	--	4.63	1.24	.89	11	3	.0	0	10.9	---	*28	SSE	10	9	10	11	5.6	--
Harrisburg	335	1004.7	1018.5	78	58	67.8	1.7	91	2+	34	28	2	0	55	69	2.19	-.44	1.05	9	4	.0	0	5.2	WSW	25	W	2+	6	7	17	6.8	52
Philadelphia (U)	26	------	------	79	63	70.9	1.6	92	3	44	27+	2	0	--	--	2.71	-.72	.78	8	--	---	--	---	---	--	---	--	--	--	--	---	--
Philadelphia	10	1013.9	1018.3	78	60	69.2	1.5	94	3	37	28	2	0	60	76	3.10	-.36	.92	9	4	.0	0	8.4	SW	33	NW	23	7	7	16	6.7	60
Pittsburgh (U)	749	------	------	77	58	67.5	-.4	92	2	37	27+	1	0	--	--	3.19	.42	1.50	7	--	.0	--	---	---	--	---	--	--	--	--	---	50
Pittsburgh	1151	987.9	1018.7	75	55	64.8	-.1	90	2	34	27	1	0	54	71	4.06	1.09	1.64	10	3	.0	0	7.8	WSW	*25	W	4	5	9	16	7.0	71
Reading (U)	266	1006.3	1018.0	78	59	68.8	1.7	91	3	38	27+	3	0	--	--	2.56	-.72	1.55	9	4	.0	0	8.8	---	38	SW	4	5	6	19	6.8	42
Scranton	940	985.0	1019.4	74	51	62.6	-.6	87	2+	30	28	0	2	51	71	2.18	-1.04	.87	12	4	.0	0	8.0	WSW	38	SW	4	8	8	14	6.2	56
Shippingport (U)	736	------	------	75	52	63.8	----	91	2	31	27	1	2	--	--	2.42	----	1.41	7	3	.0	0	1.9	---	†24	W	3	--	--	--	---	--
Williamsport	527	999.6	------	76	53	64.5	-.1	90	2	34	27+	1	0	--	--	3.80	.47	2.34	11	--	.0	0	---	---	--	---	--	8	9	13	6.3	--
RHODE ISLAND																																
Block Island	110	1013.4	1017.7	71	59	65.1	1.6	78	1	43	27+	0	0	--	--	1.58	-1.40	.62	10	2	.0	0	---	---	--	---	--	8	9	13	6.1	--
Providence	55	1011.9	1017.9	75	55	64.8	2.1	91	13	35	29	1	0	54	72	.87	-2.32	.39	7	0	.0	0	10.9	SSW	27	S	16	9	7	14	6.1	62
SOUTH CAROLINA																																
Charleston (U)	9	------	------	84	73	78.5	.8	96	1	59	28	3	0	--	--	9.25	3.94	3.74	12	--	.0	0	9.3	---	28	N	28	--	--	--	---	73
Charleston	41	1015.3	1017.3	84	67	75.9	-.4	95	3	52	26	4	0	70	87	8.44	2.97	3.37	15	8	.0	0	8.8	NNE	--	---	--	5	8	17	7.1	--
Columbia	217	1008.5	1016.9	86	67	76.3	.4	100	1	49	26	14	0	67	79	6.74	2.32	2.34	14	5	.0	0	6.9	S	*23	SW	6	3	12	15	7.1	49
Florence	146	1012.0	------	85	67	76.0	.7	98	3	51	28	13	0	--	--	9.03	4.75	4.70	14	8	.0	0	---	---	--	---	--	7	7	16	6.8	--
Greenville	1018	980.4	1017.4	81	64	72.4	-.7	97	1+	45	28	5	0	64	80	7.09	3.50	1.90	12	5	.0	0	8.9	NE	33	E	28	3	9	18	7.8	44
Spartanburg	801	------	------	81	64	72.5	-.7	96	1+	45	28	5	0	--	--	8.23	4.55	2.40	15	3	.0	0	7.9	---	23	NW	1+	--	--	--	---	--
SOUTH DAKOTA																																
Huron	1282	968.8	1016.0	73	46	59.3	-3.5	86	1	35	16	0	0	49	73	1.69	-.04	1.24	7	3	.0	0	10.4	S	39	W	2	9	13	8	5.1	77
Rapid City	3165	902.8	1016.5	73	45	59.2	-1.3	91	28	32	19	1	1	38	50	.69	-.49	.32	6	3	T	0	10.3	NNW	41	NW	8	9	11	10	4.9	73
Sioux Falls	1420	965.1	1016.5	70	48	59.1	-3.3	84	1	35	16	0	0	48	69	2.66	-.27	.90	7	4	.0	0	9.5	SSE	*35	W	2	8	13	9	5.8	--
TENNESSEE																																
Bristol	1519	963.9	------	80	60	70.2	1.7	93	1+	44	28	2	0	--	--	5.05	2.26	1.50	16	3	.0	0	---	---	--	---	--	5	7	18	7.3	--
Chattanooga	670	989.2	1016.7	82	63	72.7	.2	100	1	48	25	7	0	63	80	12.19	9.50	4.35	16	7	.0	0	6.5	NNE	57	SW	14	5	5	20	7 4	47
Knoxville	950	981.9	1017.4	82	64	72.7	.6	97	1	49	25	3	0	63	76	6.98	4.45	1.93	20	6	0	0	5.3	NE	34	W	22	6	6	18	7.3	41
Memphis (U)	263	1001.6	1016.2	80	64	72.0	-2.3	91	4	53	24+	2	0	63	78	7 48	4.93	4.63	14	4	.0	0	7.1	NE	25	SW	21	4	7	19	7.6	45
Memphis	271	------	------	79	65	71.7	-3.1	87	2+	55	28	0	0	--	--	5.72	3.22	3.06	12	--	.0	0	---	---	--	---	--	--	--	--	---	--
Nashville	577	997.1	1017.1	81	64	72.5	-.7	95	1	52	24+	3	0	63	80	4.09	1.35	.96	15	5	.0	0	6.3	S	23	SW	11	4	8	18	7.3	43

See footnotes at end of table.

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure		Temperature								No. of days				Precipitation			No. of days		Snow, Sleet		Wind		Fastest mile			No. of days (sunrise to sunset)				
		Station Ø	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F. or above	Min. 32° F. or below	Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max. depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy	Sky cover, tenths (sunrise to sunset)	Possible sunshine
	Ft.	Mb.	Mb.	°F.	°F	°F.	°F.	°F.		°F.		#		°F.	%	In.	In.	In.			In.	In.	M. p. h.		M. p. h.			0–3	4–7	8–10	0–10	%
TENNESSEE (Cont'd.)																																
Oak Ridge (R)	905	985.4	------	83	65	73.6	2.8	98	1	51	24+	8	0	--	--	9.10	6.55	2.61	17	10	0.0	0	4.0	---	34	---	22	6	4	20	7.5	--
TEXAS																																
Abilene	1759	953.9	1014.2	85	62	73.5	-2.0	99	2	52	24	11	0	57	61	2.92	.32	1.41	6	6	.0	0	9.7	SSE	52	NW	11	15	9	6	4.2	--
Amarillo	3590	890.6	1014.7	80	53	66.4	-2.9	91	4	44	23	1	0	48	58	.88	-1.40	.42	4	5	.0	0	10.9	S	39	NE	6	17	6	7	3.5	78
Austin	615	993.2	1014.6	88	66	77.0	-2.3	101	2	56	9+	17	0	64	69	6.43	2.37	3.07	8	5	.0	0	8.2	N	*25	NE	2	13	11	6	4.5	79
Brownsville	16	1010.2	1012.8	90	72	80.9	-.5	94	1+	64	29+	17	0	70	74	1.34	-3.79	.78	7	4	.0	0	12.1	SE	31	S	21	11	13	6	4.8	61
Corpus Christi	41	1011.9	1013.0	88	71	79.5	-1.2	95	2+	58	30	16	0	69	74	2.42	-2.70	1.32	7	4	.0	0	9.7	SE	27	SE	21	12	10	8	4.7	81
Dallas	487	996.6	1015.1	87	65	76.0	-2.9	99	5	52	30	13	0	62	65	3.22	.51	2.35	6	4	.0	0	8.6	NE	38	S	21	13	9	8	5.0	68
Del Rio (U)	957	------	------	91	68	79.6	-.2	100	1+	59	8+	19	0	--	--	2.76	.25	1.18	5	2	.0	0	---	---	--	---	--	--	--	--	---	--
El Paso	3920	886.2	1011.9	87	62	74.5	-.4	95	5+	52	25+	12	0	43	35	.11	-1.02	.10	2	2	.0	0	10.1	SSE	32	W	1	23	3	4	2.4	91
Fort Worth	544	994.2	1014.8	86	65	75.1	-3.1	98	4	53	30	10	0	61	66	3.23	.54	2.40	4	4	.0	0	10.6	NNE	*40	NNE	6	13	11	6	4.6	--
Galveston (U)	7	------	------	83	74	78.1	-2.2	89	1+	64	28+	0	0	--	--	5.62	.18	1.99	10	--	.0	0	12.2	---	43	W	12	--	--	--	---	66
Galveston	5	1011.5	1014.0	83	74	78.5	-1.9	90	1+	65	28+	3	0	71	77	6.54	.72	2.27	11	8	.0	0	12.5	N	--	---	--	7	12	11	6.2	--
Houston (U)	41	1008.8	------	85	69	77.3	-2 7	97	2	58	30	10	0	--	--	9.37	5.72	3.20	10	6	.0	0	9.3	N	34	SE	3	7	13	10	6.0	70
Houston	50	1011.2	1013.9	85	69	76.9	-1.8	96	2	58	30	[illegible]	0	68	77	8.29	3.94	3.33	9	4	.0	0	10.6	ENE	--	---	--	7	11	12	6.3	--
Laredo	500	997.0	1012.2	94	73	83.2	-.3	103	2	63	24+	21	0	64	59	2.91	-.25	2.10	5	2	.0	0	11.8	SE	*31	NE	22	18	6	6	3.9	--
Lubbock	3243	904.2	1014.2	83	55	68.6	-2.6	93	2	44	15	6	0	53	62	.51	-2.34	.47	3	3	.0	0	10.5	NE	*40	NE	6	14	10	6	3.9	--
Midland	2854	916.0	1013.6	86	61	73.4	-1.9	99	14	53	28+	13	0	54	55	1.56	-.58	.69	9	9	.0	0	8.6	ESE	*27	N	6	17	8	5	3.6	--
Port Arthur	16	1012.9	1014.4	84	69	76.2	-1.7	93	2	60	28+	6	0	69	81	14.04	9.16	5.26	13	6	.0	0	10.3	N	40	S	12	2	14	14	7.1	38
San Angelo	1903	947.5	1014.0	86	62	73.6	-2.9	98	2	51	30	12	0	58	61	2.38	.08	.92	10	5	.0	0	9.3	S	*39	NE	3	16	10	4	3.6	--
San Antonio	792	990.2	1013.6	89	67	77.8	-1.6	99	2	55	30	17	0	63	65	11.10	7.73	5.21	6	6	.0	0	8.9	NNE	47	NE	12	17	8	5	4.0	76
Victoria	110	1008.5	1013.2	88	68	78.1	-2.7	96	2	57	30	18	0	66	70	5.11	1.42	3.40	6	3	.0	0	9.6	NNE	†37	N	12	12	10	8	4.9	--
Waco	500	993.2	1014.2	88	66	76.7	-2.2	101	2	53	30	13	0	63	65	5.77	2.80	4.65	5	4	.0	0	10.4	N	*25	WNW	11	11	12	7	5.0	--
Wichita Falls	1020	978.7	1014.8	87	60	73.7	-2.7	99	1+	46	30	9	0	57	61	1.71	-1.01	1.10	7	6	.0	0	7.8	SE	*23	NW	20	15	11	4	4.1	--
UTAH																																
Milford	5028	845.6	1016.9	83	40	61.4	-1.2	94	8	28	21+	5	4	--	--	T	-.40	T	0	1	.0	0	---	---	--	---	--	21	7	2	2.4	--
Salt Lake City	4220	868.3	1014.5	81	48	64.6	.4	92	6+	37	21+	7	0	35	38	.33	-.41	.33	1	0	.0	0	8.4	SE	27	NW	18	20	9	1	2.2	86
VERMONT																																
Burlington	331	996.9	1016.7	72	50	60.9	1.0	85	3+	33	29	0	0	50	72	3.27	.13	1.33	11	2	T	0	8.4	SSW	35	S	13+	7	7	16	6.2	60
VIRGINIA																																
Lynchburg	947	984.7	------	77	61	68.8	.0	91	1+	43	28	3	0	--	--	7.48	4.38	3.10	19	8	.0	0	7.2	---	29	SE	3	3	9	18	7.7	37
Norfolk	26	1016.8	1018.2	82	68	74.8	2.8	94	3	57	28	7	0	66	78	7.18	3.32	1.99	10	7	.0	0	10.3	NNE	59	S	4	3	14	13	6.6	54
Richmond	162	1012.7	1019.0	80	63	71.9	1.6	94	3	41	28	5	0	64	81	3.43	-.22	1.54	11	4	.0	0	7.2	S	19	SW	4+	2	12	16	7.4	48
Roanoke	1174	977.0	1019.1	77	60	68.5	-.6	93	1	43	25+	3	0	60	80	7.06	3.67	2.02	17	5	.0	0	5.7	NE	--	---	--	4	6	20	7.7	--
WASHINGTON																																
Olympia	190	1008.1	1015.6	77	48	62.6	4.5	91	23	34	19	1	0	50	68	.66	-1.14	.28	6	0	.0	0	4.7	NE	*30	S	27	10	13	7	4.6	--
Seattle (U)	14	------	------	75	56	65.6	4.6	85	13	47	19	0	0	--	--	.60	-.96	.36	7	0	.0	0	6.6	---	26	N	18	11	9	10	4.8	68
Seattle	14	1014.6	1015.9	--	--	----	---	--	--	--	--	--	--	51	66	--	----	----	--	--	---	--	5.6	S	--	---	--	--	--	--	---	--
Seattle-Tacoma	386	1002.0	1016.1	74	52	62.7	4.0	84	13	40	19	0	0	52	71	.76	-.89	.39	7	0	.0	0	10.8	N	*31	NNW	18	10	12	8	4.9	--
Spokane	2357	947.2	1015.8	76	49	62.8	3.6	88	6+	34	19	0	0	41	48	.68	-.25	.46	3	1	.0	0	6.5	NE	30	SW	7	13	8	9	4.8	79
Stampede Pass(R)	3958	881.1	1018.2	67	48	57.3	6.1	80	14	37	19	0	0	--	--	.92	-3.12	.34	7	0	.0	0	---	---	--	---	--	14	5	11	4.8	--
Tatoosh (R)	101	1012.5	1015.5	64	52	58.2	3.7	72	13	49	18+	0	0	54	86	2.87	-.77	2.21	7	0	.0	0	12.5	ENE	38	E	1	10	11	9	5.3	75
Walla Walla (U)	949	978.7	1013.9	80	55	67.9	2.6	92	5+	38	19	3	0	--	--	.97	.11	.48	3	1	.0	0	4.2	---	23	NE	18	16	7	7	3.9	89
Yakima	1061	976.3	1014.9	81	45	63.1	2.0	93	6	34	19	2	0	46	57	.98	.59	.74	4	0	.0	0	5.3	WNW	*23	NNW	16	17	5	8	3.9	--
WEST VIRGINIA																																
Charleston	950	982.4	1017.8	80	60	69.9	1.3	97	2	42	25+	3	0	57	69	3.51	.57	.72	14	4	.0	0	5.1	NE	23	SW	15	5	4	21	7.4	--
Elkins	1970	------	------	75	52	63.9	.9	89	2	27	28	0	2	56	--	2.38	-.90	.50	13	2	.0	0	3.3	SE	17	SSE	10	3	6	21	7.7	--
Huntington (U)	565	------	------	81	61	71.1	.6	98	1	45	25+	3	0	--	--	5.04	2.16	1.78	11	--	.0	0	---	---	--	---	--	--	--	--	---	--
Parkersburg (U)	615	------	------	79	59	69.0	.6	97	2	39	28	3	0	--	--	1.96	-1.03	.71	12	5	.0	0	5.3	---	23	NW	4	7	7	16	6.5	52
WISCONSIN																																
Green Bay	689	993.9	1016.7	68	45	56.8	-3.4	88	1	29	28	0	3	49	79	2.15	-.72	.76	8	3	.0	0	9.2	SW	40	S	19	12	10	8	4.7	64
La Crosse	652	991.9	1016.7	70	50	60.0	-2.3	89	1	34	27	0	0	50	69	1.86	-1.96	1.35	5	1	.0	0	7.5	SE	*21	SSW	24	9	15	6	5.2	--
Madison	857	985.8	1017.2	72	47	59.2	-2.9	90	1	28	28	1	1	49	73	.95	-3.04	.37	6	1	.0	0	9.0	SW	34	SW	3	14	9	7	4.5	68
Milwaukee	672	992.2	1017.4	70	50	59.5	-3.1	90	1	34	29	1	0	50	74	.88	-2.45	.39	8	2	.0	0	11.6	SSW	36	SW	3	13	11	6	4.5	73
WYOMING																																
Casper	5322	839.1	1015.4	71	42	56.2	-1.9	85	7+	31	19	0	2	35	51	1.08	-.14	.84	8	3	T	T	10.6	WSW	*35	WNW	1	15	5	10	4.5	--
Cheyenne	6131	814.4	1016.3	69	41	55.4	-2.0	83	29	28	22	0	2	35	54	.56	-.64	.25	6	4	T	T	11.8	WNW	38	NE	8	16	8	6	3.8	76
Lander	5563	837.8	1016.8	70	42	56.2	-1.3	85	3+	29	20	0	2	38	54	1.76	.53	.76	6	1	3.6	2	5.8	---	33	SW	16	13	9	8	4.4	77
Sheridan	3942	886.2	1016.9	72	42	56.8	-1.1	89	28	31	14	0	3	40	56	1.11	-.34	.38	8	3	T	T	8.1	NW	32	NW	8	11	9	10	5.0	73
PACIFIC AREA																																
Canton Island	9	1009.1	1009.4	90	78	83.9	-.5	92	1+	74	3+	17	0	75	77	4.34	3.65	2.01	7	1	.0	0	10.8	E	*32	NE	3	3	7	20	7.9	--
Guam (Taguac) (R)	361	------	------	88	72	79.7	---	95	19	68	16+	5	0	--	--	14.79	----	3.89	27	--	.0	0	---	---	--	---	--	--	--	--	---	60
Hilo	31	1012.9	1015.0	84	69	76.5	1.2	88	7	65	6	0	0	69	80	4.20	-6.22	.88	20	0	.0	0	8.5	WSW	*20	ESE	7+	6	13	11	6.1	51
Honolulu	7	1013.9	1014.4	86	73	79.8	.6	88	8+	67	16	0	0	68	69	.07	-1.07	.06	2	0	.0	0	12.6	ENE	27	NE	2+	12	8	10	5.3	76
Koror (R)	94	1006.4	1010.2	88	76	81.8	.7	91	4	72	28	3	0	76	84	16.12	2.81	2.95	21	7	.0	0	---	---	--	---	--	0	2	28	9.5	--
Lihue	115	1009.1	1014.7	85	72	78.5	.7	88	7	65	21	0	0	70	78	.46	-1.74	.18	9	0	.0	0	10.3	NE	24	NE	26	9	9	12	6.1	75
Majuro	10	1009.5	1009.8	86	77	81.7	---	88	1+	74	3+	0	0	76	83	12.52	----	2.92	20	3	.0	0	---	---	--	---	--	0	3	27	8.9	--
Ponape (R)	120	1004.7	1010.2	89	73	81.0	.9	92	24	72	3+	16	0	76	89	16.79	.83	2.46	26	3	.0	0	---	---	--	---	--	0	4	26	9.2	--
Truk, Moen Is.	8	1010.2	1010.6	87	76	81.1	.4	89	27	73	12+	0	0	77	86	12.39	-.22	2.92	25	1	.0	0	---	---	--	---	--	0	1	29	9.8	--
Wake Island	11	1012.5	1012.9	88	78	83.4	1.2	90	5+	73	2	5	0	75	77	5.17	-.31	1.46	16	1	.0	0	11.2	ENE	*31	ESE	8	13	10	7	4.9	--
Yap (R)	53	1007.8	1009.8	88	76	82.0	.2	92	3+	73	6+	11	0	77	86	17.60	3.44	3.93	25	3	.0	0	---	---	--	---	--	0	1	29	9.7	--
WEST INDIES																																
San Juan, P.R.(U)	47	------	------	86	76	81.1	.6	89	22	75	1+	0	0	--	--	3.21	-2.79	.76	16	11	.0	0	---	---	--	---	--	--	--	--	---	--
San Juan, P.R.	15	1011.4	1014.0	88	74	80.9	---	90	[illegible]	72	2+	1	0	74	81	4.53	----	1.48	21	7	.0	0	9.2	ENE	20	NE	5	0	17	13	7.0	56
Swan Island	31	1009.9	------	87	79	82.7	.0	89	1+	72	5	0	0	--	--	6.10	.02	2.39	12	7	.0	0	---	---	--	---	--	1	15	14	6.9	--
ALASKA																																
Anchorage	92	1003.7	1008.7	56	44	49.9	1.9	73	5	27	30	1	4	43	77	3.21	.50	.78	21	0	T	0	8.6	NNE	*28	S	18	1	7	22	8.5	33
Annette	110	1012.9	1017.0	64	52	57.7	4.6	72	17	44	24	3	0	51	83	7.51	-2.09	2.11	11	0	.0	0	8.9	SSE	*26	ESE	5	6	7	17	6.7	--
Barrow	22	1011.5	1012.1	33	25	28.9	-1.7	62	4	1	28	0	27	27	90	1.10	.55	.24	16	0	6.5	3	14.8	NE	47	NE	12	0	4	26	9.5	--
Barter Island	39	1008.8	1010.6	34	26	30.0	---	61	4	7	26	0	21	29	91	2.99	----	1.20	14	0	22.8	16	16.9	W	*78	W	19	2	2	26	8.8	--
Bethel	10	1004.7	1006.3	53	38	45.8	.5	68	6	18	27	0	13	40	82	2.18	-.83	.59	14	0	.2	T	10.5	N	*28	NNE	20+	6	8	16	6.5	--
Cold Bay	90	999.7	1003.4	53	45	49.1	1.6	60	6	33	30	0	0	45	87	3.38	-.19	.77	14	0	.0	0	18.0	SSE	*41	NNE	27	0	4	26	9.1	--
Cordova	40	1009.5	1011.0	57	45	50.8	2.8	70	5	34	16+	1	0	46	84	16.50	1.03	2.40	26	0	T	0	7.9	ESE	*35	ESE	12	0	4	26	9.4	--
Fairbanks	436	992.2	1009.6	54	33	43.6	-1.0	84	5	13	30	5	13	37	77	.47	-.74	.19	[illegible]	0	4.9	4	5.7	N	*24	WSW	19	4	2	24	8.0	--
Juneau	15	1014.6	1015.4	60	45	52.4	3.4	71	4	32	17	1	1	48	87	5.61	-1.31	1.59	18	0	.0	0	8.3	N	34	SE	29	3	3	24	8.5	30
King Salmon	44	1003.1	1005.1	56	40	48.0	.4	70	5	16	30	1	9	42	80	3.14	-.23	.67	19	0	.0	0	13.0	N	*51	E	2	1	5	24	8.5	--
Kotzebue	10	1008.5	1009.1	46	36	41.1	.2	63	3+	17	29	0	12	37	84	1.67	.73	.39	12	0	7.4	4	12.3	N	*31	NW	19	5	4	21	7.9	--
McGrath	334	995.6	1008.6	53	34	43.7	-.3	76	5	6	30	2	14	35	75	2.17	-.24	.78	14	0	2.9	2	6.2	N	*23	SSW	13	6	6	18	6.7	--
Nome	13	1008.5	1009.2	48	35	41.2	-.8	60	5	17	28	0	13	36	83	1.39	-1.54	.73	10	0	1.7	2	9.3	N	*25	N	5	4	10	16	7.1	39
St. Paul Island	22	1006.1	1007.1	49	42	45.4	.1	54	[illegible]	27	30	0	2	43	89	1.28	-2.21	.32	17	0	.0	0	---	---	--	---	--	0	7	23	8.6	--
Yakutat	28	1012.9	1013.9	59	47	52.9	4.5	77	4	34	17+	2	0	50	89	15.07	-1.25	3.73	23	0	.0	0	7.5	E	*35	SSE	30	0	1	29	9.6	--

Data from airport unless otherwise specified. U indicates Urban, R indicates Rural, sites.
* Data entered in column "Fastest Mile" is the fastest mile observed. This station is not equipped with automatic recording wind instrument.
+ And also on a later date or dates.
a Maximum hourly average † Peak gust ‡ Airport Data
# Number of days maximum 70° or above for Alaskan stations.
Ø Station pressures apply to elevation shown in Table 10b of the annual issue of this publication.

Delete "Hail" in above Snow, Sleet columns in August issue

HEATING DEGREE DAYS

(Base 65°F.)

SEPTEMBER 1957

State and station	Current season		Normals July through this month
	This month	Period July through this month	
ALABAMA			
Birmingham	24	24	13
Mobile	7	7	0
Montgomery	17	17	0
ARIZONA			
Flagstaff	225	345	370
Phoenix (U)	0	0	0
Phoenix	0	0	0
Prescott	14	17	34
Tucson	0	0	0
Winslow	6	6	20
Yuma	0	0	0
ARKANSAS			
Ft. Smith	3	3	9
Little Rock	0	0	10
Texarkana	0	0	0
CALIFORNIA			
Bakersfield	0	0	0
Bishop	9	12	55
Blue Canyon	128	235	182
Burbank	0	0	11
Eureka (U)	167	621	779
Fresno	0	0	0
Los Angeles (U)	0	0	17
Los Angeles	0	0	109
Mt. Shasta (R)	125	245	248
Oakland	8	56	237
Red Bluff	10	10	0
Sacramento (U)	3	3	17
Sacramento	2	3	22
Sandberg (R)	43	68	26
San Diego	0	0	42
San Francisco (U)	56	383	476
San Francisco	22	141	381
San Jose	1	7	44
Santa Maria	53	198	303
COLORADO			
Alamosa	339	432	494
Colorado Springs	173	177	153
Denver	141	141	136
Grand Junction	55	66	36
Pueblo	81	81	74
CONNECTICUT			
Bridgeport	71	79	66
Hartford	122	150	115
New Haven	87	99	111
DELAWARE			
Wilmington	65	65	47
DIST. OF COLUMBIA			
Washington (U)	43	43	32
Washington	40	40	37
FLORIDA			
Apalachicola (U)	0	0	0
Daytona Beach	0	0	0
Fort Myers	0	0	0
Jacksonville	0	0	0
Key West (U)	0	0	0
Miami (U)	0	0	0
Miami	0	0	0
Miami Beach	0	0	0
Orlando	0	0	0
Pensacola (U)	2	2	0
Tallahassee	0	0	0
Tampa	0	0	0
West Palm Beach	0	0	0
GEORGIA			
Athens	40	40	5
Atlanta	36	36	8
Augusta	19	19	0
Columbus	17	17	0
Macon	22	22	0
Rome	19	19	8
Savannah	3	3	0
IDAHO			
Boise	75	85	135
Lewiston	49	51	133
Pocatello	166	179	183
ILLINOIS			
Cairo (U)	7	7	28
Chicago	89	89	90
Chicago University	93	94	
Moline	136	138	104
Peoria	70	70	97
Springfield	72	72	89
INDIANA			
Evansville	28	28	59
Ft. Wayne	140	145	124
Indianapolis	90	92	79
South Bend	154	161	119
IOWA			
Burlington	97	97	83
Des Moines	113	115	116
Dubuque	180	199	185
Keokuk (U)	71	71	
Sioux City	133	134	153
KANSAS			
Concordia (U)	54	54	55
Dodge City	55	55	40
Goodland	142	142	95
Topeka (U)	36	36	42
Topeka	55	55	67
Wichita	36	36	32
KENTUCKY			
Lexington	39	39	56
Louisville	22	22	51
Pikeville (U)	25	25	
LOUISIANA			
Baton Rouge	1	1	0
Lake Charles	0	0	0
New Orleans (U)	6	6	0
New Orleans	5	5	0
Shreveport	0	0	0
MAINE			
Caribou	283	577	572
Greenville (U)	255	519	
Portland	184	293	270
MARYLAND			
Baltimore (U)	33	33	29
Baltimore	56	58	50
Frederick	86	89	47
MASSACHUSETTS			
Blue Hill Obs. (R)	96	133	
Boston	57	64	84
Nantucket	80	110	167
Pittsfield	205	352	301
MICHIGAN			
Alpena (U)	245	363	350
Detroit	130	137	104
Detroit (Willow Run)	119	130	106
East Lansing (U)	151	165	
Escanaba (U)	292	392	404
Grand Rapids	196	216	187
Marquette (U)	259	410	392
Muskegon	201	226	226
S. Ste. Marie	318	529	533
MINNESOTA			
Duluth (U)	357	485	434
Duluth	372	486	445
Internat. Falls	420	572	544
Minneapolis	184	197	182
Rochester	203	227	244
St. Cloud	265	302	310
MISSISSIPPI			
Jackson	17	17	0
Meridian	22	22	0
Vicksburg (U)	12	12	0
MISSOURI			
Columbia	47	47	68
Kansas City	29	29	44
St. Joseph	54	54	54
St. Louis (U)	17	17	38
St. Louis	30	30	45
Springfield	41	41	69
MONTANA			
Billings	188	216	222
Glasgow	225	271	288
Great Falls	197	273	347
Havre (U)	204	242	328
Helena	264	328	422
Kalispell	286	447	456
Miles City	185	198	204
Missoula	178	262	371
NEBRASKA			
Grand Island	132	132	90
Lincoln (U)	76	76	86
Norfolk	151	151	139
North Platte	182	182	138
Omaha	91	91	93
Scottsbluff	191	193	137
Valentine	186	193	166
NEVADA			
Elko	227	262	263
Ely	252	297	294
Las Vegas	0	0	0
Reno	116	162	253
Tonopah	74	94	101
Winnemucca	153	193	197
NEW HAMPSHIRE			
Concord	167	251	260
Mt. Washington Obs.	683	1907	
NEW JERSEY			
Atlantic City (U)	40	41	29
Newark	54	54	47
Trenton (U)	60	60	55
NEW MEXICO			
Albuquerque	3	3	10
Clayton	85	85	68
Roswell	10	10	8
NEW YORK			
Albany	152	185	163
Binghamton	166	276	271
Buffalo	140	179	168
New York (U)	47	47	39
New York	40	40	28
Rochester	158	224	176
Schenectady	122	136	
Syracuse	131	179	146
NORTH CAROLINA			
Asheville (U)	60	60	50
Asheville	69		
Cape Hatteras (R)	1	1	0
Charlotte	37	37	7
Greensboro	52	53	29
Raleigh	38	39	16
Wilmington	4	4	0
Winston-Salem	54	55	28
NORTH DAKOTA			
Bismarck	264	308	293
Devils Lake (U)	340	411	384
Fargo	274	309	281
Grand Forks	318	371	
Pembina	288	331	
Williston (U)	235	294	332
OHIO			
Akron	133	156	100
Cincinnati (U)	30	30	42
Cincinnati	47	48	83
Cleveland	97	103	85
Columbus	73	73	77
Dayton	77	77	79
Sandusky (U)	95	96	66
Toledo	145	154	114
Youngstown	148	179	102
OKLAHOMA			
Oklahoma City	17	17	14
Tulsa	5	5	18
OREGON			
Astoria	100	426	395
Burns (U)	126	195	266
Eugene	51	151	211
Meacham	195	490	484
Medford	44	62	77
Pendleton	61	65	104
Portland (U)	10	37	112
Portland	45	105	163
Roseburg	56	121	
Salem	47	131	157
Sexton Summit (R)	120	461	326
PENNSYLVANIA			
Allentown	93	101	98
Harrisburg	76	76	69
Philadelphia (U)	40	40	33
Philadelphia	64	64	47
Pittsburgh (U)	64	64	56
Pittsburgh	101	115	114
Reading (U)	64	64	62
Scranton	139	187	133
Williamsport	109	120	117
RHODE ISLAND			
Block Island	67	84	115
Providence	93	115	133
SOUTH CAROLINA			
Charleston (U)	2	2	0
Charleston	5	5	0
Columbia	20	20	0
Florence	16	16	0
Greenville	43	43	10
Spartanburg	40	40	7
SOUTH DAKOTA			
Huron	190	208	175
Pierre	161	181	
Rapid City	189	211	249
Sioux Falls	189	202	192
TENNESSEE			
Bristol	45	45	58
Chattanooga	19	19	24
Knoxville	23	23	33
Memphis	6	6	17
Nashville	10	10	22
TEXAS			
Abilene	[illegible]	6	5
Amarillo	45	45	37
Austin	0	0	0
Brownsville	0	0	0
Corpus Christi	0	0	0
Dallas	0	0	0
Del Rio (U)	0		
El Paso	4	4	0
Ft. Worth	0	0	0
Galveston (U)	0	0	0
Galveston	0	0	0
Houston (U)	0	0	0
Houston	0	0	0
Laredo	0	0	0
Lubbock	19	19	23
TEXAS (Cont'd.)			
Midland	2	2	
Port Arthur	0	0	0
San Angelo	0	0	0
San Antonio	0	0	0
Victoria	0	0	0
Waco	0	0	0
Wichita Falls	4	4	5
UTAH			
Milford	127	136	114
Salt Lake City	101	102	88
VERMONT			
Burlington	167	266	238
VIRGINIA			
Lynchburg	65	71	49
Norfolk	9	9	9
Richmond	50	50	33
Roanoke	67	70	50
WASHINGTON			
Olympia	82	278	381
Seattle (U)	31	99	228
Seattle-Tacoma	72	264	337
Spokane	105	174	250
Stampede Pass (R)	233	994	925
Tatoosh Island (R)	196	705	898
Walla Walla (U)	42	42	93
Yakima	82	153	157
WEST VIRGINIA			
Charleston	43	43	60
Elkins	109	161	162
Huntington (U)	30	30	35
Parkersburg (U)	49	51	56
WISCONSIN			
Green Bay	263	327	273
La Crosse	178	199	183
Madison (U)	178	190	177
Madison	197	215	194
Milwaukee	193	209	186
WYOMING			
Casper	267	286	268
Cheyenne	284	315	313
Lander	267	297	274
Sheridan	248	265	307
ALASKA			
Anchorage	445	842	1040
Annette	212	673	836
Barrow	1075	2568	2641
Barter Island	1040	2368	
Bethel	566	1145	1298
Cold Bay	472	1310	
Cordova	418	1046	1233
Fairbanks	634	962	1057
Juneau	371	884	1134
King Salmon	506	992	
Kotzebue	710	1446	1550
McGrath	632	1047	1193
Nome	707	1688	1660
St. Paul	578	1584	1710
Yakutat	357	938	1257

Data from airport unless otherwise specified.
U indicates Urban, R indicates Rural, sites.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
WYOMING Worland (2 miles south of), Washakie County	1	10 a.m.	4-1/2	*2			1	4	Hail and wind	Storm moved northeastward.
VIRGINIA Tasley area, Accomack County	1	A.m.					4		Electrical, wind, and rain	Electrical storm accompanied by high winds and some rain. 2-story house burned. Wind damage to utility lines and buildings.
PENNSYLVANIA Central City, Somerset County	1	Daytime					4	1	Electrical	Lightning destroyed a hoist house of local coal company.
SOUTH DAKOTA Statewide	1	1-6 p.m.				3	4	5	Hail, wind, and rain	Hail areas widely scattered, mostly in north-central and southeast. Near Howes, gardens and pastures ruined. Buildings and crops damaged near Timber Lake. Rancher and child pelted by stones up to 2 inches in diameter, when caught in open. Young boy had arm broken while trying to escape storm on horseback. South of Firesteel, wind unroofed house and contents ruined by heavy rain. Trees stripped by hail which accumulated to 1-1/2 feet. Southeast of Glencross, stones chiseled wood as well as paint from buildings. Stones 1-1/2 inches across fell at Mobridge. At Pollock, roads and a bridge washed out by heavy rain. In southeast, hail reported from Vermillion to Dell Rapids, with a few stones reaching baseball size.
MASSACHUSETTS Petersham, Worcester County	1	3:40 p.m.			0	0	1	1	Dust devil	Dust devil struck large, open-air tent. Lifted tarpaulin into air with stakes, cables, and ropes flying about. None of a dozen women and children sitting on benches injured.
SOUTH DAKOTA Elkton (northwest of), Brookings County	1	Afternoon			0	0			Funnel aloft and thunderstorm	Sighted during thunderstorm.
NEW HAMPSHIRE Nashua, Hillsboro County	1	Late afternoon			0	0	2	1	Dust devil	Dust devil lifted asbestos slates from shed and carried them 60 feet to house roof. Twister funnel shaped and was carrying papers, sticks, wood, etc., when it struck. Moved southeastward.
NEBRASKA Lincoln, Lancaster County	1	5:30-6 p.m.			0	0	3	2	Wind, hail, and funnel aloft	Many TV antennas downed. Some hail damage to gardens. Funnel cloud reported. Storm moved northeastward.
SOUTH DAKOTA Spink and Brown Counties	1	5:30-7 p.m.	35		0	0	1	1	Tornado and funnels aloft	Sighted touching ground in field east of Mellette. Raised as it approached farm buildings. Straw from field could be seen around fringe of funnel. Last sighted aloft 20 miles east of Aberdeen accompanied by other funnels; moved northeastward.
NEBRASKA Valley (north of), Douglas County	1	6-6:20 p.m.			0	0	3	2	Wind and tornado (suspected)	
WISCONSIN St. Croix Falls, Polk County	1	6:30 p.m.					5	1	Rain	6.2 inches of rainfall in 7 hours.
	1									Minor storms also reported in southwestern Iowa; at St. Charles, Mo.; near Fremont, Leigh, and Loup City, Nebr.; and in Cleveland County, N.C.
NORTH DAKOTA Eastern fourth	1,2,3								Rain	Heavy rain on September 1, 2, and 3 following some late August heavy rains, flooded fields of potatoes, beets, and cut grain, causing much damage. Many basements in larger towns and cities, both residence and business flooded. At Gwinner, Sargent County, unofficial reports of 7-1/2 inches of rain received with 5 inches in a 2-hour period.
MICHIGAN Kinde, Huron County	2	Midnight-3 a.m.					4		Electrical	2 buildings burned after lightning strike.
NORTH CAROLINA Stanly County	2	2:30 p.m.					4		Electrical	Lightning fire destroyed office and warehouse.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

SEPTEMBER 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
OKLAHOMA Marlow, Stephens County	2	2:30 p.m.	2						Wind, rain, and hail	Strong winds blew small home off its foundation and destroyed small outbuilding. 15 telephone poles blown over. Winds and heavy rain broke tree limbs and flattened crops. Estimated damage to the buildings $100.
VIRGINIA Roanoke area, Roanoke County	2	3 p.m.					3	3	Wind, electrical, and rain	High winds, 60 m.p.h., or more, accompanied by considerable lightning. 3 homes struck by lightning. Trees, buildings, and utility lines damaged by rain. Storm moved northeastward.
OKLAHOMA Duke, Jackson County	2	4 p.m.				1			Wind, rain, hail, dust, and electrical	Severe winds lashed area, causing extensive damage and destruction to outbuildings and TV antennas; trees broken off, and crops flattened. Woman injured when wind slammed storm-cellar door against her. Considerable dust blew in ahead of storm. Storm moved southward.
NEW YORK Scattered sections	2	Afternoon-evening							Electrical, wind, and hail	Series of severe electrical storms moved through State. Hardest hit sections appear to have been Niagara, Orleans, and Genesee Counties in northwest, Syracuse area, Walkill Valley, and selected communities of southeast. Damage consisted of limbs over power-and communications lines, church struck by lightning in Syracuse, scattered hail damage, and a few injuries to workmen repairing powerline damage.
TEXAS Lockhart (near), Caldwell County	2	9:30 p.m.				1	3		Wind	Strong wind tipped empty trailer which overturned pickup truck. Driver cut and bruised.
TEXAS Marlin (west of), Falls County	2	P.m.			0	0			Funnel aloft	
	2									Minor storms also reported at Cordele, Ga.; at Atlantic, Iowa; at Cass City and Snover, Mich.; in Gaston, N. C.; at Dallas and in Schuylkill County, Pa.; and at Chilton and Mooresville, Tex.
CONNECTICUT Fairfield County	2-3	Late p.m. 2d-early a.m. 3d							Electrical	Storm with considerable lightning concentrated its effects in Stamford-Norwalk area. Bolt struck feeder line on electrified rail line between New Haven and New York City, causing short delays of trains in Cos Cob area. This was second similar occurrence in area within a week. Power failures to 100 users resulted from lightning-downed limb on line in Darien.
TEXAS San Antonio, Bexar County	3	4:30 a.m.					4		Electrical	Lightning set fire to fertilizer plant which was destroyed, including equipment and fertilizer.
TEXAS Seagraves (near), Gaines County	3	4-5 p.m.	11	4,000				5	Hail	Cotton and feed crops damaged over 11-section area. Storm moved southeastward.
TEXAS Nolan (near), Nolan County	3	5:30 p.m.	5	*1-1/2					Hail, rain, and electrical	90 percent of cotton and feed crops destroyed. Storm moved southeastward.
TEXAS Fairview (near) Howard County	3	6 p.m.	3	*3					Hail	Extensive damage to crops.
OKLAHOMA Ponca City, Kay County	3	8:45 p.m.						1	Electrical	Lightning struck home, causing $115 damage to electric circuits. Barn struck, causing fire which destroyed 2 barns, 2 tractors, truck, considerable farm machinery, hay, and grain.
TEXAS Eldorado (near), Schleicher County	3	9:30-10:30 p.m.	3	1,320			4	C	Wind, rain, hail, and electrical	Winds over 75 m.p.h. House demolished; phone and powerline poles blown down; TV antennas damaged. Rain 2.84 inches in 1 hour and accompanying hail damaged crops. Storm moved southward.
VIRGINIA Nottoway, Caroline, Northumberland, and Middlesex Counties	3	P.m.					4	3	Wind, electrical, and hail	High winds demolished brooder house and killed 1,200 chicks. Buildings unroofed, and damage to trees and utility lines downed. Lightning fire destroyed barn. Hail accompanied storm in Crewe area. Storm moved westward.
TEXAS Odessa (10 miles west of), Ector County	3				0	0	3		Dust devil	Metal roofing lifted off 100-ft. long building, siding torn out.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
	3									Minor storms also reported at St. Clair, Mo.; in Buncombe County, N.C.; at Alva, Norman, and Stillwater, Okla.; at Bartonsville, Pa.; at Tullahoma, Tenn.; and at Cameron, Tex.
NEBRASKA Dundy County	4	3:30-4:30 p.m.	35	*10			2	5	Hail	Hailstones 1/2 to 2 inches in diameter. Severe storm, but damage rather low because main crop, winter wheat, had been harvested, and corn stunted by drought. Storm moved southeastward.
NORTH CAROLINA Columbus, Johnston, Lenoir, Pitt, Sampson, and Pasquotank Counties	4	Afternoon			1	1	3		Electrical	Lightning killed 1 boy and injured another under tree, killed 4 mules, set fire to 2 buildings, and damaged telephone lines over several counties.
OKLAHOMA Woodward, Woodward County to Alva, Woods County	4	4-6 p.m.	45	*3			4	2	Hail	Severe hailstorm, with stones up to size of baseballs covered ground in strip across 2 counties. Heaviest damage in Freedom area. Roofs, windows, automobiles, trees, and gardens heavily damaged. Storm moved northeastward.
KANSAS Cheyenne, Thomas, Rawlings, Gove, and Logan Counties	4	4:15-6:10 p.m.			0	0			Hail, wind, and funnel aloft	During severe thunderstorm, numerous strips of hail occurred from west to east across these counties, damaging much grain sorghum and necessitating replanting of wheat. Strip 10 miles long and 6 miles wide was worst damaged in southeast part of Thomas County. Some fields 100 percent loss. Stones up to golf-ball size frequent. Many roofs badly damaged and some newly poured concrete at an elevator had to be releveled after hail. Violent wind blew down seven 100-foot T.V. antennas and bent and damaged many others. Several large store windows blown in. Damage at and near Colby estimated at $6,000 to property and $50,000 to crops. Small funnel cloud aloft sighted near McDonald, traveling south-southeastward about 4:30 p.m.
OKLAHOMA Butler, Custer County	4	5 p.m.	4	*3			3	4	Hail	Hail up to size of baseballs covered ground 1-1/2 inches deep with solid sheet of ice about 9 miles northwest of Butler. Roofs, windows, automobiles, etc., damaged and broken, and crops destroyed. Storm moved west-northwestward.
NORTH CAROLINA Wadesboro (near), Anson County	4	5 p.m.			0	0			Funnel aloft	Funnel observed and described by experienced pilot.
KANSAS Rooks County	4	8-9:30 p.m.							Electrical	Tank battery on oil lease 11 miles west and 2-1/2 miles north of Plainville destroyed by lightning. Explosion blew lid of tank about 200 feet. In Stockton vicinity, 2 fires set by lightning 6 miles apart consumed 1,600 bales of hay.
KANSAS Ellis County	4	8:58 p.m.							Electrical	In Hays, 2 separate lightning bolts damaged T.V. set, 2 clocks, blew fuses at 1 home, and split large tree at the other location. Tank battery and 750 gallons of crude oil burned by lightning 3-1/2 miles north of Catharine.
KANSAS Pratt, Pratt County	4	10:30 p.m.							Electrical and wind	At Pratt, wind broke limbs and trees, causing outages in powerlines. Lightning blew fuses and transformers in north part of town.
MASSACHUSETTS and NEW HAMPSHIRE	4	Night				3	4	1	Electrical, wind, rain, and hail	Northeastern Massachusetts hardest hit area. Major damage from lightning-started fires. Falling trees brought down powerlines. Many communities without power and light generally for short periods. Hail in Haverhill, Mass., area - no damage reported. 3 persons injured in traffic collisions in blinding rainstorm.
	4									Minor storms also reported near Russell and in Sumner County, Kans.; near Hyannis, Nebr.; at Jarvisburg, N.C.; at Geary, Okla.; at Scranton, Pa.; and at Bennettsville, S.C.
KANSAS Lyon County	5	1:30-1:50 a.m.							Electrical	Lightning set fire to barn and 40 tons of hay, 8 miles north of Emporia, with loss of both. Poultry house and 100 hens also burned when lightning hit 5 miles north and 2 east of Emporia at 1:50 a.m.
KANSAS Butler County	5	6:43 a.m.							Electrical	Barn and contents of baled hay 4 miles north and 1 east of Augusta destroyed by lightning.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

SEPTEMBER 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
FLORIDA Panama City Bay County	5	Afternoon			0	0			Waterspout	
NEBRASKA Loup City (near), Sherman County	5	Afternoon				1	1	1	Electrical	Woman struck by lightning and suffered burns.
KANSAS Brown County	5	6:30-7 p.m.	25	*2-3			5	5	Hail and wind	Hail driven by 60 m.p.h., winds broke many windows, damaged roofs and sidings of houses, destroyed crops, some trees, and shrubs. Many stones size of golf balls and covered ground to depth of 3 inches. 107 windows broken in Morrill high school. Practically every house in Morrill damaged. Storm less severe when it hit Hiawatha about 7 p.m., but greenhouse suffered loss of about 600 panes of double-strength glass. Storm moved across line from Richardson County, Nebraska. Storm moved southeastward.
NEBRASKA Denton (near), Lancaster County	5	11 p.m.	5	*2			2		Hail	Hailstones size of eggs. Roofs damaged; crops suffered considerable damage. Storm moved southeastward.
KANSAS Beloit (southwest of), Mitchell County	5	Night							Hail	Considerable local damage done to feed crops in small area.
KANSAS Marshall County	5	Night				1			Hail	In an area from 6 miles north of Beattie to near Axtell, crops damaged up to 90 percent by hail. At 1 farm house, 1,100 dead sparrows picked up after storm. Air force plane flying through area at time later landed at Topeka with most of glass in nose of plane broken. The engine, cowling, and leading edges of wings dented. Pilot had several cuts on his face.
TEXAS Muleshoe (near), Bailey County	5				1				Electrical	Man working in field killed by lightning.
	5									Minor storms also reported at Bellevue, Manilla, and Paullina, Iowa; at Augusta, Durham, and Herington, Kans.; at Whitehall, Mich.; near Bloomfield and at Table Rock, Nebr.; at Cushing, Fargo, Granite, and Meeker, Okla.; and in Berkeley County, S. C.
TEXAS Port Aransas (8 miles east of), Nueces County	6	9:25 a.m.			0	0			Waterspout	Waterspout moved westward.
TEXAS Whiterock, Hunt County	6	2:30 p.m.					°4	C	Wind, hail, and rain	Large broiler house and 1,000 fryers ready for market destroyed; farm home damaged, barns blown down, and trees uprooted.
NORTH CAROLINA Wayne County	6	Afternoon					3		Wind and rain	Tree blown down on automobile, roofs damaged, and plate-glass windows blown out, with accompanying water damage from 2.25 inches of rain in 20 minutes.
TEXAS Sweetwater, Nolan County	6	3:52 p.m.			2	12			Electrical	Lightning struck tree beneath which girl students awaited transportation from school. 2 killed, 8 others hospitalized, and 4 slightly injured.
TEXAS Clarendon and Hedley, Donley County	6	5:15 p.m.	15	*2					Hail	Hail in scattered areas destroyed about 1,200 acres of cotton and many more acres of feed crops; damaged some roofs. Storm moved northeastward.
TEXAS Memphis, Estelline, High Point, Carey, and Tell areas, Hall and Childress Counties	6	6-7 p.m.	50	*4				5	Hail	Cotton crops heavily damaged or destroyed in scattered areas. Storm moved northeastward.
NORTH CAROLINA Burke County	6	6:30 p.m.					4		Wind	Warehouse blown down and store unroofed.
NEW MEXICO Clovis, Curry County	6	P.m.							Rain	5.26 inches of rain fell, flooding lowlands and damaging streets and highways.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
CALIFORNIA Los Angeles County, western San Bernardino and Riverside Counties, Orange, and San Diego Counties	6						4		Wind, electrical, and rain	Widespread thunderstorms associated with extremely warm weather caused many brush fires and locally strong winds. Lightning-caused brush fire at Palmdale destroyed 1 home, 2 garages, and a car, and damaged 2 other structures. Flash flood inundated roads in Mojave Desert between Palmdale and Lancaster. Winds up to 60 m.p.h., swept parts of San Bernardino County, and lightning caused brush fires in Mill Creek, Oak Glen, Lucerne Valley, and Mission Canyon areas. Brief windstorm in Barstow tore down powerlines. In San Diego County, gusty winds knocked down powerlines, disrupting service at Chula Vista, Coronado, and Imperial Beach. Winds of 43 m.p.h., reported at San Diego Yacht Club.
	6									Minor storms also reported at Arkansas City, Augusta, Baxter Springs, Glen Elder, near Junction City, Phillipsburg, and Wichita, Kans.; in Winston-Salem area, N. C.; at Ardmore, Claremore, Granite, Sequoyah, and Stigler, Okla.; and at Decatur, Tex.
	6-7									Minor storm reported at Odessa, Tex.
TEXAS Waco, Crawford, and Lorena areas, McLennan County	7	2:20-2:50 a.m.					4		Electrical	Barn and feed contents destroyed by fire caused by lightning. Another barn with contents and a vacant house struck by lightning and burned down; calf fatally burned.
MISSOURI Aurora, Lawrence County	7	7 a.m.					2		Rain and electrical	1.15 inches of rain in 30 minutes. Severe lightning.
VIRGINIA Rappahannock and Culpeper Counties	7	4 p.m.					3		Wind, electrical, and rain	Storm accompanied by winds to 57 m.p.h., lightning, and heavy rain. Church steeple blown off at Culpeper. Scattered damage to trees, buildings, and utility lines. Storm moved westward.
	7									Minor storm also reported near Newman Grove, Nebr.
FLORIDA Jacksonville, Duval County	8	1 p.m.			1				Rain and wind	1 person drowned in St. Johns River when rough waters washed him overboard from boat.
MASSACHUSETTS Leominster Worcester County	8	9:30 p.m.				2	2	1	Wind and electrical	Strong gust of wind during electrical storm blew in window of restaurant, causing injury to 2 women.
WEST VIRGINIA Mingo County (central portion)	8							1	Rain	Heavy rains caused temporary overflow of small streams, inundation of roads and highways in several places, and some traffic-blocking landslides.
	8									Minor storm also reported at Daufuskie, S.C.
TENNESSEE Cleveland, Bradley County	8-16							1	Rain	12 to 15 city streets flooded, washed out, or closed.
FLORIDA Jacksonville, Duval County	9	6 p.m.			0	0			Rain, wind, and waterspout	Wind gusts to 68 m.p.h., damaged number of homes in Cedar Hills section; trees blown down and electrical and telephone services disrupted. Waterspout also sighted during storm.
NEW MEXICO Silver City, Grant County	9	P.m.							Rain	Considerable street damage.
	9									Minor storms also reported near Arnold and St. Libory, Nebr.
MARYLAND Baltimore City area	10	2:45 p.m.							Rain	Locally severe thunderstorms and locally heavy rains hit Baltimore area. Downpour of rain and flash flooding knocked out Charles Street bridge, contributed to failure of a 150-ft.section of 72-year old retaining wall which slid into bed of Jones Falls. Heavy rains throughout city flooded streets and basements and stalled vehicles at many points.
TENNESSEE Johnson County (south-central portion)	10	3-3:15 p.m.	11	2640			4	5	Hail	Some hailstones club-shaped 2 inches or more in length; ground covered with hail to depth of 1/2 inch. Some damage to roofs and windows, but greatest damage to tobacco crops in process of being harvested and to truck crops. Storm moved east-northeastward.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
DELAWARE Bridgeville, Sussex County	10	3:20 p.m.			0	0			Tornado	Twister hit narrow belt of Sussex County. It hurled large chickenhouse 50 feet into tree, knocking poultry farmer to ground. It then cut swath of destruction through woodlands near Bridgeville area. Sudden storm was variously described by residents as "a big funnel", a "whirlwind", and "a column of air that looked like it had a big cedar tree in its center". Storm jumped leap-frog style and hit other points, snapping trees like match sticks and causing some minor property damage. Storm moved northeastward.
TEXAS Pecos-Reeves County line	10	7 p.m.						6	Hail, wind, and rain	Severe damage to maturing cotton. Storm moved northeastward.
TENNESSEE Edwina Community, Cooke County	10	Early p.m.							Hail	Hail "as large as Hens' eggs" extensively damaged plum and apple trees and shrubbery.
PENNSYLVANIA Southeastern Counties	10	Night					4	1	Electrical	Lightning struck several homes in area.
	10									Minor storms also reported at Great Bend, Topeka, near Larned and Russell, Kans.
OKLAHOMA Fairview, Major County	11	6:10 a.m.						1	Electrical	Lightning struck and burned large barn and contents.
OKLAHOMA Cresent, Logan County	11	10:30 a.m.						1	Electrical	Lightning caused fire which destroyed large barn and contents of seed, machinery, and horse trailer.
NEW MEXICO Lea County (northern portion)	11	3 p.m.					5	C	Hail and rain	Major damage to crops. Hail up to 1 inch in diameter.
LOUISIANA New Orleans Orleans Parish	11	3:30 p.m.				3	3	1	Electrical	3 workers injured, 1 seriously, when lightning struck drilling rig.
TEXAS Dallas County	11	3:30 p.m.	1/8	75			4		Wind	Drive-in theater screen and adjacent lumber sheds damaged. Metal roof of shed blown 150 feet, dropped on top of gas main which broke. Straight-line winds, no tornado activity. Storm moved eastward.
TEXAS Andrews, Andrews County	11	3:35 p.m.				4	4		Wind, hail, rain, and electrical	Store windows broken, cars in car lot damaged, 3 trailer houses damaged, 5 houses damaged by flying debris, trees uprooted, small buildings blown down. Woman and 3 small children injured. Twister-like activity, shown on radar as not tornado. Storm lasted less than 15 minutes. Moved southeastward.
TEXAS Seminole, Gaines County	11	5 p.m.	60	*6-8			5	5	Hail and rain	Probably as many as 1,500 acres of cotton damaged in varying degrees. In Seminole, roofs battered, windows broken, automobiles and trucks scarred, signs smashed. Accompanying heavy rain. Storm moved southeastward.
TEXAS Between Melvin and Brady, McCulloch County	11	5-9:30 p.m.	15-20	*3-4			5	4	Wind and hail	Barn and chickenhouse with 900 chickens destroyed; trees and feed and haystacks blown down and scattered. Hail damaged crops. Storm moved eastward.
TEXAS Nolan area, Nolan County	11	7 p.m.	5	*4					Hail, wind, and rain	Cotton and maize, some hegari and cane sorghum 50 to 100 percent destroyed. Some roofs destroyed. Accompanying winds 50 to 60 m.p.h., and heavy rain. Storm moved southeastward.
TEXAS North of Rotan to Roby, Fisher County	11	7 p.m.							Hail	Hail in Double Mountain area damaged about 25 percent of cotton crops over several hundred acres. Storm moved southward, covering several thousand acres, with estimated 30 percent damage.
TEXAS Muenster (near), Cooke County	11	7:30 p.m.	10	*2			4		Electrical and wind	Lightning-caused fire destroyed 2 barns and about 6,000 bales of hay and other farm items. Tree limbs and small trees broken off; fuses blown and plugs in cords blown out in homes. Storm moved eastward.
TEXAS La Pryor (4 miles northwest of), Zavala County	11	8-11 p.m.				1	3		Electrical, wind, and rain	Lightning ignited large 2-story barn, destroying it and contents. Owner had heart attack. Wind and rain moderate. Storm moved southward.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

SEPTEMBER 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TENNESSEE Maryville (near), Blount County	11	11 p.m.							Electrical	11 cows struck by lightning and killed.
TEXAS Courtney-Tarzan area, Martin County	11							6	Hail and rain	During 12-minute period, hail severely damaged maturing cotton. Stalks stripped, then shredded; feed completely denuded; tree limbs twisted off. Some farmers had 100 percent loss, others from 10 to 50 percent. Accompanied by 1 inch rain. Storm moved northward, then southeastward.
	11									Minor storms also reported at Florence and Haleyville, Ala.; at Alva, Kingfisher, Tulsa, Waurika, and Yale, Okla.; in Newport County, R. I.; and at Knoxville, Tenn.
TEXAS Nacogdoches, Nacogdoches County	12	4-7 a.m.					5		Electrical	Lightning-caused fire destroyed large warehouse and contents, mostly broiler feed, and damaged nearby boxcar and contents.
TEXAS San Antonio (25 miles north of), Bexar County	12	Early a.m.					4		Electrical	Lightning struck and burned barn with 39 goats, 1200 bales of alfalfa, 1050 bales of hegari, 350 sacks of cottonseed hulls, and machinery.
MARYLAND Baltimore City area	12	7 p.m.						1	Electrical	Lightning struck at least 2 homes in Baltimore and top of utility pole in Catonsville. Lightning crumbled chimneys in Hamilton and Fullerton districts.
KENTUCKY Boyd County	12	P.m.					4		Wind	Winds accompanying thunderstorm caused considerable property damage, uprooted trees, and caused disruption to electric and telephone services. Roofs lifted off buildings, homes and other buildings damaged by falling trees.
TENNESSEE McMinnville, Warren County	12	P.m.							Electrical	16 sheep struck by lightning and killed.
	12									Minor storm also reported at Waynesboro, Pa.
KANSAS Thomas County	13	1-3 p.m.	5	1000	0	0	4	4	Hail, wind, and funnels aloft	Hail size of golf balls fell at Colby and to southeast of town. Storm moved slowly southeastward with hail continuing 15 to 20 minutes. Little wind accompanied hail. Major damage to roofs in southern part of Colby and to grain sorghums in southeastern part of County. 3 funnel clouds observed aloft south of Colby. Attending locally severe winds destroyed 2 farm buildings.
MASSACHUSETTS Saxonville, Middlesex County	13	3:30 p.m.			0	0	1	1	Dust devil	Occurred in Pinefield development. No damage. Moved eastward.
NEW MEXICO Roswell-Dexter area, Chaves County	13	4:40 p.m.					°5	C	Rain, hail, and wind	Major damage to crops north of Dexter. Barn and 2 graineries destroyed; some evidence of tornado action but unable to confirm.
TEXAS Muleshoe to Kress, Bailey and Swisher Counties	13	5-9 p.m.	80	*1-3				6	Hail and rain	Cotton damaged 50 to 100 percent; damage to grain sorghums up to 50 percent; forage crops stripped. North of Muleshoe, hail preceded by hard rain. Very little wind. Storm moved eastward.
COLORADO Eastern portion	13	Afternoon-night							Electrical, snow, and hail	Electrical storm did $2,000 damage to power equipment in Littleton area. Lightning struck 13,000-volt breaker, south of Littleton, cutting out power that serves Louviers and adjacent communities. Pilot reported large hail aloft, 15 miles southeast of Pueblo, which did damage to aircraft. First heavy snow of season fell along Continental Divide closing Trail Ridge and Mount Evans roads for a time. Storm moved eastward.
KANSAS Clay County	13	6:39 p.m.			0	0			Funnel aloft	Funnel cloud aloft reported by pilot about 45 miles northeast of Salina.
NEW MEXICO Hobbs and vicinity, Lea County	13	P.m.			0	0			Funnels aloft	Reports of funnel clouds both north and south of Hobbs; evidently did not touch ground.
TENNESSEE Bristol, Sullivan County	13	P.m.						1	Rain	Cloudburst flooded streets, backing water into some store fronts.

See footnotes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons Killed	Number of persons Injured	Estimated damage by categories † Property (exclusive of crops)	Estimated damage by categories † Crops	Character of storm	Remarks
TENNESSEE Knoxville, Knox County	13					2		1	Electrical	Lightning struck 2 power transformers, causing minor injuries to 2 women in nearby buildings, damaged roof of 1 residence and tore hole in concrete-block wall of a second.
	13									Minor storms also reported near McPherson and Tescott, Kans.; and at Alva and Beaver and in Harper County, Okla.
OKLAHOMA Gage, Ellis County	14	12:20 a.m.	5				4		Hail and rain	Heavy hail, with stones up to 2 inches in diameter, damaged roofs, automobiles, gardens, etc. Storm moved southwestward
GEORGIA Dade and Floyd Counties	14	A.m.					4	1	Electrical	Lightning destroyed 1 residence and 1 barn and killed several farm animals. Several other houses damaged and many electrical appliances burned out. Utility lines damaged, causing interruption of service in several areas.
TEXAS Provident City, Colorado County	14	12:15 p.m.			0	0			Funnel aloft	Observed moving northeastward. Extended to within 100 feet of ground.
OKLAHOMA Custer, Blaine, Caddo, Canadian, Grady, Oklahoma, and Cleveland Counties	14	2-6 p.m.	90	10			5	5	Hail, wind, rain, and electrical	Severe hailstorm caused variable and spotted destruction over extensive area from southwest of Clinton, Custer County, to southern part of Oklahoma City, Oklahoma County, and in northern part of Cleveland County. Stones mostly smaller than golf balls, with a few up to as large as baseballs caused extensive roof, window, and automobile damage throughout area. Up to 50 percent loss of cotton and feed crops resulted from hailstorm. Strong winds at spotted points caused damage to trees, TV antennas, and outbuildings. Severe lightning accompanied storm. Considerable damage resulted to electrical appliances in Hydro area of Blaine and Caddo Counties. 1 barn burned which contained 1,000 bales of hay. Heavy rains caused local flooding and a building collapsed under weight of water, causing estimated $15,000 damage. Storm moved eastward.
ALABAMA Flat Rock, Jackson County	14	Late afternoon				2	1	1	Electrical	Lightning hit light pole. 1 man severely burned and trousers torn off by bolt, while another about 15 feet away knocked briefly unconscious but otherwise not hurt.
TEXAS Wichita Falls area, Wichita County	14	5-6 p.m.					4		Wind, rain, and hail	Barn west of Wichita Falls leveled, automobile and tractor damaged. Roofs damaged in Nocona. Widespread minor damage at Randlett where observer said, "In 15 minutes 3 inches of rain and hail combined fell there." In Wichita Falls, filling station smashed, roof removed and interior left a shambles. School windows broken; signs blown down; minor damage to roofs, porches, and other structures. No evidence of tornado activity.
OKLAHOMA El Reno area, Canadian County	14	5:30 p.m.						1	Electrical, rain, and hail	Lightning struck home, burning out TV set, set divan on fire, and cracked plaster. Barn southwest of El Reno hit by lightning and burned. It contained 3000 bushels of grain. Hail fell in area. Storm moved eastward.
OKLAHOMA Randlett, Cotton County to Waurika, Jefferson County	14	5:30-6 p.m.	30	*8	0	0	4	4	Wind, rain, and hail	Strong winds and heavy hail caused considerable damage to roofs and outbuildings on about half and half basis. Winds estimated at 80 m.p.h., and hail up to 2 inches in diameter reported. Cotton and feed crops damaged up to 50 percent as result of hail. Heaviest hail damage resulted over strip 10 miles long and a mile wide from Randlett to Taylor. Storm moved eastward.
OKLAHOMA McClain, Cleveland, Pottawatomie, Seminole, and Hughes Counties	14	5:30-8 p.m.	70	800	2	6	5	4	Tornado, wind, rain, and hail	Tornado formed in vicinity of Wayne, McClain County, traveled hit and miss path, and last damage noted in northern Hughes County. First evidence on ground was in southern Cleveland County along path 3 miles long and 1/4 mile wide where 3 barns destroyed, trees broken, and crops flattened by wind, rain, and hail. Worst hit was 7-mile path near Sacred Heart in Pottawatomie and Seminole Counties at 6:55 p.m. 2 persons killed and 6 injured in 3 homes which completely destroyed. Many other homes and buildings extensively damaged. Extensive damage noted throughout area. Oil field equipment loss estimated at $40,000 included 8 rigs destroyed. Last damage noted in Butner and Wetumka area. Butner school had damage estimated at $32,000. Wind damage at Wetumka to roofs, trees, and TV antennas extensive. Storm moved east-northeastward.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

SEPTEMBER 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
OKLAHOMA Shawnee (5 miles west of), Pottawatomie County	14	5:56 p.m.	5	400	0	3	5	4	Tornado and rain	Tornado reported to have had twin funnels struck Bethel community 5 miles west of Shawnee. School buildings, 15 to 20 homes, and numerous outbuildings destroyed or damaged. 3 persons severely injured when their homes destroyed. Heavy rains fell in area. Storm moved eastward.
TENNESSEE Bristol, Sullivan County	14	6-6:35 p.m.						1	Wind, rain, and electrical	Heavy rains flooded downtown streets and basements. Wind uprooted trees and damaged power- and phone lines. Lightning caused 1 minor fire.
TEXAS Burkburnett (5 to 6 miles west of), Wichita County	14	6:15 p.m.			0	0			Funnel aloft	
TENNESSEE Chattanooga and vicinity, Hamilton County	14	6:40 p.m.						1	Wind, rain, and electrical	Heavy rains flooded numerous streets. Wind deroofed and blew out side of tool shed, damaging nearby truck and haybaler, uprooted several trees, downed powerlines, and damaged 2 stored airplanes. Lightning caused minor damage.
TEXAS Decatur (west-northwest of), Wise County	14	8:25 p.m.			0	0			Funnel aloft	
TEXAS Gainesville, Cooke County	14	9 p.m.	3	880		1	3		Wind and electrical	Straight-line wind, not a tornado. Farm home and outbuildings, boat, and trailer damaged; trees knocked down, and hothouse destroyed. Lightning shocked and partially paralyzed a woman temporarily. Storm moved northward.
TEXAS Sherman, Grayson County	14	9:30 p.m.					4		Electrical	Lightning touched off fire at some oil tanks. Also caused fire at a home, with extensive damage to wiring and furnishings.
OKLAHOMA Wewoka (10 miles east of), Hughes County	14	P.m.			0	0	1	1	Tornado	Highway Patrol reported tornado on ground 10 miles east of Wewoka. No additional information reported. Evidently struck in open country for a short time.
OKLAHOMA Marshall and Johnston Counties	14	P.m.							Wind, rain, electrical, and hail	Lightning destroyed TV antenna in Willis and exploded a 250-gallon oil tank at Pure Oil Camp in Marshall County. Hail caused considerable crop damage near Lark. Winds at Mannsville, Johnston County, blew down a tree that damaged a truck.
OKLAHOMA Kingfisher County	14	P.m.			1			1	Electrical	3 lightning strikes reported. 2 homes hit about 10 miles west of Kingfisher. Damage to 1 home estimated at $100. Woman killed by lightning near Cashion while out in open grass field.
TENNESSEE Johnson City, Washington County	14	P.m.			1		1	1	Electrical	11-year-old boy struck by lightning and killed while playing under maple tree. It is reported that rain had not yet started when lightning struck.
	14									Minor storms also reported near Flat Rock and at Huntsville, Ala.; at Wichita, Kans.; at Fairview, Garber, Okmulgee, Pauls Valley, Prague, Tishomingo, Tonkawa, Westville, and near Kingfisher, Okla.; and in Muenster area, Tex.
OKLAHOMA Tahlequah, (7 miles southwest of), Cherokee County	15	1:30 a.m.					4	1	Electrical, wind, and rain	Lightning caused fire which burned home.
OKLAHOMA Pushmataha and Choctaw Counties	15	A.m.	40	*25					Wind, rain, and electrical	Strong winds and lightning damaged trees and utility lines over southern Pushmataha and most of Choctaw Counties. Storm moved southeastward.
TENNESSEE Columbia, Maury County	15	Noon				1		1	Electrical	Lightning struck house, causing slight damage and inflicting injuries to a woman.
PENNSYLVANIA Germania, Potter County	15	4 p.m.	2	30	0	0	4	1	Tornado	Numerous windows blown out, barn destroyed, and trees and utility poles sheared off at ground level. Tornado moved northeastward.
PENNSYLVANIA Selinsgrove and Sunbury areas, Snyder and Northumberland Counties	15	7 p.m.			0	2	4	1	Tornado	Tornado struck hangar at Penn Valley airport near Selinsgrove, injuring 2 men. 4 airplanes inside hangar also damaged, 1 extensively. Tornado moved southeastward.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

SEPTEMBER 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
ALABAMA Dothan, Houston County	16	12:50 p.m.			0	0	1	1	Funnel aloft and rain	Following report received from Chief, Air Traffic Communications Section, Dothan: "A large cumulonimbus with roll-type cloud observed about 6 miles northwest of Dothan Municipal Airport at 12:50 p.m., Sept. 16, 1957. Roll cloud extended northeast and southwest ahead of the cumulonimbus and moving northeastward very slowly. Base of roll cloud appeared to be about 1200 or 1500 feet above surface. Just behind roll, large funnel formed and extended to about 500 feet above ground. Funnel was approximately 2 to 3 hundred feet in diameter. Wind moved counter clockwise around funnel. Funnel observed for approximately 8 minutes. This system appeared to be moving approximately 20 m.p.h. Heavy rainshowers observed behind roll cloud. This condition verified by a reliable party during the condition at the location by telephone. As funnel dissipated a large eye formed in the roll cloud."
MAINE Sherman Mills, Aroostook County	16	2:30-3 p.m.	5	50	0	0	3	2	Tornado	Funnel cloud observed. Tornado wrecked barn, severely damaged 2 homes, twisting one off its foundation and nearly ruining it. Shed upended and smashed, and children's playhouse ripped apart. Many trees downed, including a number of apple trees. Several large, heavy wooden beams carried 300 to 500 feet in air. Evidence of skipping about a mile in each of 2 places along 5-mile path. Tornado moved eastward.
MASSACHUSETTS Springfield and vicinity, Hampden County	16-17	Evening-early a.m.					4	1	Rain and electrical	More than 100 locations reported sewers backing up, cellars flooded, and washouts. Trees struck by lightning fell across powerlines, causing brief loss of power.
WASHINGTON Eastern portion	17	Evening			2				Wind and dust	Visibility reduced to zero in several areas by blowing dust. Several automobile accidents resulted from restricted visibility. 2 persons killed when their small plane crashed near Kennewick during duststorm. Large number of power and communication outages occurred.
LOUISIANA Southeastern portion	17-18				3		5	5	Tropical storm	Tropical storm Esther which moved northward across southeastern Louisiana during night of 17th and 18th notable mostly for heavy rains which fell in squalls moving northeastward from center. Heaviest rains fell in Plaquemines Parish from Burrwood to Port Sulphur with 18.11 inches falling at Delta Wildlife Refuge near Pilottown between 9:10 a.m., on 17th and 3:30 p.m., on 19th. At Port Sulphur, 2.50 inches fell in 1 hour between 2 and 3 a.m. on 18th. Small house blown down at Boothville during squall and livestock feed plant collapsed at Amite reportedly from heavy rains of storm. Combination of heavy rains and tidal water flooded homes in Buras area from 18th through 26th, with considerable loss of furnishings and damage to floors and walls. 2 boys drowned in rain-swollen canals in New Orleans and boy electrocuted by "live" wire while pushing boat through floodwaters at Buras. These are indirectly attributable to storm Esther.
NORTH CAROLINA Iredell County	17-18						4	3	Rain	Up to 9 inches of rain fell in parts of County in less than 24 hours, causing flash-flood damage to lowland crops, livestock, and property.
MISSISSIPPI Southern half	18	All day				2	5	5	Tropical Storm	Tropical storm Esther moved northward through central Mississippi during morning of 18th It caused high tides on coast, with widespread minor wind damage, but heavy rains over Panhandle and northward to Laurel caused further damage by flooding highways, stores, and homes. Storm rains exceeding 10 inches recorded at Bay St. Louis, Biloxi, Gulfport, Richton, and Van Cleave. On the heels of previous heavy rains, squalls and heavy rains of Esther damaged cotton and corn in southern half of State. 2 persons injured by downed "live" wire at Biloxi.
ALABAMA Selma, Dallas County	18	2:45 p.m.	10	100	0	0	4	3	Tornado	Began along river just east of Selma and followed skipping path. 3 important short dips destroyed 3 tenant houses, damaged 3 others, and destroyed corn crib. Crop loss mostly to open cotton. Group of women in card game commented on noise being made overhead "by those planes", and later identified roaring wind which did not strike the house. 1 man loaded his family into a car and outran the boiling black funnel. He returned to find considerable damage to his premises. Storm moved north-northwestward.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
NEBRASKA North Platte, Lincoln County	18	4-5 p.m.	10	*3			4	3	Hail	Hailstones 1/2 to 1-1/2 inches in diameter. Storm moved southeastward.
NEBRASKA Pierce, Pierce County	18	11 p.m.				1	2	1	Electrical	Woman burned.
	18									Minor storms also reported at Mobile, Ala.; at Gardner, Mass.; at Ord and Pierce, Nebr.; at Elizabeth City and Hertford, N.C.; and at Montrose and Wakonda, and in Brown, Grant, Hand, Lincoln, and Tripp Counties, S. Dak.
MONTANA Helena and vicinity, Lewis and Clark County	18-19	5:45 a.m.	50	*40			4	1	Snow	24-hour snowfall of 13.4 inches was greatest 24-hour September snowfall of record, and 9-inch maximum depth was also a new September record. In Helena, heavy snow broke trees and limbs requiring $9,000 labor from city crews to remove debris. Damage to trees severe, impossible to determine money value. Telephone and power companies expended $1,350 repairing lines broken by falling tree limbs. Snow on mountain passes hampered motor traffic.
ALASKA Barter Island area	18-22	10:30 p.m. 18th- 8 a.m. 22d				3			Wind and snow	With lack of ice on Arctic Ocean water became very rough. Abnormally high tides. Section of land washed away between Barter Island and Spit where runway and airport installations located. About 4,400 barrels of aviation gas washed away. Part of runway undermined by rough water. Navy LST ran aground and whale boat lost in storm. Snow drifted to 10 feet deep. Many vehicles trapped by drifts. 3 Weather Bureau personnel injured while attempting to launch RAOB balloon on 19th. Wind speed reached peak on 19th of about 75 m.p.h., and gusts to about 95 m.p.h.
FLORIDA New Port Richey, Pasco County	19	11:45 a.m.			0	0			Waterspout	Sighted offshore from New Port Richey; touched water.
WISCONSIN Hillsboro (6 miles northwest of), Vernon County	19	12:30 p.m.	10	165	0	0	4	4	Tornado	Tornado moved northeastward.
	19									Minor storm also reported at Blair, Nebr.
KANSAS Morris County	20	6:30 a.m.							Electrical	Barn south of Council Grove, with 500 bales of hay and one north of town, with 900 bales of hay, struck by lightning and burned.
KANSAS Franklin and Johnson Counties	20	Early morning			0	0			Funnel aloft and electrical	About 4:20 a.m., funnel aloft observed 3-1/2 miles southwest of Ottawa. Lightning flashes made funnel distinctly visible, in vertical position. Also usual loud roar heard. Apparently same storm that passed over Sunflower in early morning which had dirty-brown appearance. Funnel observed to swoop low to tree tops near Sunflower, but no actual damage resulted. Storm moved northeastward.
KANSAS Sedgwick County	20	Early a.m.							Electrical	Several lightning strikes caused damages in and near Wichita about daybreak. At 5:08 a.m., tree struck and 3-inch electric cable cut in two at mattress factory in east Wichita. Barn filled with 1,000 bales of hay burned northeast of Kechi, and church struck and tile torn from roof. Stones from building thrown 200 feet.
KANSAS Burlington (near), Coffey County	20	Early morning							Electrical	2 barns burned when struck by lightning.
MISSISSIPPI Walthall County	20	2 p.m.			0	0	2	2	Tornado (suspected)	Unconfirmed tornado in uninhabited eastern portion of Walthall County; thunderstorm reported at Tylertown.
TEXAS Hardeman, Wilbarger, Foard, Hall, and Childress Counties	20	4:30-10 p.m.					5	5	Hail and wind	Extensive storm damaged much irrigated cotton, and destroyed wheat crop. Damage spotted, estimated 25 to 90 percent; most severe in Odell, and Quanah, and Chillicothe areas. Windows broken; roofs and TV antennas damaged; watermelon crop destroyed. Storm moved eastward.
TEXAS Midland (18 to 20 miles southwest of), Midland County	20	5:20 p.m.			0	0			Funnel aloft	

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
OKLAHOMA Custer and Blaine Counties	20	5:30 p.m.			0	0			Tornado, wind, rain, hail, and electrical	Several persons sighted large funnel touching ground just west of Clinton and moving toward Arapaho. No damage reported. Strong winds in area blew down trees and damaged utility lines. In southern Blaine County, several farmsteads reported damage to buildings and trees from strong winds. Heavy hail reported in eastern Custer and southern Blaine Counties. Storm moved north-northeastward.
TEXAS Vernon (6 miles north of), Wilbarger County	20	6 p.m.	1/2	100-200	0	0	4		Tornadoes	2 funnels reached ground, tore end off hangar at airport, damaged house and garage, debris strewn about 200 yards. Electric light posts blown down, 2 barns damaged, and stack of hay scattered. Storm moved southward and southeastward.
OKLAHOMA Tillman County (western portion)	20	7-9 p.m.							Wind, rain, hail, and electrical	Lightning fire burned home northwest of Frederick. Remodeling and new kitchen equipment valued at $4,000 had just been completed. Strong winds, heavy rain, and hail which covered area 10 miles by 5 miles 2 inches deep with stones up to 3/4 inch in diameter caused damage up to 50 percent to cotton and grain sorghums. Hail caused considerable damage to roofs and strong winds twisted house off its foundation and damaged outbuildings, trees, etc.
KANSAS Arkansas City (south of), Cowley County	20	8:20 p.m.							Electrical	Lightning struck a large barn which appeared to explode. The barn, 1700 bales of hay, 1000 bushel of oats, and some feed and equipment lost.
OKLAHOMA Caddo County	20	10 p.m.							Electrical and rain	Lightning struck home, burned out TV set and freezer in Carnegie. Large barn filled with hay and seed wheat burned by lightning near Alfalfa. Lightning fire burned barn and 750 bales of hay 8 miles east of Carnegie. Heavy rains of up to 6 inches fell in area.
OKLAHOMA Marlow area, Stephens County	20	10 p.m.			0	0	1	1	Tornado	Funnel aloft sighted west of Marlow, moved eastward aloft across City, and dipped to ground momentarily 2 miles east. No damage reported.
KANSAS Sedgwick County	20	10:40 p.m. and 10:55 p.m.					4		Electrical	Repeated bolts of lightning 15 minutes apart struck Sandy Beach Inc. facilities in south Wichita, destroying large dance hall, beach house, oil storage tank, and appliances and resort equipment. Second bolt appeared as ball lightning and did little damage.
	20									Minor storms also reported at Muscatine and Ottumwa, Iowa; at Arkansas City, Kansas City, Neodesha, and Ottawa, Kans.; at Canton and Salisbury, Mo.; and at Lawton, Okla.
MISSOURI Osceola, St. Clair County	21	1 a.m.							Electrical	Large barn and contents destroyed when hit by lightning.
OKLAHOMA Cushing, Payne County	21	8:15 a.m.				1	2	1	Electrical	Lightning struck sink in dairy barn. 2 persons and horse knocked down by bolt, 1 received minor injury. Framework around sink splintered.
OKLAHOMA Bryan County	21	Day					3	4	Rain and electrical	Up to 11 inches of rain fell over Bryan County, causing extensive damage to cotton and peanut crops. Storm moved southeastward.
MICHIGAN Shiawassee and Genesee Counties	21	4 p.m.	26	30	0	0	°3	C	Tornado	Tornado traveled east-northeastward from Owosso to 6 miles east of Flushing. Damage not continuous, funnel dipping several times observed by witnesses. Damage mostly from trees falling on buildings.
PENNSYLVANIA Erie, Erie County	21	6 p.m.	** 440	200	0	3	4	1	Tornado	Widespread property damage resulted. 3 persons injured by flying objects. Numerous windows broken, trees uprooted, and roofs blown off. Tornado moved southward.
OKLAHOMA Ringling, Jefferson County	21	P.m.				2		1	Electrical	Woman struck by lightning while in cafe and pedestrian received slight shock. Lightning struck house, damaging wiring and telephone.
	21									Minor storms also reported at Coalgate and Norman and in Garvin County, Okla.; and at Abilene, Tex.
TENNESSEE Memphis Shelby County	21-22							1	Rain	Heavy rain flooded streets and about 50 homes; 250 other homes affected.

See footnotes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TEXAS Harris, Brazoria, Chambers, Liberty, Jefferson, Colorado, and Matagorda Counties	21-22							6	Rain	Rice crop damaged to extent of about $15 per acre.
MICHIGAN South Fox Island (5 miles southeast of), Leelanau County	22	1:21 p.m.			0	0			Waterspout	Waterspout moved northeastward.
TENNESSEE Knoxville, Knox County	22	P.m.				1	1	1	Electrical	Woman shocked by lightning while indoors, suffered minor injuries.
MASSACHUSETTS, VERMONT, and NEW HAMPSHIRE	22	Evening				1			Rain and electrical	Heavy rains caused some road washouts in parts of upper Connecticut Valley. Clogged drains caused street flooding in Pittsfield, Mass., and several nearby towns. Loss of light and power in scattered areas of upper Connecticut Valley when transformers struck by lightning.
	22									Minor storms also reported in Harlan County, Ky.; at St. Joseph, Mo.; and at Vandergrift, Pa.
MASSACHUSETTS Framingham, Middlesex County	25	11 a.m.			0	0	1	1	Dust devil	Spiraling dust cloud carrying leaves and debris observed by several persons. Caused no damage.
MAINE, MASSACHUSETTS, NEW HAMPSHIRE, and VERMONT	26	All day							Wind	Northwest gales did widespread damage. Major losses resulted from wind-downed trees falling against buildings and across powerlines.
TEXAS Earth area, Lamb County	26	6 p.m.	40						Hail	Cotton, grain and feed crops damaged from light to 75 percent. Storm moved northeastward.
NEW MEXICO Roosevelt County (northern portion)	26	P.m.	18	*9				5	Hail	About 3,000 acres of crops damaged. Hailstones reported 1/2 to 1-3/4 inches in diameter. Storm moved south-southwestward.
CALIFORNIA From Salinas-Stockton area northward	26-28						4		Rain and wind	Pacific Northwest storm with cold front moving across northern part of State beginning on evening of 26th caused widespread and locally heavy rains. Rainfall in excess of 4 inches occurred at many northern mountain stations, and on extreme north coast. Unseasonable rains caused considerable crop damage. At McCloud, Siskiyou County, heavy rains exceeding 7 inches caused flooding of Thimbleberry Creek, washing out fences and sidewalks, and flooding 3 homes. At Mt. Shasta, flash flooding, caused by rainfall of 6.78 inches, dumped tons of mud and debris on city streets. At Woodland, Yolo County, leaf-plugged gutter drains flooded streets in business and residential areas. Some streets in Davis flooded to depths up to 1 foot due to unfinished storm-drain project. Strong winds damaged fences and gardens at Point Arena.
TEXAS Odessa (14 miles northwest of), Ector County	27	Midnight				1	4		Electrical	Lightning set fire to half-full 1500-barrel capacity oil tank. 1 fireman suffered minor burns. Storm moved westward.
	27									Minor storm also reported at Tuscaloosa, Ala.
	28									Minor storm reported at Marietta, Ga.
NORTH CAROLINA Beaches and lowlying areas near sounds and estuaries	28-29						4		Wind, rain and tides	Severe storm offshore caused strong easterly winds and rains up to 9 inches in 24 hours, tides up to 6 feet above normal. Damage to boardwalks, private piers, seawalls, roofs, and storefronts. Considerable beach erosion and some water in houses.
CALIFORNIA From Santa Clara and Merced Counties northward	29	Morning-late afternoon					4		Electrical and hail	Widespread thunderstorms associated with upper-level cold low off California coast. Lightning bolt struck and destroyed huge substation transformer at Coyote Point on San Francisco Peninsula. Powerlines, transformers, and insulators struck by lightning at many places in Davis, Woodland, Colusa, and Knights Ferry areas of

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
CALIFORNIA (Cont'd.)										Sacramento Valley. Home struck by lightning 4 miles northeast of Willows, Glenn County. Brief falls of hail 1/2 to 3/4 inch in diameter fell at Fiddletown and Garden Valley in Sierra foothills, and hailstones knocked some grapes from vines in Ukiah area, Mendocino County.
OREGON Practically entire State	29-30	Afternoons -evenings	400	*250	1		5	5	Electrical, hail, and wind	Fairly severe lightning storms well distributed over State, accompanied in several areas by high winds and in Baker and Klamath Counties, particularly, by heavy hail. 1 woman and several head of cattle killed by lightning. Large number power and telephone service interruptions, due to lightning strikes. Trees blown or broken across lines. Some outbuildings burned by lightning strikes and a few demolished by winds. At Bly, Klamath County, every roof damaged by hail, many windows broken, some siding on homes splintered, parked cars battered, merchandise spoiled in stores by melting hail breaking in through windows. 1,500 acres of unharvested oats destroyed. In North Powder area, Baker County, 90 percent of homes damaged, including damage to roofs and broken windows due to hail. Considerable unharvested grain and several tons of potatoes destroyed. Damage by lightning, 12 percent or $24,000; by wind, 8 percent, or $16,000; by hail, 80 percent, or $160,000. Storm moved eastward.
FLORIDA Keatons Beach, Taylor County	30	1:45 p.m			0	0			Waterspout	Waterspout, touching water, moved northeastward over land, remaining in contact with ground. 1 home virtually destroyed, 2 others severely damaged.
CALIFORNIA Susanville, Lassen County	30								Electrical, hail, and rain	Series of violent thunderstorms moved rapidly northward across Lassen County, accompanied by torrential downpours, and frequent hail. In brief hailstorm on north limits of Susanville, hailstones (cone-shaped) as large as golf balls.
GEORGIA Entire State	Last 3 weeks						2	6	Rain	General rains that continued, with only brief interruptions, during last 3 weeks of month interrupted and delayed harvest of peanuts and cotton. Extensive damage to peanuts, that had been dug but not threshed, and to unpicked cotton, mainly in northern part of State will result in considerable losses to producers of these crops. Damage to peanuts due to sprouting and rotting of stems and to discoloration which results in lower grade for nuts that are saved. Losses in cotton primarily due to lower grades, but some reduction in total yield also likely. No estimate available on total dollar losses but expected to be several hundred thousand. Rains of benefit to pastures and early-planted grains and replenished soil moisture that had been seriously depleted in much of State by 2 preceding dry months.
FLORIDA Northwestern portion	During month					Several			Rain	Heavy rains associated with tropical storms DEBBIE and ESTHER and again during last several days of month brought monthly rainfalls of from 15 to 30 inches to northwestern portions during month and caused considerable loss to agriculture in that area, especially to peanuts, cotton, and corn by either disrupting harvest operations or by causing rapid deterioration of unharvested crops. Reports indicate that much of Florida peanut crop will not be harvested as result of exceptionally heavy rainfall during month. Area agricultural losses have been indicated to be about $2 million. These recurring heavy rains during month also caused considerable damages to roads and disrupted forest products operations by making forest roads nearly impassable for long periods of time. The earth fill around dam which forms Lake Talquin near Tallahassee breached during month, causing much road damage near breach and high water downstream. Several cars on road at time of breach washed off road and victims rescued from swirling waters as they clung to trees or other objects. No lives lost, but several persons hospitalized for short time.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
DELAYED REPORTS										
MAY 1957										
	9									Minor storm reported in Navarre area, Kans.
KANSAS Neodesha (5 miles east of), Wilson County	13	3:30 p.m.							Electrical	House and contents entirely consumed by fire when struck by lightning.
	13									Minor storm also reported at Hays, Kans.
KANSAS Barber County	15	Afternoon					5		Hail	Devastating hail struck southeast portion of County, damaging homes and business houses and causing losses of 50 to 100 percent in wheat fields. Crop losses not estimated.
	15									Minor storms also reported at Ellis and southwest of Russell, Kans.
KANSAS Reno County	15-16	Night 15th-early morning 16th	10	*4					Hail	2 strips of hail in southwestern part of county damaged crops, roofs, windows, and siding of houses. Largest area began about 4 miles south of Arlington and was 10 miles long and 4 wide. The other was small area between Turon and Penalosa. Storm moved southeastward.
KANSAS Arkansas City (northeast of), Cowley County	16	1:26 a.m.				1			Electrical	Lightning struck farm house, shattering plaster, burning out electrical wiring, and causing slight burns to a member of the family.
KANSAS Arkansas City (north of), Cowley County	16	2:30 p.m.							Hail	Heavy hail of odd shape fell. Icy chunks resembled frozen clusters of 1/4-inch ice cubes. Some chunks measured 2 inches long and 1 inch or more thick.
	16									Minor storms also reported near Augusta and at Eldorado and Potwin, Kans.
KANSAS Montgomery County	20	7-8:30 a.m.							Hail and wind	Winds estimated at 70 m.p.h., with strips of hail damaged western and northern parts of County. Trees broken at a number of places. Hail fell at Caney until ground was white with 1/2-inch hailstones. Cherryvale also had some hail. Power and telephone services out for a while. Storm moved northeastward.
KANSAS Lincoln County	20	Afternoon							Hail	Hailstones larger than golf balls damaged metal buildings and crops, and broke a number of windows at ranch home.
KANSAS Hill City, Graham County	20	Afternoon							Wind	New church under construction had cement block walls on east, north, and west sides blown over by gusts of wind reaching 55 m.p.h.
KANSAS Sedgwick County	20	3:30-4 p.m.							Hail and wind	Some hail with stones larger than walnuts fell in various parts of Wichita. Wind also quite prominent, but relatively minor damages resulted.
	20									Minor storm also reported at Burlington, Kans.
	22									Minor storm reported at Sedgwick County, Kans.
KANSAS Sherman County	24	7-8 p.m.							Hail, wind, and rain	Several strips of hail over northwestern part of County battered crops and stripped trees. Stones ranged from marble size to that of walnuts. Drifts of hail remained until next afternoon. Wind gusts reached 70 m.p.h., about 7 p.m. Storm moved northeastward.
KANSAS Sedgwick and Sumner Counties	24	10 p.m.			0	0			Tornado, funnel aloft, and electrical	During severe thunderstorm in Wichita area, 2 houses in separate parts of town struck by lightning, but with only minor damage. At 1 house, lightning appeared as ball of fire darting around room. 2 small tornadoes observed. Near Clearwater, funnel cloud aloft seen by sheriff. Another tornado struck farm plant 2 miles southeast of Mulvane and demolished garage.
KANSAS Cherokee County	24	Night			0	0			Tornado	Small tornado followed path northeastward, damaging several buildings.
	25									Minor storm reported northeast of Columbus, Kans.
KANSAS Meade (near), Meade County	27	3:30-4 p.m.							Hail	30-minute hailstorm, with stones as large as hens' eggs caused considerable damage.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
DELAYED REPORTS (Cont'd.)										
MAY 1957 (Cont'd.)										
KANSAS Reno County	27	Late afternoon							Hail	A new suburb northeast of Hutchinson hard hit by hail which varied in size from peas to hens' eggs. Gardens, fruit trees, and crops damaged, and many awnings ripped to shreds. Ground white for an hour after storm.
KANSAS Gove (6-1/2 miles southeast of), Gove County	27	Night				1			Electrical	Man suffered burns from lightning.
	27									Minor storm also reported southeast of Oakley, Kans.
KANSAS Saline County	29	7-8 p.m.			0	0			Tornado, wind, and hail	Small tornado pulled trees 1-1/2 feet thick up by roots, sucked windows out of house, and hurled small buildings from their foundations a few miles northwest of Bavaria. Barn near Hedville flattened by severe gust of wind and large accordian door at Schilling Air Force Base ripped off hangar. Some hail damaged crops. Wind speeds reached 76 m.p.h. Storm moved northeastward.
KANSAS Lyndon (4 miles southeast of), Osage County	30	Morning							Electrical	Large barn burned with all contents after being struck lightning.
JUNE 1957										
	8									Minor storm reported at Muncie, Kans.
KANSAS Finney County	9	7 p.m.							Wind, hail, dust, and rain	Band of violent storms swept across Finney County, hitting Garden City about 7 p.m. Severe hail and wind damaged buildings and crops about 25 miles northwest of Garden City. Locally severe duststorm 2 miles wide 12 miles north of Garden City made driving dangerous. Heavy rains caused local flooding. Storm moved eastward.
KANSAS Reno and Rice Counties	9	10:10-11:30 p.m.				1			Wind	11-year old girl injured by falling tree.
KANSAS Kingman County	9	Evening							Wind	Large barn and other small buildings destroyed or damaged by wind squall that had some tornadic characteristics in north-central part of County. Windows blown out and loud roar heard.
	9									Minor storms also reported in southeastern Butler County and at Chanute, Kans.
KANSAS Inman (4 miles west and 4-1/2 miles north of), McPherson County	11	Late afternoon			1				Electrical	Lightning struck and instantly killed man hauling grain from field. Bundle rack set on fire.
KANSAS Neosho, Franklin, Anderson, and Woodson Counties	11	Night			0	0			Wind, electrical, and tornado	Broken trees from high winds damaged power- and telephone lines in various localities over these counties. Near Yates Center, severe winds blew barn onto powerline. Lightning also caused some power outages. Storm moved northeastward.
	11									Minor storms also reported at Paola and Ft. Scott, Kans.
KANSAS Hamilton County	12-13								Hail	Hail damaged the few remaining good fields of wheat north of Syracuse. Some fields damaged up to 90 percent. Several streaks of hail occurred these 2 days.
	13									Minor storms also reported at Graham and Gove Counties, Kans.
KANSAS Bonner Springs, Johnson County	14	5 a.m.							Electrical	House and contents complete loss from fire after being struck by lightning.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Property (exclusive of crops)	Crops	Character of storm	Remarks
					Killed	Injured				
DELAYED REPORTS (Cont'd.)										
JUNE 1957 (Cont'd.)										
KANSAS Coffeyville, Montgomery County	14	10 a.m.				1			Electrical	Lightning struck 90-foot flagpole and injured man standing nearby.
	14									Minor storm also reported at Coffeyville, Kans.
KANSAS Gove and Sheridan Counties	15	Evening			0	0			Wind and tornado	A number of farm buildings damaged by severe winds over northern Gove and southern Sheridan Counties. Small tornado left damaged path from 6-1/2 miles northwest of Quinter to 10 miles north of town.
	15									Minor storm also reported at Dellvale, Kans.
KANSAS Finney County	16	Afternoon			0	0			Tornadoes, wind, hail, and rain	About midafternoon 2 tornadoes observed to touch ground for a few minutes in open country about 20 miles northwest of Garden City. Severe winds caused considerable damage over County, especially to trees and T.V. antennas. Some hail and washing rains also caused damage.
	18									Minor storms reported at Maryville and LeRoy, Kans.
KANSAS Stanton County	19	7:10-7:35 p.m.	12	*2				5	Hail	Hailstones ranging from pea to marble size fell across northeastern portion of County; accumulated to more than 1 foot deep. Storm moved southeastward.
KANSAS Seward and Meade Counties	21	4-5 p.m.							Wind, hail and dust	Thunderstorm brought rather severe winds and hail in strips over these Counties. Damage from hail ranged from 20 percent to entire loss of crops. Stones up to 1-1/2 inches in diameter found. Wind damaged a number of farm buildings. Duststorm followed thunderstorms within 2 hours.
	21									Minor storms also reported at Bremer and Syracuse and in Dickinson, Logan, McPherson, Russell, and Trego Counties, Kans.
KANSAS Hamilton County	22	Night							Hail and rain	Several thousand acres of crops damaged by hail. Washing rains necessitated replanting of crops.
KANSAS Southwestern portion	22	Night							Hail, wind, and rain	Hail and wind damages of light to moderate intensities reported over Morton, Stevens, Meade, Comanche, and Finney Counties. Some wheat damaged 70 percent. Heavy rains washed fields and mud covered highways. Water stopped rail traffic near Garden City.
KANSAS Winkler (near), Riley County	22				0	0			Electrical	Large barn struck by lightning and burned. Several head of livestock also lost.
	22									Minor storm also reported at La Crosse, Kans.
KANSAS Stevens, Gray, Haskell, and Clark Counties	23	1-3 a.m.			0	0			Wind, tornado, hail, and rain	Thunderstorm resulted in some damage to buildings and power- and telephone lines from wind, and crop losses from hail and heavy rains. Tornado observed east of Copeland, Gray County, by aid of lightning. It took out 14 powerline poles and destroyed windmill.
KANSAS Sharon Springs (near), Wallace County	23	Midafternoon							Hail	Hail damaged local area. Stones as large around as half dollar numerous. Gardens, automobiles, and windows suffered most damage.
	23									Minor storm also reported south of Sterling, Kans.
KANSAS Kingman (13 miles south of), Kingman County	25	Night							Electrical	Lightning struck and set fire to crude-oil storage tank. In all, 4 tanks burned as 1 caught fire from the other. 2,400 barrels of oil consumed.
KANSAS Kingman (7 miles south of), Kingman County	26	Early morning							Electrical	8-room house burned, with loss of house and contents after being struck by lightning.
	26									Minor storms also reported in southwestern Lane County and at Cedarvale and Solomon, Kans.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
DELAYED REPORTS (Cont'd.)	June 1957									
KANSAS Dickinson, Saline, McPherson, and Morris Counties	29	11 p.m.-midnight			0	0	3	1	Wind and tornado	Gale-force winds over the 4 Counties caused damage to power- and transmission lines, roofs, and other parts of buildings. Lone box car driven eastward from Salina to near New Cambria distance of 7 miles. Winds estimated at 70 m.p.h. Just west of Enterprise, small tornado sighted and loud roar heard. Several farm buildings damaged in 50-foot wide path and covering a few miles. Storm moved eastward.
KANSAS Sharon Springs area, Wallace County	29	Night							Wind	Gusts of wind estimated up to 90 m.p.h., damaged roofs, trees, awnings, and some power-and transmission lines. Storm moved eastward.
	29									Minor storm also reported at Sabetha, Kans.
	30									Minor storms reported at Herington and Russell and in Thomas County, Kans.
JULY 1957										
	19									Minor storms reported at Fredonia and in Wichita County, Kans.
KANSAS Great Bend, Barton County	20	1:50 p.m.				1			Electrical and wind	Lightning struck home, resulting in injury of small child.
	20									Minor storms also reported near Conway Springs, Fowler, and Maryville, at Wamego and Zenith, and in Ellsworth County, Kans.
	21									Minor storms reported at Meade and Wellington, Kans.
KANSAS Sun City (east of), Barber County	25	11 p.m.							Electrical	Stock shed, granery and contents burned after being struck by lightning. Fire smoldered until 5 a.m., next morning when building blew up in flames.
	26									Minor storms reported at Axtell and Marion, Kans.
AUGUST 1957										
MONTANA Sunburst (11 miles east of), Toole County	17	3 p.m.		5			1	4	Hail	Hailstones up to 1 inch in diameter. Storm moved eastward.
	23									Minor storm reported southeast of Topeka, Kans.
KANSAS Rooks and Phillips Counties	27	8:30 p.m.	6	4					Wind and electrical	Severe straight wind damaged many properties in northern Rooks and southern Phillips Counties. A number of barns and sheds destroyed; roofs torn from houses; trees, T.V. antennas, telephone and electric lines, windmills, fences, and machinery damaged or destroyed. Storm moved eastward.
KANSAS Axtell (northeast of), Marshall County	27						4	4	Electrical	Fire started by lightning destroyed broiler plant, 10,500 chickens, 40 tons of brome-grass seed, and shed and barn.
	27									Minor storms also reported near Osborne and Protection and in western Logan County, Kans.
KANSAS Scott and Wichita Counties	28	9 p.m.				1			Electrical and wind	During severe thunderstorm, wind caused minor damages in eastern Wichita and western Scott Counties. 2 houses struck by lightning with small amount of damage. 1 man burned slightly by lightning.
	28									Minor storm also reported at Athol, Kans.
	31									Minor storm reported near Cherryvale, Kans.

* Miles instead of yards.
** Yards instead of miles.
c Includes crop damage.
C Crop damage.
† Storm damages are placed in categories varying from 1 to 9 as follows:

1	Less than $50
2	$50 to $500
3	$500 to $5,000
4	$5,000 to $50,000
5	$50,000 to $500,000
6	$500,000 to $5,000,000
7	$5,000,000 to $50,000,000
8	$50,000,000 to $500,000,000
9	$500,000,000 to $5,000,000,000.

GENERAL SUMMARY OF RIVER AND FLOOD CONDITIONS

SEPTEMBER 1957

The most significant flooding during September occurred in the smaller tributaries of the middle and upper portions of the San Antonio and Guadalupe Rivers during the latter part of the month. Flooding elsewhere was minor and sparse.

ATLANTIC SLOPE DRAINAGE

Minor flooding occurred in the upper Roanoke Basin in Virginia between the 17th and 19th from heavy rain between the 15th and 19th. Another period of heavy rain from September 28 through October 1 caused minor flooding on the lower Cape Fear River from October 2 through the 4th. No damages were reported.

Heavy rainfall on the 17th and 18th caused the Yadkin River at Yadkin College, N.C., to reach bankfull stage on the 18th. The river at this point rose from a stage of 1.5 feet on the 16th to 20 feet on the 18th. Some low farmland in the vicinity was flooded but no damage was reported. Below Yadkin College the reservoirs were able to contain and regulate the flow so no substantial rise occurred.

General rains totaling 2 to 3 inches over portions of the Saluda watershed and 3 to 4 inches over the upper reaches of the Broad River in South Carolina on the 16th and 17th resulted in light flooding in the headwaters of the Saluda and near bankfull stage on the Broad River. The Santee at Rimini, S.C., rose slowly during the month, reaching flood stage on the 16th, and remained above flood stage the remainder of the month. No damage resulted.

EAST GULF OF MEXICO DRAINAGE

Heavy rainfall accompanying tropical storm Esther on the 18th resulted in flash floods in southwest Alabama. Several small streams in the Millers Ferry, Ala., area were reported in flood. Hundreds of head of livestock were saved through timely warnings. Property damage from local flooding was minor.

Precipitation at Montgomery, Ala., for the month of September totaled 9.55 inches, or about 300 percent of normal. This was the 4th highest September rainfall in 86 years of record, 1872-1957.

Heavy rainfall late in the month caused the Pearl River to overflow in the vicinity of Bogalusa, La., beginning on the 29th. No damage was reported.

Coastal streams in Mississippi were flooded due to heavy rains accompanying tropical storm Esther on the 18th. Tuxachanie Creek overflowed Highway 57 north of Biloxi, causing damage to roadbeds. Several residences in Biloxi were flooded from high water in Tchoutacabouffa Creek. Thompson Creek near Richton, Flint Creek near Wiggins, Big Creek south of Waynesboro, and Carters Creek at Beaumont were out of their banks, flooding pasture land, woodland, and some highways.

WEST GULF OF MEXICO DRAINAGE

Heavy rains (4 to 12 inches) during the afternoon and night of the 25th caused the Colorado River to exceed flood stage at Columbus, Tex., on the 26th. There was considerable flooding of lowlands from Columbus to the Gulf but no extensive damage was reported.

The flooding on the Guadalupe River in Texas from the 24th to October 1 was due to heavy rains (4 to 8 inches) on the 22d and 23d. Major flooding occurred in the smaller tributaries of the middle and upper portions of the San Antonio and Guadalupe Rivers and moderate flooding of some portions of the main streams. Considerable flash flooding occurred in the city of San Antonio and a short distance downstream and over the upper portions of the Medina River above the Reservoir. No flooding occurred over the middle and lower portions of the San Antonio River except over the flat lands below Goliad, Tex. Another rain of 2 to 4 inches over the San Antonio area on the 25th caused some additional local flooding. Some damage resulted to farm and grazing land, and to country roads and bridges over the upper portions of all the rivers. Streets and several houses in San Antonio were flooded. There was some damage to stranded automobiles in lower areas.

Heavy rain (4 to 6 inches) from September 21 through the 23d caused flooding on the Nueces River and tributaries in Texas between September 23 and October 5. Rainfall amounts of 4 to 6 inches were common with the greatest amount of 9 inches being reported from Bee County and upper portion of Medina County. Amounts along the coast from Corpus Christi southward ranged from 1 to 2 inches. Flooding was generally confined to farm and ranch lands with resulting little damage. Minor flooding occurred in the town of Beeville, with 60 automobiles completely covered at one time. Considerable damage was done to highways under construction in Atascosa County.

FLOOD STAGE DATA

(All dates in September unless otherwise specified)

SEPTEMBER 1957

River and station	Flood stage	Above flood stages -dates		Crest*	
		From—	To—	Stage	Date
ATLANTIC SLOPE DRAINAGE	Ft.			Ft.	
Roanoke:					
Altavista, Va.	18	17	18	20.2	18
Randolph, Va.	20	18	19	23.7	18
Cape Fear: Elizabethtown, N. C.	20	Oct. 2	Oct. 4	24.3	Oct. 3
Yadkin: Yadkin College, N. C.	A20	18	18	E20.0	18
Saluda: Pelzer, S. C.	6	18	19	7.0	18
Santee: Rimini, S. C.	12	16	1/	13.4	29
EAST GULF OF MEXICO DRAINAGE					
Pearl: Bogalusa, La.	15	29	1/	16.1	30
WEST GULF OF MEXICO DRAINAGE	Ft.			Ft.	
Colorado: Columbus, Tex.	24	26	26	25.6	26
Guadalupe:					
Gonzales, Tex.	20	24	28	24.9 27.4	25 27
Cuero, Tex.	23	27	30	28.2	28
Victoria, Tex.	21	25	Oct. 1	29.4	30
Frio: Derby, Tex.	6	24	25	8.9	25
Calliham, Tex.	12	23	26	19.9	23
Atascosa: Whitsett, Tex.	20	24	26	26.4	25

*Provisional A Tentative E Estimated

1/ Continued at end of month

TROPICAL STORMS, SEPTEMBER 1957

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Weather Bureau

Washington, D. C.

Four tropical storms moved over the waters of the North Atlantic Ocean and the Gulf of Mexico during September 1957. The two that ran their course over the Atlantic both developed into storms accompanied by winds of full hurricane force, while no winds of that force were reported in connection with the two storms that formed over the Gulf of Mexico. Both of the Gulf storms did, however, reach the coastline of the United States and for that reason both Debbie and Esther are summarized in detail. The tracks of these two tropical storms are shown on Figure 1.

TROPICAL STORM DEBBIE SEPTEMBER 7-9, 1957

Tropical storm Debbie developed on the morning of September 7 as a weak circulation on an easterly wave that had been observed for several days moving across the northern Gulf of Mexico. The storm moved northeastward at about 15 m.p.h. and intensified somewhat before it moved inland near Fort Walton, Fla., at about 10 a.m. (c.s.t.) on the morning of the 8th. Debbie, however, never became a severe storm. The center continued northeastward across southeastern Alabama and into Georgia with decreasing intensity. By noon of the 9th the pressure and wind patterns had become diffused and merged with other stronger weather systems.

During passage of the storm, winds of 30 to 40 m.p.h. were reported from stations along the track. The highest winds were reported from the Tampa-Tallahassee area with Tampa, Fla., reporting a peak gust of 52 m.p.h. from the south on the 8th. A low pressure of 1005 millibars (29.68 inches) was reported at Pensacola, Fla., at 5:30 a.m. (c.s.t.) on the 8th.

Varying precipitation amounts ranging as high as 11.26 inches at Wewahitchka, Fla., accompanied by tides 1 to 4 feet above normal, caused some local flooding, particularly in the vicinity of St. Marks, Fla., where flood waters reached the downtown area. Rains in Florida, Georgia, South Carolina, and Alabama in most instances were welcome as they filled lakes and ponds which were at low levels; and were for the most part more beneficial than damaging to growing crops. No deaths or severe injuries were reported as a result of this storm.

TROPICAL STORM ESTHER SEPTEMBER 16-19, 1957

A midlevel cyclonic circulation over Nicaragua on September 12 drifted northeastward and out over the southwestern Gulf of Mexico on the 15th. Tropical storm Esther formed under this circulation on the 16th and intensified during the first 24 hours of its existence, but did not reach hurricane force. Over the Gulf, the storm took on a northward drift of about 15 m.p.h. and was characterized by a central area of relatively light winds with a diameter of roughly 100 miles. Turning to a north-northeasterly direction the storm area reached the southeastern Louisiana coast about daybreak on the 18th and moved up the Mississippi Valley where it dissipated during the 19th.

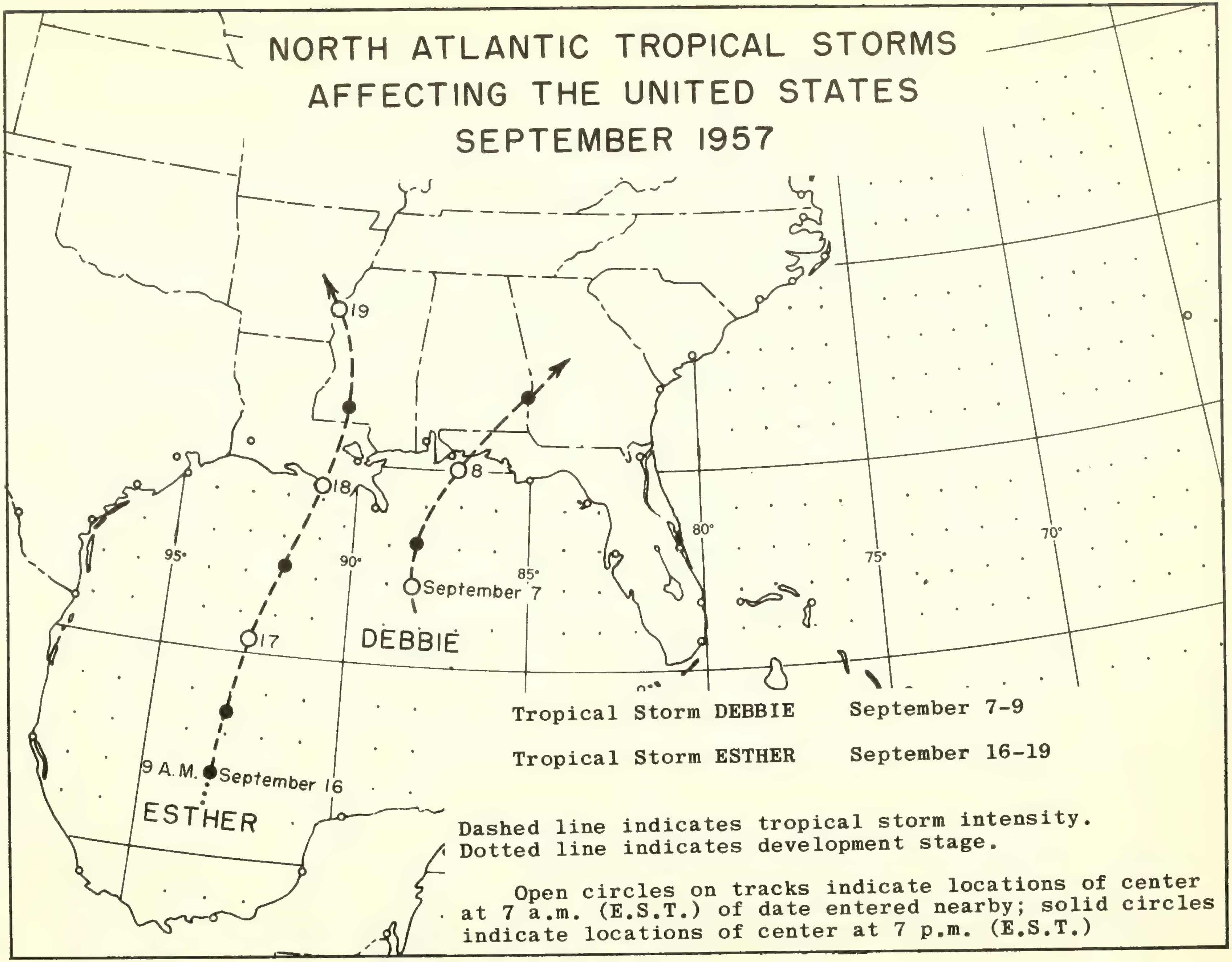
The lowest pressure observed at a land station was 1003 millibars (29.62 inches) at New Orleans, La. A slightly lower pressure of 1000 millibars (29.53 inches) was reported by reconnaissance aircraft flying in the vicinity of Lat. 23.5°N., Long. 93°W. The highest observed wind occurred a considerable distance to the east of the storm track at Pensacola, Fla., where a maximum of 52 m.p.h. from the south and gusts to 75 m.p.h. were reported at the airport on the 18th. Mobile, Ala., recorded a fastest mile of 40 m.p.h., with peak gusts of 60 m.p.h. during the morning of the 18th.

Attendant squalls and heavy rains occurred in advance and to the east of the central storm area and continued along the Mississippi and Alabama coasts and near the mouth of the Mississippi River for some time after the central portion of the storm area had passed to the north. Heavy rains from Esther began on September 17 and continued through September 19. The heaviest reported was 18.11 inches at Quarantine, La., recorded between 9:10 a.m. on the 17th and 3:30 p.m. on the 19th. Other heavy falls in the area of excessive rains were 13.36 inches and 12.35 inches at Buras and Burrwood, La., respectively, and 12.74 inches and 11.12 inches at Van Cleve and Richton, Miss. Tides were generally 4 to 5 feet above m.s.l. along the Louisiana and Mississippi coasts east of the mouth of the Mississippi River. A high tide of 6.5 feet above m.s.l. was reported as occurring at 10:00 a.m. on September 18 at Gulfport, Miss.

Additional pressure, wind, precipitation, and tide values for selected stations are listed in Table 1.

Some flooding, caused primarily from the heavy rains, occurred through southeastern Louisiana, southern Mississippi, and along the Alabama coast. In the Buras, La., section breaks in the back levees, brought about by inflow from the Gulf of Mexico, resulted in considerable flooding. Although there was some damage to piers and small craft along the coast, property damage from winds and local flooding was generally minor and did not exceed a few hundred thousand dollars. Crop losses were more extensive and have been estimated at about $1 million; the greatest losses being in cotton, peanuts, and pecans. In Mobile and Baldwin Counties, Ala., an estimated 50 percent of the pecans were blown from the trees. In most sections the heavy rains were beneficial to agriculture since precipitation during the months of July and August had been much below normal throughout the general area.

No loss of life was directly attributable to the storm during its passage, but two persons were drowned later in a New Orleans canal and one person was electrocuted by a downed wire at Buras, La., the following day.


NORTH ATLANTIC TROPICAL STORMS
AFFECTING THE UNITED STATES
SEPTEMBER 1957

Tropical Storm DEBBIE September 7-9

Tropical Storm ESTHER September 16-19

Dashed line indicates tropical storm intensity.
Dotted line indicates development stage.

Open circles on tracks indicate locations of center at 7 a.m. (E.S.T.) of date entered nearby; solid circles indicate locations of center at 7 p.m. (E.S.T.)

FIGURE 1

TROPICAL STORM DATA

ESTHER

SEPTEMBER 16–19, 1957

Station	Date	Pressure (inches)		Wind (miles per hour)				Rainfall # (inches)	Remarks
	Sept.	Low	Time	Fastest mile	Time	Gusts	Time		
LOUISIANA									
Amite	18	---	---	45*ENE	3:30 a.	60*--	3:30a	6.40	
Baton Rouge	18	29.71	---	23 NE	---	31 NE	---	0.40	
Bogalusa	18	29.58	8:00 a.	- SE	6:30 a.	---	---	6.07	
Burrwood	18	29.66	4:50 a.	48SSW	5:20 a.	---	---	12.35	High tide 3.4 feet above m.s.l. at 4:30 a.
Cameron	18	---	---	28-30 E	---	---	---	5.64	High tide 1.5 - 2 feet above m.s.l.
Franklintown	18	29.82	8-9 a.	45* NE	9:00 a.	---	---	3.39	
Grande Isle	18	29.67	2:00 a.	35 SSE	2:00 a.	---	---	4.00	High tide 3.0 feet above m.s.l. at 5:00 p.
Hammond	18	---	---	---	---	---	---	3.63	
Hobedale	18	29.64	6:30 a.	45 SSE	4:30 a.	---	---	6.80	High tide 4.0 feet above m.s.l. at 10:00 a.
Lafayette	18	29.66	---	15 NE	3:00 a.	---	---	0.15	
New Orleans (City Office)	18	29.65	---	22 E	1:02 a.	---	---	6.68	
New Orleans (Airport)	18	29.61	---	25 ENE	1:30 a.	---	---	5.46	
Ponchartrain Bridge (North)	18	---	---	56 E	5:00 a.	64 E	5:00 a.	---	
Ponchartrain Bridge (South)	18	---	---	46 ESE	4:50 a.	50 ESE	4:50 a.	---	
Port Sulphur	18	29.71	6:30 a.	35 S	3:00 a.	50 S	4:35 a.	9.75	High tide 3.4 feet above m.s.l.
Quarantine	18	29.82	4:00 a.	-- S	---	---	---	18.11	
Rigolets	18	---	---	38 E	4:00 a.	46 E	---	4.90	High tide 3.0 feet above m.s.l. at 9:00 a.
Schriever	18	---	---	---	---	---	---	2.90	
Slidell	18	---	---	50*SE	4:00 a.	---	---	5.35	
Violet	18	29.63	3:30 a.	55*SE	4:00 a.	---	---	6.19	High tide 3.5 feet above m.s.l.
MISSISSIPPI									
Bay St. Louis	18	---	---	50*SE	---	60*SE	---	10.26	High tide 5*feet above m.s.l.
Bay Springs	18	---	---	---	---	---	---	4.85	
Biloxi	18	---	---	40*--	---	---	---	10.55	High tide 4-5 feet above m.s.l.
Gulfport	18	---	---	52 E	7:00 a.	---	---	10.55	High tide 6.5 feet above m.s.l. at 10:00 a.
Hattiesburg	18	---	---	---	---	---	---	6.00	
Jackson	18	---	---	32 NE	2:24 p.	40 --	2:29 p.	1.49	
Laurel	18	---	---	35 NNE	12.30 p.	40 NNE	12:30 p.	5.29	
McComb	18	29.63	3:58 p.	23 ENE	7:58 a.	32 ENE	7:58 a.	3.83	
Meridian	18	---	---	29 E	2:42 p.	37 E	2:42 p.	2.80	
Pascagoula	18	29.78	3:00 p.	48 ESE	8:30 a.	51 ESE	8:30 a.	9.97	High tide 4.1 feet above m.s.l.
Poplarville	18	---	---	---	---	---	---	5.94	
Richton	18	---	---	---	---	---	---	11.12	
Standard	18	---	---	---	---	---	---	9.15	
Van Cleave	18	---	---	---	---	---	---	12.74	High tide 3-5 feet above m.s.l. Local flooding.
Waynesboro	18	---	---	---	---	---	---	6.09	
ALABAMA									
Evergreen	18	29.87	5:58 p.	21 SSE	2:12 p.	---	---	1.38	
Mobile	18	29.79	4:00 p.	40 E	8:32 a.	60 SE	9:58 a.	7.05	Major damage to pecan crop in Mobile and Baldwin Counties.
Montgomery	19	29.94	3-4 a.	21 S	10:17 a.	---	---	1.20	
Tuscaloosa	19	29.68	2:58 a.	15 ESE	12:58 a.	26 ESE	12:58 a.	--	
FLORIDA									
Pensacola (City office)	18	29:86	6:00 p.	31 S	12:31 p.	---	---	5.80	No report of any local flooding.
Pensacola (Airport	18	29.86	6:00 p.	52 S	12:37 p.	75 S	12:37 p.	4.83	

All Times Central Standard
# Total rainfall for duration of storm
* Estimated

TABLE 1

RAWINSONDE DATA

Average monthly values

SEPTEMBER 1957

ALBANY, N. Y.
(1008 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	86	12.0	91	214	2.5
1,000	30	148	12.6	84	233	3.1
950	30	583	13.9	70	261	7.4
900	30	1,037	11.8	64	277	11.5
850	30	1,514	9.5	58	278	15.3
800	30	2,016	7.6	54	273	18.8
750	30	2,547	5.2	52	268	22.7
700	30	3,107	2.4	53	266	26.0
650	30	3,700	-.2	43	264	29.5
600	30	4,341	-3.9	41	262	31.5
550	30	5,017	-7.8	39	263	34.2
500	30	5,759	-12.0		260	37.3
450	30	6,550	-17.2		261	40.2
400	30	7,432	-23.5		263	43.1
350	30	8,395	-30.2		261	49.5
300	30	9,475	-38.0		260	54.6
250	30	10,707	-46.9		262	62.2
200	30	12,157	-55.1		266	64.1
175	30	13,003	-58.5		267	57.1
150	30	13,966	-61.1		263	52.3
125	30	15,097	-61.9		262	41.4
100	29	16,477	-61.4		262	31.9
80	29	17,868	-59.1		271	20.0
60	29	19,690	-55.0		265	7.0
50	29	20,860	-53.5		261	2.1
40	27	22,300	-51.5			.0
30	21	24,180	-48.4		82	4.1
25	15	25,395	-47.0		78	4.7
20	5	26,888	-45.2			
15						

ALBUQUERQUE, N. MEX.
(840 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	1,619	14.8	48	91	2.3
1,000	30	107				
950	30	553				
900	30	1,025				
850	30	1,515				
800	30	2,032	15.9	37	197	4.1
750	30	2,573	13.3	35	243	4.9
700	30	3,154	9.2	36	280	7.8
650	30	3,757	4.6	38	280	7.6
600	30	4,410	-.5	44	278	7.6
550	30	5,093	-5.5	37	273	8.9
500	30	5,842	-10.1	31	281	11.7
450	30	6,640	-15.2		286	15.2
400	30	7,528	-21.7		283	17.5
350	30	8,498	-28.7		286	20.4
300	30	9,583	-37.0		285	24.1
250	30	10,821	-45.6		280	34.0
200	30	12,278	-54.4		287	32.6
175	29	13,123	-58.4		289	31.9
150	28	14,083	-62.5		286	32.4
125	26	15,196	-66.5		287	28.6
100	21	16,547	-67.2		290	17.3
80	16	17,908	-63.2			
60	12	19,703	-58.9			
50	12	20,854	-56.6			
40	12	22,278	-54.0			
30	12	24,137	-51.1			
25	7	25,328	-49.6			
20						
15						

AMARILLO, TEX
(894 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	1,095	12.8	78	193	3.7
1,000	30	138				
950	30	574				
900	30	1,035				
850	30	1,521	15.7	57	215	9.9
800	30	2,035	14.3	49	243	6.8
750	30	2,574	11.3	43	266	4.3
700	30	3,150	7.4	42	304	4.1
650	30	3,749	3.4	42	305	4.9
600	30	4,401	-1.0	43	309	6.4
550	30	5,080	-5.2	38	293	7.6
500	30	5,833	-10.0	33	294	9.9
450	30	6,632	-15.5		291	14.4
400	30	7,517	-21.7		289	16.9
350	30	8,487	-29.0		289	21.4
300	30	9,571	-37.2		284	27.0
250	30	10,808	-45.8		282	33.6
200	30	12,266	-54.2		282	35.8
175	30	13,113	-59.0		283	35.8
150	30	14,071	-63.1		282	34.4
125	30	15,184	-66.4		284	24.5
100	24	16,532	-66.3		289	15.5
80	22	17,896	-63.2		293	3.3
60	22	19,683	-58.8		102	7.2
50	21	20,837	-56.2		88	7.2
40	19	22,252	-54.1		93	9.7
30	18	24,118	-50.7		91	11.9
25	18	25,313	-48.4		90	10.7
20	17	26,788	-45.9		84	12.2
15	14	28,732	-43.0		88	13.6

ANCHORAGE, ALASKA
(1004 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	30	9.1	82	221	0.8
1,000	30	58			192	1.7
950	30	483	8.3	68	149	2.7
900	30	929	5.9	67	155	7.8
850	30	1,395	2.7	71	168	11.5
800	30	1,883	.0	73	172	13.4
750	30	2,394	-3.3	73	184	16.5
700	30	2,942	-5.6	69	193	15.9
650	30	3,512	-8.7	66	201	16.5
600	30	4,137	-12.5	65	205	17.3
550	29	4,790	-16.3	59	210	19.8
500	29	5,506	-20.5	55	219	26.2
450	29	6,272	-25.6	54	225	32.3
400	29	7,124	-31.3	53	230	36.5
350	29	8,058	-37.5	52	227	38.1
300	29	9,107	-44.2		218	35.0
250	29	10,311	-51.2		228	27.0
200	28	11,754	-51.9		233	29.0
175	28	12,622	-51.1			
150	28	13,626	-50.7			
125	25	14,810	-51.0			
100	23	16,251	-51.2			
80	20	17,712	-50.5			
60	19	19,597	-51.3			
50	17	20,796	-51.7			
40	14	22,227	-52.4			
30	10	24,105	-52.0			
25						
20						
15						

ANNETTE, ALASKA
(1013 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	37	12.5	90	83	1.2
1,000	30	146	12.9	84	322	1.9
950	30	577	11.8	77	224	1.2
900	30	1,030	10.0	72	243	2.9
850	30	1,505	8.6	62	248	5.4
800	30	2,005	6.6	56	268	9.7
750	30	2,529	4.3	51	274	13.2
700	30	3,093	1.9	51	278	16.7
650	30	3,682	-1.4	43	287	18.7
600	30	4,322	-5.2	42	277	19.0
550	30	4,992	-9.5	43	274	16.5
500	30	5,731	-14.0	44	268	18.1
450	30	6,515	-19.5	43	268	19.4
400	30	7,389	-25.7	41	243	12.8
350	30	8,343	-33.0	39	257	12.8
300	30	9,409	-41.3		275	16.5
250	30	10,624	-50.2		262	14.8
200	29	12,064	-56.9		286	22.2
175	29	12,910	-57.0			
150	29	13,884	-58.1			
125	28	15,035	-58.2			
100	26	16,446	-57.9			
80	20	17,870	-56.8			
60	16	19,699	-56.0			
50	13	20,863	-55.6			
40	13	22,290	-55.0			
30	12	24,148	-54.1			
25	9	25,343	-52.8			
20						
15						

1/
ATHENS, GA.
(989 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	246	18.8	96	84	1.7
1,000	30	147				
950	30	593	20.0	78	165	3.1
900	30	1,057	18.4	74	178	4.5
850	30	1,546	15.9	73	191	5.8
800	30	2,060	12.9	71	204	7.0
750	30	2,600	9.7	67	210	8.4
700	30	3,171	6.6	63	216	11.7
650	30	3,776	3.3	56	218	14.0
600	30	4,423	-.1	49	227	13.2
550	30	5,111	-4.0	51	227	15.7
500	30	5,862	-8.3	47	234	18.1
450	30	6,667	-13.4	44	235	21.0
400	30	7,560	-19.1	44	233	23.5
350	30	8,541	-25.8	45	234	25.3
300	30	9,641	-33.8	44	235	29.9
250	30	10,893	-43.8		238	32.1
200	29	12,350	-55.4		243	34.8
175	29	13,192	-60.7		247	34.4
150	29	14,140	-65.2		250	28.6
125	28	15,248	-68.3		241	22.3
100	26	16,593	-68.2		240	12.2
80	26	17,942	-64.9		235	3.3
60	26	19,722	-58.9		90	8.0
50	26	20,874	-56.2		95	8.7
40	26	22,301	-53.7		82	9.9
30	25	24,167	-50.3		83	15.3
25	25	25,364	-48.0		87	15.0
20	24	26,845	-45.2		90	12.4
15	20	28,782	-43.0		74	14.8

2/
BARROW, ALASKA
(1011 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	8	-2.2	91	14	2.5
1,000	30	97	-2.3	91	2	1.9
950	30	501	-3.7	89	335	2.7
900	30	930	-4.4	78	325	4.1
850	30	1,380	-5.7	69	324	3.7
800	30	1,854	-7.6	65	292	4.9
750	30	2,353	-9.8	62	291	5.8
700	30	2,886	-12.7	58	254	6.8
650	30	3,444	-15.8	56	253	10.7
600	30	4,049	-19.4	53	248	12.8
550	30	4,686	-23.4	48	243	14.4
500	30	5,383	-27.8	45	230	16.9
450	30	6,125	-32.8		239	18.1
400	30	6,955	-38.6		230	19.0
350	30	7,860	-44.7		230	28.6
300	30	8,879	-50.1		233	23.5
250	30	10,064	-51.9		231	31.7
200	30	11,521	-48.8		238	32.1
175	29	12,403	-47.8		235	32.6
150	29	13,421	-47.7		229	32.1
125	28	14,632	-47.8			
100	27	16,106	-48.3			
80	27	17,573	-48.9			
60	27	19,459	-49.6			
50	27	20,650	-50.2			
40	27	22,105	-50.7			
30	25	23,987	-51.0			
25	25	25,172	-51.3			
20	24	26,615	-51.5			
15	18	28,454	-51.9			

3/
BARTER IS., ALASKA
(1008 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	15	-0.7	92	301	3.7
1,000	30	81			303	4.3
950	31	494	-.9	83	295	3.5
900	30	922	-2.0	78	269	4.3
850	30	1,376	-3.2	73	265	5.1
800	30	1,855	-4.6	72	259	8.2
750	30	2,362	-6.8	69	256	8.7
700	30	2,898	-9.6	67	247	11.3
650	30	3,464	-12.5	62	247	11.7
600	30	4,076	-16.1	57	248	15.5
550	30	4,718	-20.2	53	246	16.7
500	30	5,427	-24.7	50	243	20.0
450	30	6,179	-29.7	46	243	21.8
400	30	7,018	-35.5		238	25.3
350	30	7,936	-41.8		240	30.1
300	30	8,967	-47.8		238	32.6
250	30	10,159	-51.5		236	33.6
200	30	11,612	-50.0		236	31.5
175	30	12,488	-48.7		236	27.0
150	29	13,505	-48.8		238	25.3
125	28	14,699	-48.6		241	24.1
100	27	16,156	-48.9		240	21.2
80	27	17,624	-48.8		245	19.6
60	26	19,514	-49.9		248	17.5
50	26	20,705	-50.4		255	18.3
40	26	22,160	-51.1		261	17.5
30	25	24,042	-51.5		267	16.7
25	24	25,238	-51.3		278	17.1
20	20	26,658	-51.4		289	18.1
15	11	28,610	-50.3		298	12.6

4/
BETHEL, ALASKA
(1005 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	4	5.8	91	6	3.5
1,000	30	44			16	5.8
950	30	467	5.9	71	60	6.2
900	30	907	3.7	66	70	2.9
850	30	1,369	1.3	61	64	2.3
800	30	1,855	-1.2	61	116	1.4
750	30	2,367	-4.0	60	184	1.7
700	30	2,910	-6.8	59	205	3.5
650	30	3,484	-10.1	56	206	6.4
600	30	4,099	-13.7	53	217	7.8
550	30	4,754	-17.8	52	213	7.6
500	30	5,463	-22.6	48	201	10.5
450	29	6,224	-27.5	47	196	11.7
400	29	7,069	-33.3	43	204	13.4
350	29	7,995	-39.9		207	16.5
300	29	9,033	-46.5		214	22.7
250	29	10,231	-50.1		214	29.9
200	29	11,691	-49.3		220	30.9
175	29	12,567	-48.8		225	29.1
150	29	13,582	-48.4		225	32.8
125	29	14,781	-48.7		225	24.9
100	29	16,247	-49.0		227	19.0
80	29	17,711	-49.5		230	16.1
60	29	19,595	-49.9		226	13.0
50	29	20,785	-50.6		217	9.3
40	28	22,240	-50.6		222	11.1
30	28	24,114	-50.9		252	7.6
25	27	25,298	-51.1		292	3.5
20	25	26,754	-51.0		289	4.7
15	20	28,639	-50.7			

5/
BISMARCK, N. DAK.
(957 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	505	7.5	88		0.0
1,000	30	135				
950	30	564	8.9	84	272	.8
900	30	1,012	11.2	68	287	6.4
850	30	1,488	9.5	58	299	9.9
800	30	1,989	6.7	55	297	11.7
750	30	2,515	3.8	55	289	14.0
700	30	3,074	.5	55	285	17.5
650	30	3,661	-3.3	54	288	19.0
600	30	4,295	-6.9	49	286	19.2
550	30	4,966	-10.9	44	289	21.4
500	30	5,696	-15.7	42	287	23.5
450	30	6,476	-21.4	42	289	28.2
400	30	7,343	-27.7	39	289	25.8
350	30	8,290	-34.5		289	27.2
300	30	9,350	-42.5		286	29.0
250	30	10,560	-50.3		277	28.2
200	30	12,001	-54.1		286	29.0
175	29	12,855	-54.9		278	29.1
150	29	13,838	-56.1		276	28.2
125	28	14,995	-57.7		276	22.0
100	26	16,402	-57.1		280	16.1
80	22	17,823	-56.2			
60	21	19,658	-55.0			
50	21	20,826	-53.9			
40	21	22,266	-52.0			
30	21	24,141	-49.6			
25	21	25,339	-48.0			
20	21	26,818	-45.9			
15	19	28,750	-44.5			

BOISE, IDAHO
(916 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	868	12.8	49	149	3.3
1,000	30	124				
950	30	565				
900	30	1,020	16.7	36	142	2.1
850	30	1,507	16.1	30	277	.8
800	30	2,019	13.0	33	277	2.9
750	30	2,558	9.3	34	283	4.7
700	30	3,127	5.7	34	280	7.6
650	30	3,727	1.7	36	275	10.5
600	30	4,370	-2.3	37	281	12.0
550	30	5,048	-6.5	35	283	13.2
500	30	5,796	-11.5	36	296	12.6
450	30	6,590	-17.3	35	299	11.9
400	30	7,469	-24.0	34	293	14.8
350	30	8,430	-31.3		296	13.6
300	30	9,504	-39.5		316	14.4
250	30	10,728	-48.4		312	15.7
200	30	12,171	-56.1		311	20.0
175	30	13,014	-58.7		305	19.8
150	29	13,977	-60.0		302	19.0
125	28	15,107	-62.3		285	17.7
100	27	16,486	-62.3		280	12.0
80	26	17,870	-60.6		289	11.9
60	25	19,669	-58.7		295	6.6
50	25	20,818	-57.3		307	5.6
40	22	22,243	-55.4			
30	20	24,086	-52.9			
25	17	25,261	-51.3			
20	8	26,680	-50.5			
15						

BROWNSVILLE, TEX.
(1012 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	7	23.0	89	284	1.0
1,000	30	111	24.6	82	193	.8
950	30	558	22.4	79	165	3.7
900	30	1,030	19.8	76	165	4.3
850	30	1,521	16.9	73	187	2.5
800	30	2,037	14.2	67	287	1.4
750	30	2,577	12.0	51	6	1.2
700	30	3,155	9.0	46	339	1.7
650	30	3,761	5.4	42	341	1.9
600	30	4,415	1.6	39	344	1.9
550	30	5,105	-2.3	37	344	2.7
500	30	5,863	-6.9	31	341	2.9
450	30	6,670	-12.0	30	263	2.1
400	30	7,569	-18.2		303	3.5
350	30	8,553	-25.0		263	3.1
300	30	9,656	-33.2		249	9.9
250	30	10,912	-42.8		248	9.9
200	30	12,382	-53.9		278	11.7
175	30	13,228	-60.1		273	11.9
150	30	14,176	-66.2		278	11.9
125	29	15,266	-71.5		301	5.4
100	24	16,573	-73.4		282	1.6
80	21	17,885	-69.4		59	6.0
60	19	19,628	-63.3			
50	19	20,759	-59.2			
40	19	22,171	-55.2			
30	17	24,023	-51.6			
25	13	25,219	-48.7			
20						
15						

6/
BUFFALO, N. Y.
(996 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	182	12.9	86	230	5.1
1,000	30	142				
950	30	576	14.1	73	244	10.5
900	30	1,032	11.7	70	252	15.0
850	30	1,509	9.3	63	255	17.5
800	30	2,010	6.9	58	257	20.4
750	30	2,543	4.6	54	257	23.3
700	30	3,099	2.1	52	256	25.6
650	30	3,693	-.6	46	259	28.2
600	30	4,331	-3.9	44	260	31.1
550	30	5,009	-8.0	40	258	33.6
500	30	5,749	-12.6	38	258	35.9
450	30	6,542	-18.0		260	39.2
400	30	7,416	-24.2		257	42.0
350	30	8,377	-31.1		257	45.7
300	30	9,452	-39.1		262	48.8
250	30	10,680	-47.6		260	56.9
200	30	12,131	-54.5		262	61.4
175	30	12,981	-57.2		263	56.3
150	30	13,950	-59.7		263	47.2
125	30	15,088	-60.4		262	36.7
100	30	16,477	-60.5		261	29.0
80	30	17,873	-58.6		267	20.2
60	30	19,694	-55.8		265	11.7
50	28	20,856	-54.5		274	4.9
40	25	22,288	-53.0		348	.6
30	22	24,139	-50.8		77	1.4
25	20	25,332	-49.3		39	1.9
20	19	26,799	-47.4		68	2.3
15	19	28,712	-45.0		83	3.3

7/
BURRWOOD, LA.
(1013 MB)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	29	3	25.2	93	110	1.9
1,000	29	121	24.7	90	125	3.7
950	29	568	21.9	85	146	4.5
900	29	1,039	19.5	78	162	7.2
850	29	1,531	16.9	73	168	7.0
800	29	2,046	14.1	70	176	7.2
750	29	2,586	11.1	66	179	7.0
700	29	3,162	7.9	62	185	8.4
650	29	3,768	4.6	57	203	8.2
600	29	4,418	.8	58	215	8.5
550	29	5,104	-3.4	53	209	10.1
500	29	5,860	-7.9	52	210	8.9
450	29	6,667	-12.9	51	208	10.7
400	29	7,561	-18.9	50	216	12.6
350	29	8,542	-25.7	46	218	13.6
300	29	9,642	-33.7		217	15.9
250	29	10,896	-43.4		235	18.7
200	27	12,368	-54.3		262	14.0
175	27	13,213	-60.2		255	14.6
150	27	14,163	-65.3		267	10.1
125	26	15,257	-69.4		266	8.9
100	25	16,584	-69.6		277	1.4
80	23	17,927	-66.6		102	9.5
60	23	19,691	-60.9		76	13.6
50	23	20,833	-58.1		88	18.1
40	23	22,250	-55.0		83	23.3
30	22	24,099	-51.8		82	27.2
25	21	25,290	-49.4		91	26.4
20	20	26,758	-47.2		82	29.9
15	16	28,683	-43.5		80	28.6

8/
CAPE HATTERAS, N. C.
(1017 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	4	23.4	86		0.0
1,000	30	151	23.4	80	275	.8
950	30	592	20.5	77	249	1.6
900	30	1,065	18.0	71	255	2.1
850	30	1,553	15.5	70	257	3.7
800	30	2,066	12.8	64	254	4.1
750	30	2,602	9.9	60	258	5.8
700	30	3,177	7.0	56	257	8.0
650	30	3,778	3.8	53	246	9.7
600	30	4,430	.5	48	248	11.5
550	30	5,113	-3.5	48	248	14.0
500	30	5,872	-7.7	41	245	15.3
450	30	6,678	-12.7	42	245	16.7
400	30	7,574	-18.7	39	249	19.6
350	30	8,556	-25.6	38	250	22.9
300	30	9,656	-33.9		253	22.9
250	30	10,907	-43.9		257	25.5
200	30	12,370	-54.8		264	24.7
175	30	13,214	-60.2		263	22.3
150	30	14,164	-64.9		265	20.4
125	30	15,267	-68.2		258	18.3
100	30	16,610	-67.3		264	10.3
80	29	17,970	-64.0		274	2.5
60	29	19,761	-57.6		84	7.0
50	29	20,919	-55.0		97	8.5
40	29	22,356	-52.0		89	10.9
30	28	24,235	-49.1		86	11.5
25	26	25,431	-47.4		91	12.2
20	25	26,914	-44.9		94	10.9
15	21	28,837	-42.5		55	7.0

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

1/ 10 mb., 7 obs., 31,538 m., -38.7°C.
2/ 10 mb., 6 obs., 31,107 m., -51.6 C.
3/ 10 mb., 7 obs., 31,403 m., -47.4 C.
4/ 10 mb., 12 obs., 31,285 m., -49.4°C.
5/ 10 mb., 13 obs., 31,443 m., -42.7°C.
7 mb., 5 obs., 33,808 m., -41.7 C.
6/ 10 mb., 12 obs., 31,429 m., -40.8 C.
7/ 10 mb., 10 obs., 31,423 m., -39.3°C.
8/ 10 mb., 15 obs., 31,590 m., -37.4°C.

RAWINSONDE DATA

Average monthly values

Standard pressure surface (mb.)	CARIBOU, ME. (992 MB.)						CHARLESTON, S. C. (1016 MB.)						COLD BAY, ALASKA (999 MB.)						COLUMBIA, MO. (990 MB.)						DAYTON, OHIO (983 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind		Number of observations	Dynamic height	Temperature	Relative humidity	Wind		Number of observations	Dynamic height	Temperature	Relative humidity	Wind		Number of observations	Dynamic height	Temperature	Relative humidity	Wind		Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed					Direction	Speed					Direction	Speed					Direction	Speed					Direction	Speed
SURFACE	30	191	9.6	93	227	3.1	30	13	20.9	95	353	0.8	30	27	8.9	89	20	1.6	30	238	13.4	89	132	2.1	30	297	14.3	88	118	0.6
1,000	30	125					30	151	22.9	86	253	.6	30	18			180	1.0	30	147					30	147				
950	30	550	10.9	78	264	9.1	30	599	21.9	80	202	2.7	30	441	7.0	85	83	2.5	30	584	16.9	65	201	3.9	30	580	15.8	71	177	1.7
900	30	1,005	9.4	72	281	15.0	30	1,069	19.5	76	205	4.3	30	886	4.6	84	65	2.5	30	1,044	14.9	61	253	3.7	30	1,041	13.7	68	252	5.2
850	30	1,477	6.9	70	282	16.5	30	1,560	16.7	71	213	4.1	30	1,349	2.2	81	89	4.3	30	1,527	12.7	57	294	4.9	30	1,521	11.5	62	265	8.9
800	30	1,974	4.9	65	277	21.2	30	2,075	13.9	68	215	3.3	30	1,837	.2	74	152	3.5	30	2,034	10.0	55	298	6.0	30	2,026	9.0	58	259	12.4
750	30	2,500	2.6	59	278	22.9	30	2,615	10.7	68	219	4.3	30	2,349	- 2.2	68	175	6.0	30	2,568	7.3	51	298	8.0	30	2,550	6.7	52	256	14.4
700	30	3,055	- .4	56	272	24.7	30	3,190	7.7	61	215	7.4	30	2,898	- 5.0	63	169	8.4	30	3,134	4.7	45	293	9.7	30	3,123	3.9	49	250	15.5
650	30	3,639	- 3.4	50	268	29.1	30	3,795	4.3	57	216	8.9	30	3,473	- 8.0	57	188	8.5	30	3,731	1.6	44	285	10.3	30	3,711	.7	47	251	17.9
600	30	4,275	- 7.0	46	270	33.2	30	4,445	.6	54	222	10.1	30	4,096	-11.2	52	191	9.5	30	4,376	- 2.2	42	275	11.7	30	4,361	- 2.9	45	251	19.8
550	30	4,942	-10.4	40	270	35.4	30	5,137	- 2.8	49	226	12.2	30	4,756	-15.3	48	202	14.0	30	5,054	- 6.4		270	13.0	30	5,034	- 6.7		254	21.8
500	30	5,678	-15.0	41	267	39.4	30	5,891	- 7.2	45	234	13.8	30	5,472	-20.0	45	205	19.0	30	5,801	-11.1		267	15.3	30	5,785	-11.2		256	24.5
450	30	6,461	-20.3	38	268	43.1	30	6,700	-12.3	43	240	14.0	30	6,237	-25.3	42	204	19.2	30	6,595	-16.3		266	19.4	30	6,574	-16.6		254	27.8
400	30	7,332	-26.3	37	266	45.5	30	7,597	-18.2	44	237	15.2	30	7,090	-31.1	39	210	18.1	30	7,480	-22.6		264	22.2	30	7,462	-22.9		246	32.3
350	30	8,284	-33.2		270	49.9	30	8,581	-25.1	39	233	14.6	30	8,023	-37.9		200	21.6	30	8,446	-29.9		265	25.8	30	8,428	-29.5		248	38.9
300	30	9,351	-41.0		266	54.4	30	9,683	-33.4	36	234	15.7	30	9,069	-44.7		200	29.1	30	9,526	-38.2		261	29.1	30	9,510	-37.5		246	46.2
250	30	10,570	-48.8		266	58.9	30	10,937	-43.5		253	17.3	30	10,274	-48.7		207	28.0	30	10,756	-47.1		263	34.4	30	10,745	-46.4		246	53.4
200	29	12,019	-54.9		276	56.0	30	12,402	-55.0		268	16.9	30	11,743	-48.5		211	20.4	30	12,208	-54.8		264	39.6	30	12,197	-55.4		249	53.6
175	27	12,885	-56.9		278	50.7	30	13,245	-60.6		263	15.9	30	12,621	-48.5		218	20.6	30	13,057	-57.7		260	40.2	30	13,042	-58.8		254	49.0
150	27	13,859	-58.2		272	45.1	30	14,194	-65.4		258	15.9	30	13,635	-48.7		219	24.5	30	14,023	-60.6		261	37.1	30	14,003	-61.6		254	42.9
125	27	15,005	-59.3		275	38.1	28	15,292	-69.2		264	12.4	30	14,831	-49.7		215	20.6	29	15,155	-62.8		263	33.4	30	15,129	-63.1		253	33.8
100	26	16,405	-57.6		274	29.7	27	16,627	-68.9		241	4.5	30	16,290	-50.1		218	15.2	28	16,533	-62.2		267	20.4	29	16,500	-62.5		255	24.9
80	23	17,819	-55.9		267	16.9	26	17,968	-65.5		138	.8	30	17,747	-50.6		215	15.7	28	17,917	-60.6		263	10.3	29	17,885	-60.0		257	12.8
60	22	19,657	-53.7		268	11.7	24	19,749	-58.8		86	10.3	30	19,622	-50.8		219	8.9	27	19,727	-56.9		260	2.3	29	19,697	-56.3		237	1.7
50	21	20,829	-53.1		267	7.0	22	20,900	-56.3		88	11.3	30	20,809	-51.4		205	9.3	27	20,888	-54.9		116	2.1	28	20,858	-54.1		141	2.5
40	19	22,268	-51.8		269	4.1	22	22,328	-53.5		93	16.3	29	22,263	-51.8		221	5.6	25	22,320	-52.3		96	3.9	26	22,299	-51.1		94	4.9
30	17	24,137	-50.0		335	4.3	14	24,179	-50.9		84	15.7	23	24,140	-52.0		166	6.0	19	24,189	-49.2		92	6.0	22	24,181	-48.7		84	7.8
25	15	25,323	-49.1		345	4.3	6	25,391	-48.6				16	25,314	-51.7				14	25,385	-47.2		85	6.2	20	25,389	-46.1		85	10.7
20	15	26,796	-46.7		348	4.9							6	26,736	-52.1				5	26,871	-44.5				14	26,889	-43.0		81	9.3
15	7	28,736	-43.6																						8	28,851	-41.2			

Standard pressure surface (mb.)	1/ DENVER, COLO. (841 MB.)						DODGE CITY, KANS. (927 MB.)						EL PASO, TEX. (882 MB.)						ELY, NEV. (811 MB.)						2/ FAIRBANKS, ALASKA (993 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind		Number of observations	Dynamic height	Temperature	Relative humidity	Wind		Number of observations	Dynamic height	Temperature	Relative humidity	Wind		Number of observations	Dynamic height	Temperature	Relative humidity	Wind		Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed					Direction	Speed					Direction	Speed					Direction	Speed					Direction	Speed
SURFACE	30	1,611	7.7	74	213	2.9	30	792	12.8	82	197	2.1	30	1,197	18.2	52	46	2.1	30	1,908	4.2	48	180	8.7	30	135	4.3	83		0.0
1,000	30	154					30	144					30	101					30	162					30	75				
950	30	585					30	578					30	549					30	589					30	494	6.1	65	234	3.1
900	30	1,041					30	1,039	16.1	62	205	5.6	30	1,024					30	1,047					30	937	3.8	64	223	7.2
850	30	1,520					30	1,525	15.9	50	216	5.4	30	1,514	20.1	41	119	3.1	30	1,524					30	1,399	1.3	65	215	9.5
800	30	2,028	13.2	47	266	4.7	30	2,038	13.3	45	237	3.5	30	2,035	17.7	39	158	2.1	30	2,024	11.7	40	182	7.6	30	1,885	- 1.4	63	209	9.5
750	30	2,566	10.5	46	274	4.9	30	2,575	10.1	45	268	4.5	30	2,580	14.4	39	201	1.4	30	2,563	12.1	31	199	3.3	30	2,392	- 4.4	63	218	11.7
700	30	3,140	6.9	44	279	5.2	30	3,149	6.5	46	285	6.4	30	3,163	10.1	44	241	2.3	30	3,140	8.5	31	238	5.2	30	2,937	- 7.4	60	215	15.0
650	30	3,740	2.6	44	284	9.7	30	3,750	2.4	45	307	7.8	30	3,769	5.3	48	238	2.5	30	3,740	4.2	33	249	7.2	30	3,502	-10.7	57	221	17.7
600	30	4,387	- 2.3	47	290	13.8	30	4,395	- 2.0	42	303	12.0	30	4,424	.5	47	258	3.3	30	4,393	- .5	36	249	7.6	30	4,122	-14.2	52	222	21.6
550	30	5,064	- 7.0	45	285	16.7	30	5,078	- 6.4	39	294	14.2	30	5,109	- 3.9	39	282	6.8	30	5,076	- 5.1	31	247	7.2	30	4,770	-18.0	49	228	23.3
500	30	5,808	-12.2	37	283	18.5	30	5,821	-10.9	35	301	19.0	30	5,864	- 8.0		287	10.7	30	5,826	- 9.9		248	8.4	30	5,484	-22.7	48	224	25.8
450	30	6,601	-17.5		283	20.4	30	6,616	-16.4	30	306	18.3	30	6,668	-13.1		284	14.4	30	6,623	-15.7		264	8.4	30	6,243	-27.9	49	226	30.3
400	30	7,479	-23.8		280	22.3	30	7,500	-22.7		299	22.5	30	7,565	-19.5		280	19.0	30	7,508	-22.3		258	9.3	30	7,085	-33.6	49	244	35.6
350	30	8,441	-31.2		279	25.1	30	8,465	-30.0		310	21.6	30	8,544	-26.7		279	23.1	30	8,475	-30.0		275	9.1	30	8,010	-39.9		251	30.9
300	30	9,515	-39.6		281	28.2	30	9,545	-38.2		308	24.7	30	9,639	-34.9		275	26.2	30	9,555	-38.3		286	9.9	30	9,048	-46.8			
250	30	10,741	-47.9		281	33.6	30	10,776	-47.4		302	30.9	30	10,887	-44.0		277	31.5	30	10,786	-47.1		312	9.5	30	10,242	-51.4			
200	30	12,190	-54.6		289	39.2	30	12,227	-54.6		296	36.9	30	12,351	-54.4		280	35.0	30	12,238	-54.7		309	14.0	30	11,688	-51.3			
175	30	13,041	-57.3		288	39.1	29	13,075	-58.3		285	37.3	30	13,196	-59.6		281	38.7	30	13,086	-58.0		287	18.3	30	12,558	-50.6			
150	30	14,009	-59.9		280	36.5	29	14,037	-61.5		283	39.1	29	14,149	-65.1		280	34.8	30	14,052	-60.8		295	14.8	30	13,563	-50.5			
125	26	15,134	-61.9		282	28.4	27	15,167	-63.6		280	36.9	29	15,247	-69.7		273	28.0	30	15,178	-63.4		295	17.3	30	14,752	-50.2			
100	21	16,507	-63.2		293	16.7	23	16,540	-64.7				13	16,569	-71.5		286	17.3	30	16,546	-64.3		296	16.1	30	16,209	-50.3			
80	15	17,874	-61.6		288	12.2	17	17,903	-62.4				8	17,883	-67.7				29	17,917	-61.8		338	6.4	29	17,662	-50.6			
60	15	19,668	-58.8		297	4.1	15	19,688	-58.2				5	19,657	-60.2				29	19,712	-58.6		357	2.9	29	19,537	-51.0			
50	15	20,819	-56.7		293	3.5	15	20,843	-56.0				5	20,804	-57.2				29	20,863	-56.4		29	2.1	29	20,723	-51.6			
40	15	22,243	-54.1		27	1.9	15	22,271	-53.6				5	22,225	-54.5				29	22,288	-54.1		13	2.3	27	22,161	-52.2			
30	14	24,091	-51.8		79	2.5	12	24,130	-50.2				5	24,084	-50.8				27	24,146	-51.0		93	2.1	26	24,020	-52.4			
25	14	25,280	-49.7		85	2.5	6	25,369	-47.3				5	25,277	-48.5				21	25,348	-49.1				25	25,203	-52.7			
20	14	26,749	-47.3		357	.6							5	26,752	-46.7				5	26,869	-46.9				21	26,630	-52.8			
15	14	28,663	-44.7		297	3.1							5	28,672	-44.1										16	28,476	-53.0			

Standard pressure surface (mb.)	3/ FLINT, MICH. (990 MB.)						4/ FORT WORTH, TEX. (995 MB.)						GLASGOW, MONT. (935 MB.)						GRAND JUNCTION, COLO. (854 MB.)						GREAT FALLS, MONT (889 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind		Number of observations	Dynamic height	Temperature	Relative humidity	Wind		Number of observations	Dynamic height	Temperature	Relative humidity	Wind		Number of observations	Dynamic height	Temperature	Relative humidity	Wind		Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed					Direction	Speed					Direction	Speed					Direction	Speed					Direction	Speed
SURFACE	30	240	10.0	94	257	1.9	30	180	19.8	82		0.0	30	696	8.8	77	54	2.3	28	1,474	12.2	45	114	7.2	30	1,123	10.6	61	241	8.0
1,000	30	147					30	133					30	136					28	129					30	133				
950	30	579	13.5	75	271	5.6	30	575	20.0	74	170	5.1	30	567					28	568					30	568				
900	30	1,033	11.3	68	274	8.5	30	1,042	17.9	70	170	5.1	30	1,017	12.0	61	324	4.3	28	1,031					30	1,027				
850	30	1,509	9.2	57	272	11.7	30	1,531	15.6	59	214	1.4	30	1,495	10.7	55	314	8.0	28	1,517			117	7.4	30	1,504	12.8	45	271	8.2
800	30	2,011	7.8	45	270	15.0	30	2,043	12.9	61	344	2.7	30	1,998	7.6	54	306	10.9	28	2,030	14.7	33	131	6.4	30	2,010	9.8	47	292	7.6
750	30	2,536	5.1	46	267	17.9	30	2,581	10.7	46	357	5.1	30	2,524	4.2	53	310	12.6	28	2,571	12.4	30	206	1.7	30	2,539	5.9	52	298	7.6
700	30	3,102	2.3	45	264	21.4	30	3,156	7.5	45	343	5.4	30	3,084	.5	54	309	16.7	28	3,148	8.3	32	277	5.8	30	3,104	2.1	56	291	11.3
650	30	3,693	- .9	42	265	23.7	30	3,762	3.8	46	333	6.2	30	3,667	- 3.2	56	306	20.0	28	3,749	3.8	36	279	8.4	30	3,695	- 1.4	51	291	14.8
600	30	4,333	- 4.5	41	263	27.6	30	4,409	- .3	43	319	6.8	30	4,304	- 7.0	52	303	21.6	28	4,401	- .9	38	281	10.5	30	4,332	- 5.7	52	288	17.1
550	30	5,006	- 8.3	37	260	29.3	30	5,094	- 4.4	40	308	7.8	30	4,971	-11.1	50	301	24.5	28	5,081	- 6.0	38	283	13.6	30	5,003	- 9.9	48	291	19.4
500	30	5,748	-12.6		261	32.1	30	5,846	- 8.9		300	8.9	30	5,703	-15.8	50	301	28.4	28	5,828	-11.1		279	17.5	30	5,738	-14.7	46	294	22.0
450	30	6,539	-17.8		260	35.6	30	6,648	-14.2		297	10.7	30	6,480	-21.1	44	291	25.8	28	6,622	-16.6		280	15.0	30	6,521	-19.7	39	297	22.9
400	30	7,417	-24.0		259	38.9	30	7,539	-20.3		286	14.2	30	7,350	-27.2	43	299	28.6	28	7,505	-23.0		301	16.7	30	7,395	-25.8	35	297	24.7
350	30	8,378	-31.4		256	43.3	30	8,515	-27.0		281	20.0	30	8,298	-34.5	40	310	27.6	28	8,469	-30.6		300	18.3	30	8,348	-32.8		296	27.8
300	30	9,452	-39.3		253	48.0	29	9,611	-35.2		282	24.1	30	9,358	-42.4		307	29.0	28	9,545	-39.0		305	19.4	30	9,416	-40.8		302	30.5
250	30	10,678	-47.6		253	56.3	29	10,857	-44.2		277	27.2	30	10,568	-50.7		298	25.6	28	10,772	-47.9		293	18.7	30	10,635	-49.0		308	34.2
200	30	12,130	-54.0		255	58.9	29	12,323	-53.4		274	32.6	29	12,005	-54.6		294	28.0	28	12,219	-55.3		298	27.6	30	12,080	-54.6		306	35.0
175	30	12,983	-56.5		257	53.6	28	13,170	-58.2		278	32.8	29	12,858	-55.4		289	29.9	28	13,065	-58.3		288	30.9	30	12,931	-56.1		300	34.0
150	30	13,956	-58.8		257	49.0	26	14,135	-62.7		281	24.9	29	13,839	-56.4		302	26.0	27	14,029	-61.7		286	30.3	29	13,907	-57.5		304	32.3
125	29	15,100	-60.1		256	41.2	22	15,248	-66.1		273	19.6	29	14,994	-57.6		303	16.7	27	15,150	-64.5		287	23.5	25	15,049	-57.5		304	26.6
100	27	16,491	-59.9		258	26.0	18	16,601	-67.6		268	11.9	28	16,403	-57.5		292	15.3	26	16,508	-65.1		290	19.8	24	16,462	-58.1		307	20.6
80	27	17,893	-57.7		261	18.8	16	17,948	-64.7		315	1.9	26	17,820	-57.3		314	13.0	26	17,874	-63.1		309	7.4	18	17,872	-57.0		313	12.4
60	27	19,719	-55.3		257	10.5	13	19,722	-60.1		78	8.9	24	19,638	-56.4		306	6.2	26	19,662	-59.4		355	3.3	15	19,707	-56.3		335	8.5
50	27	20,888	-53.6		246	5.6	13	20,867	-58.0		94	11.7	23	20,799	-55.7		330	5.2	26	20,810	-56.8		355	2.1	14	20,867	-55.3		337	4.7
40	26	22,329	-51.8		228	3.1	13	22,284	-55.2		91	14.0	22	22,227	-54.3		311	6.4	26	22,231	-54.6		357	2.3	13	22,301	-53.8		338	5.1
30	25	24,208	-49.8		99	4.3	11	24,129	-52.0		85	18.3	18	24,086	-51.6				25	24,086	-51.6		42	3.3	12	24,172	-50.2		309	3.3
25	24	25,408	-48.0		81	5.1	11	25,315	-50.6		83	19.0	12	25,255	-50.6				21	25,274	-49.9				12	25,366	-48.7		231	2.7
20	22	26,881	-46.6		71	5.4	11	26,775	-48.9		76	19.2	6	26,685	-49.1				12	26,757	-47.9				10	26,821	-47.3			
15	17	28,779	-44.9		66	2.9	11	28,677	-46.2		83	22.0													7	28,765	-43.3			

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

1/ 10 mb., 6 obs., 31,340 m., -42.3 C.
2/ 10 mb., 5 obs., 31,198 m., -51.3 C.
3/ 10 mb., 8 obs., 31,444 m., -42.1 C.
4/ 10 mb., 8 obs., 31,357 m., -43.6°C.

RAWINSONDE DATA

Average monthly values

Standard pressure surface (mb)	GREEN BAY, WIS. (991 MB.)						GREENSBORO, N. C. (988 MB.)						HILO, T. H. (1014 MB.)						INTERNAT. FALLS, MINN. (971 MB.)						1/ JACKSON, MISS. (1004 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	210	9.4	93	280	3.1	30	273	17.9	96	48	1.0	30	11	22.1	88	227	4.9	30	360	7.8	82	185	1.7	29	101	19.8	94	63	1.9
1,000	30	134					30	165					30	129	23.2	81	233	2.7	30	119					29	136	20.0	92	76	2.1
950	30	567	12.1	72	269	7.2	30	606	19.0	80	184	.8	30	581	20.5	82	83	3.1	30	544	9.3	76	228	3.9	29	579	18.9	81	117	3.5
900	30	1,016	10.1	63	273	8.4	30	1,072	17.7	77	206	4.1	30	1,043	17.6	84	84	4.1	30	992	7.9	73	279	7.6	29	1,043	17.2	76	147	4.5
850	30	1,490	8.1	54	271	11.7	30	1,560	15.5	73	233	8.5	30	1,530	14.9	84	85	4.3	30	1,462	5.6	66	281	9.5	29	1,530	14.9	72	172	5.2
800	30	1,989	5.7	50	276	13.6	30	2,073	12.8	70	242	9.9	30	2,043	13.8	64	97	5.2	30	1,956	3.2	64	284	10.9	29	2,042	12.3	72	197	6.0
750	30	2,513	3.2	46	273	15.7	30	2,611	9.8	66	246	11.9	30	2,589	12.1	44	96	5.8	30	2,477	.8	61	282	13.6	29	2,577	9.2	68	209	6.4
700	30	3,072	.5	47	270	20.4	30	3,184	6.6	59	251	12.8	30	3,162	9.7	34	99	5.1	30	3,029	- 2.2	59	281	16.3	29	3,152	6.1	66	221	7.2
650	30	3,660	- 2.6	48	273	23.7	30	3,786	3.2	53	246	15.5	30	3,772	6.2	33	100	4.9	30	3,613	- 5.1	59	281	18.7	29	3,754	3.0	61	220	7.8
600	30	4,296	- 6.3	42	267	26.6	30	4,434	- .5	50	242	17.5	30	4,425	2.4	29	94	3.7	30	4,241	- 8.7	57	282	21.0	29	4,402	- .9	61	215	7.8
550	30	4,965	-10.0	37	268	28.0	30	5,121	- 4.0	47	238	20.0	30	5,116	- 1.7	29	109	2.5	30	4,906	-12.6	51	282	22.5	29	5,086	- 4.5	53	218	8.2
500	30	5,702	-14.7	32	271	29.3	30	5,873	- 8.1	41	239	23.1	30	5,876	- 6.3		134	1.2	30	5,633	-16.8	47	283	25.3	29	5,838	- 8.9	45	235	8.9
450	30	6,485	-20.1		271	28.0	30	6,678	-13.2	41	242	26.2	30	6,689	-11.6		235	.6	30	6,409	-22.2	45	284	27.2	29	6,642	-14.0	40	237	11.1
400	30	7,356	-26.3	33	270	23.5	30	7,572	-19.2	39	245	27.2	30	7,586	-18.0		259	2.7	30	7,273	-28.5	45	284	27.8	29	7,534	-19.9	40	233	14.0
350	30	8,309	-32.9		272	20.6	30	8,551	-26.4	39	247	32.1	30	8,570	-25.2		265	4.7	30	8,217	-35.5		281	30.1	29	8,512	-26.5	37	230	19.0
300	30	9,376	-40.5		285	24.5	30	9,648	-34.5	38	245	35.8	30	9,671	-33.5		271	11.1	30	9,273	-43.5		283	34.8	29	9,608	-34.5		230	27.8
250	30	10,597	-48.6		326	18.7	30	10,896	-44.3		254	39.2	30	10,925	-43.3		267	17.9	29	10,478	-50.4		279	39.6	29	10,858	-44.0		230	34.4
200	30	12,043	-54.2		296	23.1	30	12,356	-55.2		259	35.9	30	12,391	-54.4		274	21.0	26	11,917	-53.4		279	40.2	29	12,324	-54.1		236	34.8
175	29	12,902	-55.6		288	25.5	30	13,199	-59.9		263	29.5	30	13,236	-60.4		280	19.8	25	12,774	-53.8		273	40.0	29	13,171	-59.4		241	31.1
150	29	13,882	-56.7		284	23.7	30	14,152	-64.2		256	25.8	30	14,183	-66.6		285	12.4	25	13,763	-54.5		275	35.8	29	14,126	-64.1		248	26.4
125	29	15,034	-57.7		289	24.5	28	15,261	-66.4		254	19.4	30	15,271	-71.6		299	4.5	25	14,928	-55.5		277	28.8	27	15,231	-67.1		248	20.2
100	29	16,443	-57.3		292	18.7	28	16,611	-66.3		260	11.5	30	16,581	-73.7		74	7.6	21	16,358	-55.3		281	22.2	26	16,574	-67.2		254	8.0
80	28	17,858	-56.3		300	12.4	27	17,977	-63.0		1	2.3	29	17,891	-70.4		83	12.8	20	17,779	-55.3		285	17.7	26	17,926	-64.9		127	3.1
60	28	19,695	-54.3		316	9.1	26	19,774	-58.1		81	9.5	28	19,627	-64.1		89	21.4	20	19,619	-54.2		283	9.9	24	19,707	-58.6		83	8.7
50	28	20,867	-52.8		315	7.0	24	20,928	-55.5		80	12.4	28	20,753	-60.5		87	23.5	20	20,791	-53.6		278	7.0	24	20,860	-56.3		89	11.9
40	27	22,312	-51.1		307	6.2	22	22,362	-53.5		88	13.6	26	22,153	-57.4		90	26.4	18	22,242	-51.9		272	10.1	24	22,287	-53.5		90	14.6
30	21	24,175	-49.2				17	24,234	-50.3				25	23,988	-53.7		90	26.0	16	24,118	-49.1		262	11.9	24	24,154	-49.6		87	18.1
25	12	25,364	-47.9				[illegible]	25,390	-49.7				19	25,161	-51.7		91	30.7	16	25,319	-47.6		256	12.0	24	25,356	-46.8		91	18.8
20	7	26,913	-45.2																13	26,798	-45.7		259	11.7	22	26,841	-45.3		91	17.7
15																			11	28,703	-44.1				17	28,768	-42.7		83	17.3

Standard pressure surface (mb)	JACKSONVILLE, FLA. (1017 MB.)						2/ KING SALMON, ALASKA (1003 MB.)						KOTZEBUE, ALASKA (1009 MB.)						LAKE CHARLES, LA. (1013 MB.)						LANDER, WYO. (832 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	6	22.8	95	138	1.7	30	15	7.0	88	79	5.4	30	5	4.6	87	353	5.1	30	5	21.4	93	62	2.5	29	1,696	8.1	67	236	3.3
1,000	30	152	23.8	86	148	4.3	30	37			90	2.5	30	75			338	6.6	30	121	21.8	89	67	5.1	29	143				
950	30	597	22.6	77	161	9.3	30	460	8.1	74	108	8.7	30	491	3.1	73	360	2.7	30	567	20.6	82	80	7.2	29	578				
900	30	1,072	19.8	73	158	9.1	30	908	5.8	73	130	8.5	30	929	.6	71	311	2.9	30	1,034	18.3	79	95	4.9	29	1,032				
850	30	1,563	17.0	72	156	7.6	30	1,374	3.1	72	136	9.7	30	1,386	- 1.9	70	313	2.3	30	1,523	15.7	76	90	1.4	29	1,515				
800	30	2,079	14.3	67	157	7.4	30	1,864	.6	71	153	9.7	30	1,867	- 4.6	66	284	2.3	30	2,036	13.1	71	170	.6	29	2,021	11.7	50	287	2.1
750	30	2,614	11.1	64	165	7.4	30	2,379	- 2.1	68	163	9.9	30	2,371	- 7.3	62	284	3.5	30	2,575	10.4	62	185	.8	29	2,555	9.2	44	286	3.9
700	30	3,196	8.0	63	175	6.6	30	2,926	- 5.0	67	178	10.5	30	2,908	-10.2	61	271	3.9	30	3,150	7.6	53	283	2.1	29	3,128	5.7	42	286	6.4
650	30	3,798	4.8	57	198	7.4	30	3,502	- 8.3	61	183	13.4	30	3,471	-13.6	58	244	5.6	30	3,751	4.1	47	303	3.3	29	3,722	1.7	40	284	10.3
600	30	4,454	1.1	53	210	8.0	30	4,124	-11.9	54	191	15.3	30	4,081	-17.2	53	248	8.5	30	4,404	.5		284	3.7	29	4,370	- 2.9	40	298	13.4
550	30	5,139	- 2.5	48	217	8.5	30	4,780	-15.8	50	193	18.5	30	4,725	-21.3	49	253	8.4	30	5,086	- 3.5		267	6.0	29	5,044	- 7.8	40	291	18.5
500	30	5,901	- 6.9	45	220	9.1	30	5,500	-20.4	48	196	22.2	30	5,427	-25.9	47	247	10.5	30	5,845	- 8.3		264	6.8	29	5,787	-13.4	38	284	19.4
450	29	6,709	-12.1	46	221	9.3	30	6,264	-25.5	50	200	25.6	30	6,174	-31.3	47	246	13.6	30	6,649	-13.7		282	10.3	29	6,570	-19.0	33	288	17.9
400	29	7,608	-18.1	44	219	10.1	30	7,119	-31.2	49	206	30.1	30	7,009	-37.2		234	17.7	30	7,542	-19.6		266	12.8	29	7,448	-25.6		292	20.2
350	29	8,592	-25.2	39	223	11.1	30	8,053	-37.4	49	206	35.4	30	7,920	-43.3		228	18.5	30	8,521	-26.3		260	16.3	29	8,402	-32.9		290	21.8
300	29	9,694	-33.4		234	11.1	30	9,102	-44.6		208	41.6	30	8,945	-48.7		227	18.1	30	9,617	-34.4		253	20.0	29	9,467	-41.3		289	27.8
250	29	10,949	-43.5		248	10.3	30	10,306	-50.2		212	47.4	30	10,135	-51.2		241	18.3	30	10,868	-43.6		254	22.5	29	10,683	-49.4		276	27.0
200	29	12,412	-55.3		263	14.0	29	11,762	-50.1		210	42.2	30	11,593	-49.0		246	24.1	30	12,334	-53.9		270	21.8	29	12,125	-55.3		283	29.3
175	29	13,253	-60.9		263	12.6	29	12,636	-49.3		213	38.5	29	12,467	-47.9		231	17.3	30	13,181	-59.2		266	23.1	28	12,968	-57.7		274	32.8
150	29	14,199	-66.3		260	9.9	29	13,646	-49.9		218	37.3	29	13,485	-47.9		239	18.8	30	14,137	-63.9		277	22.5	28	13,938	-59.5		273	33.0
125	29	15,294	-69.5		270	5.6	29	14,838	-50.3		219	28.4	28	14,688	-47.7		226	19.2	29	15,245	-68.1		281	16.7	28	15,069	-62.6		272	28.6
100	29	16,619	-70.6		190	1.2	29	16,293	-50.2		220	22.2	27	16,170	-48.6		235	15.3	28	16,582	-68.6		306	4.9	28	16,445	-62.2		269	24.1
80	28	17,954	-67.0		91	5.4	28	17,749	-50.8		222	19.4	25	17,637	-48.5		228	12.6	25	17,934	-65.2		93	5.8	28	17,828	-61.3		286	12.0
60	25	19,720	-60.9		82	14.2	26	19,619	-50.8		219	14.2	25	19,526	-49.3		238	10.7	24	19,715	-59.6		88	11.5	27	19,623	-59.8		296	5.8
50	24	20,861	-58.0		89	18.3	26	20,808	-50.9		227	12.2	25	20,719	-49.9		243	12.2	24	20,865	-56.1		86	13.4	27	20,767	-58.3		281	6.4
40	23	22,279	-54.4		92	20.8	25	22,259	-51.1		230	8.2	23	22,177	-50.1		255	20.8	21	22,290	-52.8		82	15.0	26	22,180	-56.2		284	4.3
30	23	24,137	-51.2		86	23.3	25	24,131	-51.3		232	6.0	22	24,070	-50.6		249	10.9	14	24,137	-50.5				25	24,027	-53.3		290	4.9
25	20	25,321	-48.9		91	23.1	23	25,307	-50.8		255	6.8	19	25,245	-51.0				11	25,322	-48.8				20	25,216	-51.5		310	4.5
20	13	26,788	-47.0		86	19.4	23	26,762	-50.9		265	2.7	9	26,725	-50.8				7	26,766	-47.3				13	26,697	-49.2			
15							21	28,650	-49.6		285	3.9																		

Standard pressure surface (mb)	LAS VEGAS, NEV. (936 MB.)						LITTLE ROCK, ARK. (1007 MB.)						McGRATH, ALASKA (996 MB.)						MEDFORD, OREG. (968 MB.)						MIAMI, FLA. (1015 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	660	20.8	29	240	4.9	30	79	18.1	91	325	1.9	30	103	4.5	83	309	0.6	30	401	12.6	71	179	1.0	30	4	25.5	88	93	3.5
1,000	30	79					30	139	18.5	85	338	1.6	30	67			309	1.0	30	126					30	136	26.1	81	104	6.8
950	30	528					30	581	18.5	72	49	1.4	30	485	6.1	67	177	2.5	30	564	15.8	60	252	.8	30	591	23.2	81	120	11.5
900	30	1,000	25.3	17	226	1.4	30	1,043	16.1	72	57	.6	30	928	3.5	65	197	5.1	30	1,020	16.0	54		.0	30	1,059	20.2	79	117	11.7
850	30	1,499	22.5	18	290	1.9	30	1,527	13.4	71	310	1.7	29	1,391	1.0	65	194	4.5	30	1,506	14.5	51	142	3.5	30	1,552	17.3	76	118	10.1
800	30	2,021	18.4	20	226	5.1	30	2,036	10.7	65	327	2.1	29	1,877	- 1.5	59	196	5.4	30	2,017	12.8	43	165	4.5	30	2,069	14.5	69	117	10.1
750	30	2,568	13.9	26	190	5.6	30	2,573	8.3	57	319	2.3	29	2,386	- 4.2	58	203	8.4	30	2,555	9.6	40	196	5.2	30	2,608	11.7	66	119	8.9
700	30	3,146	9.0	31	181	7.8	30	3,140	5.7	48	305	2.5	29	2,930	- 7.4	56	207	10.7	30	3,126	6.7	32	211	5.4	30	3,188	8.5	60	120	7.8
650	30	3,752	4.3	32	190	9.5	30	3,741	2.7	39	292	3.5	29	3,497	-10.6	54	206	11.3	30	3,728	3.0	30	209	5.2	30	3,794	5.1	55	129	6.6
600	30	4,401	.0		202	8.4	30	4,388	- 1.0		283	3.7	29	4,115	-14.0	51	205	14.0	30	4,375	- 1.1	30	212	2.5	30	4,449	1.5	54	135	5.4
550	30	5,085	- 4.6		215	8.0	30	5,071	- 5.1		265	5.4	29	4,764	-18.0	51	204	16.1	30	5,057	- 5.7	27	186	1.9	30	5,134	- 2.6	51	132	4.9
500	30	5,836	- 9.8		221	8.4	30	5,820	- 9.9		263	8.9	29	5,478	-22.4	47	216	18.3	30	5,805	-10.9	30	353	.6	30	5,896	- 7.3	48	141	4.7
450	30	6,637	-15.5		238	10.3	30	6,621	-15.7		261	10.9	29	6,236	-27.7	46	220	21.2	30	6,601	-16.6		24	1.0	30	6,701	-12.2	45	117	4.3
400	30	7,521	-22.0		243	12.2	30	7,505	-21.8		260	15.2	29	7,081	-33.5	47	216	23.3	30	7,483	-23.0		57	1.7	30	7,603	-18.3	41	102	3.9
350	30	8,489	-29.2		250	17.3	30	8,475	-28.8		247	21.4	29	8,006	-39.8		214	29.3	30	8,447	-30.4		45	5.6	30	8,586	-25.4	37	66	3.7
300	30	9,572	-37.6		254	21.4	30	9,561	-36.8		250	28.2	29	9,044	-46.2		219	36.9	30	9,524	-39.1		42	7.8	30	9,686	-33.8	34	44	4.5
250	30	10,806	-46.4		260	25.3	30	10,800	-45.8		253	29.0	29	10,243	-50.2		220	32.8	30	10,750	-47.9		14	5.6	30	10,939	-43.7		12	8.2
200	30	12,263	-53.9		260	29.3	29	12,257	-54.7		260	31.1	29	11,697	-50.5		231	30.9	30	12,198	-55.0		326	8.2	30	12,401	-55.4		339	10.9
175	30	13,114	-57.8		255	31.3	29	13,104	-59.1		262	29.7	29	12,571	-49.2		234	27.8	30	13,046	-57.6		316	7.2	29	13,243	-61.1		342	10.3
150	30	14,076	-61.9		259	27.4	29	14,061	-63.3		264	27.2	29	13,582	-49.4		232	23.9	30	14,014	-60.1		288	9.5	29	14,188	-66.7		10	10.3
125	29	15,195	-64.9		259	21.2	27	15,177	-66.1		266	22.9	28	14,773	-49.6		238	22.5	30	15,146	-62.1		299	12.2	29	15,281	-70.0		41	6.2
100	24	16,550	-65.5		266	15.2	27	16,526	-66.8		265	15.2	26	16,244	-49.2		226	18.8	30	16,523	-62.8		292	9.1	27	16,605	-70.4		64	8.5
80	22	17,913	-63.0		284	6.2	25	17,884	-64.1		288	5.1	24	17,731	-49.8		236	15.3	29	17,903	-61.2		323	7.8	26	17,935	-67.5		91	14.4
60	21	19,703	-58.8		35	1.6	25	19,665	-59.1		85	6.8	22	19,632	-50.3				29	19,699	-58.9		346	2.7	25	19,695	-61.2		90	20.2
50	20	20,851	-56.9		95	5.1	25	20,816	-56.5		89	8.5	21	20,820	-50.6				28	20,851	-57.8		19	3.3	24	20,834	-58.0		91	24.1
40	19	22,265	-55.1		84	6.4	22	22,247	-54.3		86	9.7	21	22,274	-50.8				28	22,264	-56.1		336	2.3	22	22,249	-55.3		89	27.8
30	17	24,118	-52.3		84	10.9	22	24,106	-50.9		95	15.3	21	24,144	-51.5				26	24,114	-53.0		337	3.9	21	24,104	-50.8		88	29.5
25	14	25,303	-50.2		80	10.1	18	25,294	-48.7		87	16.3	11	25,354	-50.9				22	25,299	-51.1		287	4.5	21	25,294	-49.0		83	29.9
20	10	26,775	-48.0				9	26,750	-47.5										14	26,744	-49.9				13	26,786	-46.4		87	34.6

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

1/ 10 mb , 7 obs , 31,533 m , -38.5°C

2/ 10 mb., 14 obs., 31,353 m., -47.6°C., 275 dir., 3.1 speed

RAWINSONDE DATA

Average monthly values

SEPTEMBER 1957

MIDLAND, TEX. (917 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	29	871	17.5	75	103	2.1
1,000	29	120				
950	29	562				
900	29	1,029	18.7	65	138	4.9
850	29	1,520	17.5	56	187	10.7
800	29	2,037	15.3	53	219	4.9
750	29	2,578	12.3	45	316	2.5
700	29	3,157	8.5	44	332	5.6
650	29	3,761	4.2	45	332	6.8
600	29	4,412	.0	41	326	7.6
550	29	5,098	-4.4	33	315	8.0
500	29	5,849	-8.8		297	9.5
450	29	6,653	-14.2		301	13.2
400	29	7,542	-20.1		297	18.5
350	29	8,518	-27.5		299	22.2
300	29	9,610	-35.4		299	28.0
250	29	10,856	-44.6		286	36.3
200	29	12,319	-54.3		285	40.4
175	29	13,165	-59.2		281	41.6
150	27	14,124	-63.6		274	33.8
125	27	15,231	-68.1		277	29.5
100	24	16,564	-68.4		288	12.4
80	16	17,910	-66.1			
60	13	19,670	-60.5			
50	12	20,816	-57.5			
40	12	22,238	-54.2			
30	9	24,099	-51.8			
25	7	25,270	-49.0			
20						
15						

MONTGOMERY, ALA. (1009 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	61	20.1	95	87	2.7
1,000	30	140	20.6	90	94	4.3
950	30	587	20.6	79	149	6.2
900	30	1,052	18.4	77	167	8.4
850	30	1,542	15.9	72	173	9.5
800	30	2,055	13.1	71	183	10.3
750	30	2,590	10.2	62	190	12.0
700	30	3,168	6.8	57	199	11.3
650	30	3,772	3.5	51	207	10.3
600	30	4,420	-.2	47	216	13.2
550	30	5,105	-4.5	47	224	15.5
500	30	5,858	-8.6	50	224	16.1
450	30	6,668	-13.0	47	219	18.3
400	30	7,560	-18.7	47	223	21.8
350	30	8,543	-25.3	44	227	24.3
300	30	9,644	-33.6		229	27.2
250	30	10,895	-43.9		231	30.1
200	30	12,356	-55.2		241	31.5
175	30	13,198	-60.7		243	29.3
150	30	14,147	-65.0		245	24.5
125	27	15,252	-69.0		255	20.0
100	26	16,589	-68.9		253	6.8
80	26	17,932	-65.8		111	1.7
60	23	19,709	-60.5		87	10.5
50	22	20,852	-57.3		89	14.8
40	22	22,276	-53.5		84	15.3
30	20	24,144	-50.0		92	20.8
25	17	25,343	-47.9		95	23.1
20	10	26,811	-46.3			
15						

NANTUCKET, MASS. (1017 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	14	17.1	86	258	2.7
1,000	30	162	17.0	78	253	5.1
950	30	595	15.6	65	259	9.3
900	30	1,057	13.5	59	265	11.1
850	30	1,537	11.3	57	266	14.4
800	30	2,042	8.9	53	269	16.7
750	30	2,570	6.7	47	270	19.4
700	30	3,139	3.9	44	270	22.3
650	30	3,736	.7	43	266	25.3
600	30	4,377	-2.8	41	265	26.4
550	30	5,057	-6.6	36	266	29.1
500	30	5,802	-11.2		268	33.6
450	30	6,598	-16.2		271	29.0
400	30	7,482	-22.2		274	35.8
350	30	8,450	-28.9		269	41.8
300	30	9,535	-37.1		274	44.9
250	30	10,771	-46.7		283	47.2
200	30	12,219	-56.5			
175	30	13,058	-60.7			
150	30	14,010	-63.9			
125	30	15,124	-65.1			
100	30	16,488	-63.4			
80	30	17,867	-61.0			
60	30	19,669	-57.5			
50	30	20,826	-55.8			
40	29	22,249	-54.4			
30	28	24,102	-51.9			
25	24	25,285	-50.3			
20	8	26,763	-48.2			
15						

NASHVILLE, TENN. (997 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	177	18.1	92		0.0
1,000	30	148				
950	30	590	18.9	77	184	2.3
900	30	1,055	16.8	73	208	5.4
850	30	1,540	14.0	73	217	6.8
800	30	2,050	11.3	67	220	8.2
750	30	2,584	8.1	69	221	10.7
700	30	3,154	5.2	59	224	12.2
650	30	3,750	2.0	55	228	12.8
600	30	4,399	-1.3	48	235	12.8
550	30	5,079	-5.4	45	240	14.0
500	30	5,830	-9.8	41	240	15.5
450	30	6,626	-15.3	39	243	17.7
400	30	7,515	-21.2	44	240	22.5
350	30	8,488	-28.1	43	240	29.5
300	30	9,577	-36.1	43	237	35.4
250	30	10,819	-45.3		243	40.8
200	30	12,278	-55.0		245	42.4
175	29	13,125	-59.3		248	40.0
150	29	14,082	-63.0		248	31.9
125	29	15,196	-65.9		250	28.8
100	29	16,551	-65.3		253	15.7
80	29	17,918	-62.7		289	2.7
60	29	19,709	-58.5		102	7.0
50	29	20,863	-56.3		95	6.0
40	29	22,287	-54.2		82	8.4
30	28	24,147	-51.0		86	12.8
25	26	25,344	-48.8		87	17.7
20	23	26,823	-46.9		92	14.4
15	20	28,743	-44.6		86	10.9

N.Y. INT. AP, IDELWILD (1018 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	5	17.4	81	306	2.5
1,000	30	159	17.0	74	311	2.9
950	30	596	15.5	64	283	6.0
900	30	1,054	13.6	58	270	8.7
850	30	1,535	12.0	55	264	13.0
800	30	2,041	9.6	50	270	15.5
750	30	2,574	6.8	50	268	19.6
700	30	3,139	4.0	46	265	21.6
650	30	3,738	.8	48	262	25.3
600	30	4,378	-2.6	42	266	27.2
550	30	5,061	-6.4	41	263	29.1
500	30	5,804	-10.7	38	265	31.3
450	29	6,602	-15.7		263	34.0
400	29	7,485	-21.6		266	38.3
350	29	8,456	-28.6		264	41.6
300	29	9,542	-36.5		262	46.4
250	29	10,780	-45.9		264	52.7
200	29	12,233	-55.5		270	55.0
175	29	13,076	-60.0		270	53.8
150	28	14,025	-62.6		266	48.2
125	28	15,145	-64.3		265	41.8
100	28	16,513	-63.2		266	32.1
80	28	17,895	-60.7		268	16.9
60	28	19,707	-56.1		270	3.7
50	27	20,871	-54.4		105	.6
40	27	22,310	-52.0		86	3.3
30	24	24,189	-48.9		81	6.4
25	17	25,406	-47.2		81	10.7
20	10	26,884	-45.2			
15						

1/ NOME, ALASKA (1009 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	7	3.6	89	9	2.9
1,000	30	75			327	3.9
950	30	486	3.7	76	4	3.5
900	30	930	1.3	74	343	3.7
850	30	1,389	-.9	65	337	4.1
800	30	1,871	-3.3	58	320	4.3
750	30	2,367	-6.1	58	306	6.6
700	30	2,916	-9.1	58	296	7.6
650	30	3,476	-12.5	57	289	9.3
600	30	4,093	-16.1	52	260	8.4
550	30	4,732	-20.3	51	277	10.3
500	30	5,443	-24.9	48	275	10.7
450	30	6,187	-30.3	47	271	13.0
400	30	7,029	-36.5	49	264	11.3
350	30	7,942	-42.8		263	16.1
300	30	8,968	-48.9		241	21.2
250	30	10,152	-51.4		230	24.9
200	30	11,612	-48.6		227	24.1
175	29	12,487	-47.8		221	21.4
150	29	13,504	-47.8		221	18.7
125	29	14,707	-47.8		231	19.8
100	28	16,179	-48.2		232	17.1
80	28	17,649	-48.4		236	14.0
60	28	19,542	-48.9		234	11.3
50	28	20,739	-49.3		237	11.7
40	28	22,201	-49.6		267	8.4
30	26	24,072	-50.1		259	9.7
25	24	25,269	-50.1		287	6.2
20	22	26,730	-50.2		283	5.2
15	19	28,588	-50.2			

NORFOLK, VA. (1017 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	29	9	21.0	86	51	1.6
1,000	29	159	21.0	82		.0
950	29	602	19.5	76	265	2.5
900	29	1,067	17.1	76	275	3.9
850	29	1,555	14.8	73	266	5.6
800	29	2,066	12.2	68	259	9.1
750	29	2,602	9.2	64	254	9.7
700	29	3,175	6.4	56	257	12.8
650	29	3,777	3.2	54	259	14.8
600	29	4,425	-.4	50	255	17.1
550	29	5,111	-4.0	45	258	19.0
500	29	5,864	-8.6	40	258	21.6
450	29	6,668	-13.9	38	254	24.1
400	29	7,559	-20.0	40	254	28.2
350	29	8,536	-26.9	41	251	31.9
300	29	9,630	-35.1	41	254	34.8
250	29	10,877	-44.9		258	38.1
200	29	12,332	-56.0		259	39.4
175	29	13,172	-61.1		262	38.9
150	28	14,126	-65.2		261	34.2
125	27	15,228	-67.6		259	27.4
100	26	16,572	-66.3		258	16.5
80	26	17,931	-63.4		255	6.4
60	25	19,718	-58.7		77	3.7
50	23	20,878	-56.3		94	7.0
40	20	22,301	-53.7		89	10.5
30	15	24,175	-50.1		93	12.6
25	14	25,365	-48.4		83	14.2
20	8	26,835	-46.2			
15						

NORTH PLATTE, NEB. (919 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	848	9.4	88	110	0.6
1,000	30	140				
950	30	571				
900	30	1,023	12.6	73	203	1.0
850	30	1,506	13.9	52	267	3.7
800	30	2,016	11.8	47	279	7.2
750	30	2,548	8.7	46	291	10.1
700	30	3,121	5.2	45	290	11.5
650	30	3,718	1.2	47	293	14.6
600	30	4,363	-3.4	48	287	17.7
550	30	5,040	-7.7	43	286	20.8
500	30	5,782	-12.5	38	283	20.4
450	30	6,570	-18.2		284	22.2
400	30	7,449	-24.7		283	24.9
350	30	8,408	-31.9		286	26.6
300	30	9,479	-40.3		291	28.2
250	30	10,699	-49.1		289	33.6
200	29	12,146	-55.1		294	35.6
175	29	12,995	-57.0		295	33.6
150	29	13,966	-59.4		295	30.9
125	26	15,104	-61.1		304	25.6
100	22	16,488	-61.4		300	18.8
80	19	17,875	-60.6		275	8.5
60	17	19,680	-57.6		272	7.6
50	16	20,834	-55.7		316	7.0
40	16	22,265	-53.0		1	5.8
30	10	24,140	-49.5			
25						
20						
15						

2/ OAKLAND, CALIF. (1013 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	6	15.5	83	277	2.1
1,000	30	114	15.7	81	263	3.1
950	30	550	16.8	67	259	5.2
900	30	1,014	18.4	47	259	4.9
850	30	1,502	16.4	43	206	3.7
800	30	2,015	13.5	40	173	5.2
750	30	2,550	9.9	40	180	6.6
700	30	3,126	6.6	35	182	8.2
650	30	3,726	3.0	32	172	8.4
600	30	4,374	-1.5	31	173	9.9
550	30	5,053	-6.3	31	171	10.1
500	30	5,800	-11.5	31	167	10.1
450	30	6,589	-17.3		168	11.1
400	30	7,472	-24.2		168	11.9
350	30	8,433	-31.0		168	15.7
300	30	9,510	-38.7		179	14.4
250	30	10,743	-46.0		182	10.7
200	29	12,204	-53.6		216	15.0
175	29	13,057	-56.9		220	15.2
150	29	14,026	-60.1		236	14.8
125	28	15,157	-62.7		251	11.5
100	22	16,524	-63.7		261	9.3
80	21	17,894	-62.3		277	5.8
60	21	19,684	-59.2		42	1.9
50	18	20,828	-57.3		26	3.7
40	16	22,249	-54.8		73	4.9
30	15	24,095	-51.9		84	5.1
25	14	25,283	-49.8		91	7.0
20	11	26,731	-48.7			
15	8	28,619	-46.4			

3/ OKLAHOMA CITY, OKLA. (971 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	392	15.3	91	54	1.4
1,000	30	138				
950	30	576	18.5	69	113	2.7
900	30	1,040	17.5	61	210	.6
850	30	1,527	15.2	55	321	3.9
800	30	2,038	12.6	49	307	4.5
750	30	2,576	9.9	41	315	5.4
700	30	3,147	6.5	41	308	7.2
650	30	3,747	2.5	37	308	7.4
600	30	4,393	-1.5	36	302	7.4
550	30	5,074	-5.9	35	299	8.7
500	30	5,821	-10.4		285	10.3
450	30	6,620	-15.8		286	13.8
400	30	7,502	-22.4		284	17.7
350	30	8,470	-29.0		272	21.6
300	30	9,555	-36.8		267	25.8
250	30	10,795	-44.8		270	32.6
200	30	12,259	-53.2		274	35.0
175	30	13,112	-57.0		274	36.5
150	30	14,079	-60.8		279	31.3
125	29	15,208	-63.7		278	23.9
100	29	16,571	-64.7		279	16.3
80	29	17,943	-61.7		287	7.0
60	29	19,743	-57.4		116	3.3
50	29	20,902	-54.9		98	7.2
40	28	22,336	-52.6		81	11.7
30	28	24,208	-49.3		88	12.8
25	28	25,409	-47.4		85	13.2
20	27	26,892	-45.6		77	12.8
15	25	28,822	-44.1		82	15.3

4/ OMAHA, NEB. (969 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	403	11.7	88	152	0.6
1,000	30	139				
950	30	574	13.9	74	207	2.9
900	30	1,030	14.3	63	253	7.4
850	30	1,511	12.3	56	267	9.5
800	30	2,017	9.5	53	274	12.0
750	30	2,548	6.4	49	279	14.2
700	30	3,113	3.0	46	286	15.3
650	30	3,708	-.4	46	279	17.3
600	30	4,347	-4.0	38	282	20.4
550	30	5,025	-8.0	33	281	22.5
500	30	5,764	-12.7		280	23.5
450	30	6,555	-18.1		277	26.2
400	30	7,430	-24.7		279	28.8
350	30	8,389	-31.9		275	30.7
300	30	9,461	-39.9		271	35.0
250	30	10,685	-48.5		264	40.2
200	30	12,128	-55.3		265	47.0
175	29	12,980	-57.1		267	46.2
150	29	13,953	-58.8		269	38.3
125	28	15,093	-60.6		270	30.3
100	27	16,482	-61.1		270	20.8
80	27	17,873	-59.5		274	13.6
60	25	19,691	-56.3		268	6.6
50	24	20,851	-54.6		261	2.7
40	23	22,291	-52.3		188	1.4
30	22	24,161	-49.7		59	1.4
25	21	25,361	-47.9		90	4.9
20	20	26,843	-45.7		87	4.5
15	19	28,769	-43.8		98	3.5

5/ PEORIA, ILL. (994 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	201	12.6	88	127	1.4
1,000	30	146				
950	30	582	15.4	66	213	2.5
900	30	1,038	13.4	61	266	5.4
850	30	1,519	11.4	54	272	7.8
800	30	2,024	9.0	53	276	9.1
750	30	2,557	6.2	55	272	10.3
700	30	3,119	3.0	54	267	14.2
650	30	3,714	.3	48	267	16.3
600	30	4,356	-3.3	43	266	19.2
550	30	5,031	-7.5	42	268	19.6
500	30	5,775	-12.0		263	23.5
450	30	6,562	-17.3		263	25.8
400	30	7,446	-23.6		263	27.8
350	30	8,408	-30.9		265	32.8
300	30	9,484	-39.1		262	35.9
250	30	10,708	-48.2		261	42.0
200	29	12,151	-55.2		258	43.3
175	29	12,997	-57.7		258	43.7
150	28	13,962	-59.8		259	39.8
125	28	15,097	-61.4		261	33.0
100	28	16,482	-60.7		265	23.5
80	[illegible]	17,875	-59.2		262	12.2
60	27	19,687	-56.3		275	4.9
50	27	20,850	-54.5		266	2.3
40	27	22,287	-52.3		84	2.1
30	27	24,159	-49.7		97	3.3
25	26	25,354	-48.1		86	5.8
20	25	26,839	-46.0		77	6.6
15	19	28,737	-44.0		75	6.8

PHOENIX, ARIZ. (971 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	341	21.9	47	89	3.5
1,000	30	82				
950	30	533	27.5	25	117	4.1
900	30	1,009	26.2	23	225	1.4
850	30	1,510	23.0	23	225	2.3
800	30	2,034	19.0	26	211	4.5
750	30	2,578	14.5	30	196	6.0
700	30	3,162	9.8	33	196	6.8
650	30	3,766	5.2	36	205	7.8
600	30	4,421	.5	34	231	6.6
550	30	5,105	-3.6		247	8.4
500	30	5,862	-8.4		257	12.4
450	30	6,662	-14.0		254	15.2
400	30	7,556	-20.6		263	16.3
350	30	8,530	-27.9		270	23.3
300	30	9,620	-36.2		272	26.2
250	30	10,862	-45.0		262	30.9
200	30	12,324	-53.9		259	29.3
175	30	13,173	-58.8		263	31.5
150	30	14,130	-63.6		269	27.6
125	30	15,238	-67.6		270	20.6
100	30	16,574	-68.9		280	13.2
80	29	17,914	-66.0		333	3.7
60	28	19,681	-60.6		70	6.4
50	27	20,826	-57.8		83	8.7
40	26	22,243	-55.5		74	13.0
30	20	24,082	-52.8			
25	14	25,249	-51.2			
20						
15						

PITTSBURGH, PA. (978 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	353	13.9	85	193	1.2
1,000	30	160				
950	30	597	15.2	75	208	3.1
900	30	1,053	13.5	71	241	9.5
850	30	1,533	11.8	60	250	13.2
800	30	2,039	9.6	53	255	16.5
750	30	2,569	6.8	50	255	19.6
700	30	3,137	4.0	50	254	22.2
650	30	3,731	.9	49	252	24.5
600	30	4,377	-2.5	43	255	26.2
550	30	5,056	-6.6	39	254	27.8
500	30	5,801	-11.3	38	254	30.3
450	30	6,597	-16.6		254	32.1
400	30	7,477	-23.0	40	253	38.5
350	30	8,442	-30.0	39	251	43.9
300	30	9,520	-38.6		250	52.1
250	30	10,748	-47.8		251	58.9
200	30	12,188	-56.9		255	62.8
175	30	13,027	-60.4		255	57.9
150	27	13,985	-63.4		256	48.0
125	27	15,100	-65.0		256	38.3
100	25	16,462	-64.2		259	27.2
80	24	17,833	-61.4		264	15.2
60	24	19,633	-58.1		261	4.9
50	24	20,788	-55.7		207	.6
40	22	22,215	-54.0		89	6.0
30	13	24,057	-51.2		72	7.4
25	8	25,247	-49.7			
20						
15						

6/ PORTLAND, ME. (1016 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	20	12.3	90	254	4.9
1,000	30	149	15.0	73	254	5.8
950	30	585	14.3	64	252	8.9
900	30	1,039	12.1	64	261	13.6
850	30	1,517	10.3	54	266	15.9
800	30	2,020	8.3	46	266	19.0
750	30	2,551	5.5	49	262	22.0
700	30	3,112	2.8	45	261	24.5
650	29	3,701	-.4	45	261	29.0
600	29	4,340	-3.9	38	259	31.3
550	29	5,017	-7.8		258	33.2
500	29	5,757	-12.2		258	37.7
450	29	6,550	-17.4		257	40.8
400	29	7,428	-23.4		256	43.1
350	29	8,392	-30.3		256	50.1
300	29	9,471	-38.0		256	53.8
250	29	10,703	-47.0		256	59.3
200	29	12,156	-54.4		260	61.8
175	29	13,005	-57.3		262	56.7
150	29	13,974	-59.7		260	50.1
125	29	15,108	-61.2		260	43.5
100	29	16,496	-59.7		262	33.0
80	28	17,896	-57.9		266	19.2
60	27	19,727	-54.7		262	9.7
50	25	20,897	-53.1		265	6.0
40	25	22,341	-51.5		287	2.7
30	25	24,218	-49.5		4	2.5
25	23	25,416	-48.0		25	5.1
20	22	26,895	-46.1		37	5.4
15	17	28,812	-44.1		54	3.7

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

1/ 10 mb., 7 obs., 31,130 m., -51 7 C.
2/ 10 mb., 5 obs., 31,284 m., -44.2°C.
3/ 10 mb., 15 obs., 31,578 m., -41.9°C.
4/ 10 mb., 11 obs., 31,470 m., -39.6°C.
5/ 10 mb., 5 obs., 31,507 m., -40.2°C.
6/ 10 mb., 10 obs., 31,553 m., -41.1°C.

RAWINSONDE DATA

Average monthly values

SEPTEMBER 1957

1/ RAPID CITY, S. DAK. (906 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	966	9.3	71	308	2.1
1,000	30	138				
950	30	570				
900	30	1,022	10.9	65	305	2.9
850	30	1,503	12.6	54	302	7.2
800	30	2,010	9.9	54	299	8.2
750	30	2,539	6.9	52	301	12.4
700	30	3,107	3.0	51	293	15.3
650	30	3,697	- 1.1	52	289	16.9
600	30	4,338	- 5.2	50	291	20.8
550	30	5,008	- 9.6	45	291	20.4
500	30	5,746	-14.4	39	290	23.7
450	30	6,527	-19.8	37	287	26.2
400	30	7,400	-26.3	38	284	28.0
350	30	8,351	-33.8		285	28.8
300	30	9,413	-41.8		286	35.2
250	30	10,626	-49.9		290	37.7
200	30	12,066	-54.9		290	36.5
175	30	12,917	-56.3		292	35.9
150	29	13,888	-58.2		292	32.4
125	26	15,026	-59.2		287	27.0
100	21	16,427	-58.9		299	21.6
80	18	17,830	-58.3		296	14.8
60	18	19,649	-56.6		302	10.5
50	17	20,807	-55.1		308	6.2
40	17	22,237	-53.7		298	4.5
30	15	24,099	-50.8		288	3.3
25	13	25,304	-49.1		238	2.5
20	12	26,779	-47.7		229	3.3
15	12	28,696	-44.6		147	1.4

2/ ST. CLOUD, MINN. (978 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	316	9.3	90	241	1.4
1,000	30	126				
950	30	557	12.2	77	238	4.9
900	30	1,009	11.2	69	266	10.3
850	30	1,484	8.8	64	271	11.5
800	30	1,984	6.6	55	274	12.2
750	30	2,509	3.8	53	276	14.0
700	30	3,070	.9	51	277	16.7
650	30	3,660	- 2.3	46	282	20.0
600	30	4,294	- 6.3	47	282	22.3
550	30	4,965	-10.4	41	277	25.1
500	30	5,698	-14.9	36	276	25.3
450	30	6,481	-20.2		273	22.9
400	30	7,350	-26.3		258	25.1
350	30	8,304	-33.3		269	25.3
300	30	9,369	-41.2		271	26.6
250	30	10,586	-49.1		292	22.0
200	30	12,033	-53.7		309	26.0
175	29	12,889	-54.6		305	26.4
150	29	13,872	-56.0		308	26.2
125	27	15,022	-57.0		298	20.8
100	26	16,436	-57.2		297	15.2
80	26	17,849	-56.4		306	8.4
60	26	19,684	-54.6		319	9.1
50	26	20,853	-53.7		294	6.2
40	26	22,294	-51.8		288	2.9
30	25	24,171	-49.2		269	6.8
25	25	25,369	-48.2		245	7.0
20	23	26,847	-46.4		252	5.6
15	22	28,762	-44.5		252	3.9

ST. PAUL ISLAND, ALASKA (1006 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	10	7.2	89	1	9.1
1,000	30	56			2	8.4
950	30	475	4.5	87	17	12.8
900	30	916	2.2	87	23	11.9
850	30	1,376	.5	78	23	10.9
800	30	1,861	- 1.5	73	21	11.1
750	30	2,371	- 4.1	65	18	10.7
700	30	2,914	- 6.8	56	12	10.1
650	30	3,486	-10.0	51	22	10.7
600	30	4,103	-13.6	50	26	10.9
550	30	4,755	-17.5	47	20	10.9
500	30	5,468	-22.1	43	20	11.3
450	30	6,227	-27.3	40	15	11.3
400	30	7,074	-33.3	40	13	5.8
350	30	7,999	-39.8		351	3.5
300	30	9,036	-46.9		289	4.5
250	30	10,229	-51.5		246	8.9
200	30	11,686	-48.9		244	13.6
175	30	12,564	-48.2		235	16.3
150	30	13,580	-48.3		232	15.3
125	29	14,781	-48.5		233	15.7
100	29	16,248	-49.0		230	14.2
80	29	17,713	-49.4		226	12.4
60	27	19,594	-49.8		219	10.3
50	24	20,790	-49.9		214	8.2
40	23	22,248	-50.2		207	5.4
30	16	24,106	-50.4			
25	11	25,292	-50.0			
20						
15						

SALEM, OREG. (1008 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	61	11.9	86	186	1.4
1,000	30	126	14.0	75	217	.8
950	30	565	16.4	58	47	2.9
900	30	1,021	15.1	54	82	1.7
850	30	1,503	13.2	46	173	1.7
800	30	2,011	11.1	40	204	1.2
750	30	2,547	9.0	37	254	2.9
700	30	3,116	5.8	38	235	2.5
650	30	3,713	2.2	36	225	4.1
600	30	4,360	- 1.4	32	253	5.2
550	30	5,040	- 5.7		268	6.0
500	30	5,789	-10.6		277	6.8
450	30	6,581	-16.5		278	6.4
400	30	7,466	-23.1		276	8.0
350	30	8,430	-30.8		281	8.2
300	30	9,505	-39.4		285	8.9
250	30	10,728	-48.8		309	11.1
200	30	12,168	-56.2		304	13.2
175	30	13,012	-58.3		300	14.2
150	30	13,977	-60.5		306	13.6
125	30	15,108	-62.1		294	12.0
100	30	16,487	-62.2		301	10.3
80	30	17,873	-60.5		315	6.2
60	30	19,677	-58.5		333	2.7
50	29	20,826	-57.4		18	3.3
40	28	22,249	-55.8		357	2.5
30	25	24,082	-53.2		304	5.1
25	17	25,229	-51.9		289	7.8
20	12	26,653	-50.1		283	15.0
15	8	28,498	-47.7			

SALT LAKE CITY, UTAH (873 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	1,288	11.0	56	152	6.4
1,000	30	131				
950	30	568				
900	30	1,022				
850	30	1,509	17.1	29	161	7.8
800	30	2,025	15.1	25	191	6.6
750	30	2,566	11.2	27	234	6.8
700	30	3,141	7.1	29	261	8.5
650	30	3,740	2.6	30	269	10.1
600	30	4,389	- 2.1	33	274	12.0
550	30	5,067	- 7.1	38	280	13.2
500	30	5,813	-11.6		282	15.2
450	30	6,607	-17.1		289	18.1
400	30	7,487	-23.4		288	20.4
350	30	8,448	-31.0		289	20.8
300	30	9,523	-39.2		289	21.6
250	30	10,749	-48.0		297	24.5
200	30	12,198	-54.7		286	28.2
175	30	13,047	-57.3		281	28.4
150	29	14,017	-60.2		281	27.2
125	29	15,147	-63.0		279	19.8
100	28	16,523	-62.9		289	15.3
80	28	17,899	-61.3		305	7.2
60	28	19,697	-58.3		310	2.3
50	27	20,847	-56.8		320	1.6
40	25	22,269	-54.4		347	.6
30	24	24,123	-52.0		62	1.4
25	19	25,306	-50.4		89	.8
20	9	26,766	-48.6			
15						

SAN ANTONIO, TEX. (986 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	243	20.2	87	21	1.9
1,000	30	123				
950	30	573	20.5	78	84	5.2
900	30	1,035	18.7	72	97	4.9
850	30	1,525	16.6	68	83	2.3
800	30	2,039	14.1	57	1	2.3
750	30	2,586	11.8	48	8	4.1
700	30	3,156	8.3	47	16	5.4
650	30	3,764	4.7	42	10	7.0
600	30	4,412	.9	33	353	7.8
550	30	5,102	- 3.4		342	7.6
500	30	5,854	- 7.6		327	8.7
450	30	6,663	-12.9		323	8.9
400	30	7,554	-19.1		303	11.9
350	30	8,534	-26.2		295	14.6
300	30	9,630	-34.5		292	18.7
250	30	10,880	-43.8		280	24.7
200	30	12,347	-53.8		277	24.9
175	29	13,192	-59.3		281	26.0
150	28	14,144	-64.7		290	20.8
125	28	15,245	-69.0		287	14.2
100	23	16,575	-70.3		281	6.0
80	20	17,921	-66.5		94	6.4
60	19	19,688	-60.9		96	16.1
50	18	20,830	-58.4		96	20.8
40	18	22,245	-55.3		89	23.5
30	16	24,098	-50.9		86	27.0
25	16	25,291	-48.9		92	25.1
20	10	26,768	-47.1			
15						

SAN DIEGO, CALIF. (998 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	124	16.7	92	345	2.1
1,000	30	104				
950	30	544	18.4	68	339	2.3
900	30	1,009	20.1	44	311	2.1
850	30	1,501	18.9	31	257	4.5
800	30	2,018	16.1	29	228	5.8
750	30	2,559	12.8	28	214	8.2
700	30	3,139	9.1	28	211	10.1
650	30	3,741	5.3		214	9.7
600	30	4,398	1.2		221	10.9
550	30	5,080	- 3.4		227	12.0
500	30	5,839	- 8.5		238	14.6
450	30	6,637	-13.9		243	18.8
400	30	7,533	-20.5		247	24.3
350	30	8,507	-28.1		250	29.7
300	30	9,595	-36.4		252	35.9
250	30	10,836	-45.3		252	42.0
200	30	12,298	-53.8		256	46.0
175	29	13,147	-58.4		251	45.3
150	29	14,107	-62.9		256	40.4
125	29	15,220	-66.6		255	26.4
100	28	16,561	-68.2		259	13.0
80	25	17,906	-65.6		350	1.6
60	25	19,678	-59.9		85	8.0
50	23	20,823	-57.6		93	10.9
40	22	22,239	-55.4		85	15.3
30	21	24,085	-52.4		90	15.5
25	18	25,276	-50.5		86	17.5
20	12	26,761	-48.4		87	23.1
15	8	28,651	-46.3			

3/ SAN JUAN, P. R. (1014 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	6	25.4	87	157	6.4
1,000	30	128	25.1	84	127	8.5
950	30	582	22.9	81	99	13.6
900	30	1,050	20.2	77	99	14.2
850	30	1,542	17.4	73	96	13.0
800	30	2,059	14.6	68	98	11.9
750	30	2,597	12.1	57	96	10.1
700	30	3,179	9.0	47	93	9.3
650	30	3,786	5.6	44	93	8.7
600	30	4,440	2.1	39	87	7.4
550	30	5,129	- 2.0	38	94	7.0
500	30	5,889	- 6.7	34	98	5.4
450	30	6,697	-12.2	31	117	5.1
400	30	7,595	-18.4	35	173	2.7
350	30	8,578	-25.5	33	204	2.5
300	30	9,677	-34.1		251	4.5
250	30	10,928	-44.2		238	6.4
200	30	12,386	-55.8		268	9.1
175	30	13,225	-61.5		272	11.9
150	30	14,169	-66.5		261	8.7
125	30	15,262	-70.7		263	.8
100	29	16,576	-73.5		76	9.5
80	28	17,893	-69.6		81	15.0
60	27	19,634	-63.8		86	21.8
50	27	20,760	-60.8		84	25.1
40	27	22,163	-56.5		83	26.6
30	26	24,005	-53.0		93	29.7
25	25	25,191	-50.5		94	31.9
20	23	26,660	-47.8		94	34.6
15	17	28,570	-43.9		84	37.5

SANTA MARIA, CALIF. (1005 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	74	14.1	90	293	0.6
1,000	30	117	14.0	89	306	.8
950	30	555	16.7	71	12	3.3
900	30	1,016	18.9	45	64	2.9
850	30	1,505	16.9	39	136	3.5
800	30	2,019	13.9	35	171	5.4
750	30	2,555	10.7	29	179	7.2
700	30	3,132	7.7	26	193	8.2
650	30	3,734	4.0		194	11.3
600	30	4,384	- .5		199	13.0
550	30	5,065	- 5.2		204	13.6
500	30	5,817	-10.2		217	13.2
450	30	6,612	-16.0		213	17.1
400	30	7,498	-22.8		227	18.1
350	30	8,463	-29.9		228	20.0
300	30	9,544	-38.0		219	13.0
250	30	10,779	-45.8		225	15.7
200	30	12,239	-53.7		254	17.3
175	30	13,090	-57.3		261	19.0
150	29	14,055	-61.0		256	22.7
125	29	15,180	-64.1		262	21.4
100	28	16,539	-65.7		283	12.6
80	27	17,896	-64.6		283	4.5
60	27	19,677	-59.5		29	2.1
50	27	20,824	-57.6		89	6.0
40	25	22,239	-55.3		86	11.7
30	21	24,097	-52.7			
25	14	25,267	-51.4			
20						
15						

SANTA MONICA, CALIF. (1009 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	38	17.2	85		0.0
1,000	30	116	16.9	84		.0
950	30	563	18.5	62	106	1.2
900	30	1,021	19.8	38	199	.6
850	30	1,512	17.9	36	223	3.3
800	30	2,028	15.2	29	202	5.8
750	30	2,568	12.1	26	199	7.4
700	30	3,146	8.6	25	195	8.4
650	30	3,751	4.9		200	9.5
600	30	4,404	.3		201	11.1
550	30	5,089	- 4.5		218	11.5
500	30	5,841	- 9.3		229	14.2
450	30	6,642	-15.0		236	16.3
400	30	7,530	-21.5		238	22.7
350	30	8,500	-29.2		238	25.3
300	30	9,582	-37.6		242	30.5
250	30	10,817	-46.0		244	35.6
200	30	12,275	-54.1		248	37.7
175	30	13,124	-57.9		245	36.5
150	30	14,087	-62.0		248	32.8
125	30	15,204	-65.6		248	25.6
100	30	16,555	-66.9		257	14.6
80	30	17,906	-65.1		299	2.1
60	29	19,677	-60.0		77	6.2
50	29	20,819	-58.2		86	8.2
40	28	22,229	-55.9		80	11.3
30	26	24,074	-52.3		84	13.4
25	24	25,258	-50.1		90	14.2
20	24	26,722	-48.1		87	12.8
15	17	28,621	-46.0		94	8.5

4/ S. STE. MARIE, MICH. (990 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	221	8.9	93	65	1.0
1,000	30	135				
950	30	563	10.2	78	268	4.9
900	30	1,011	8.8	69	275	9.5
850	30	1,483	6.5	65	274	13.6
800	30	1,979	4.3	56	270	16.9
750	30	2,501	2.0	49	271	20.8
700	30	3,057	- .5	48	269	21.4
650	30	3,643	- 3.6	45	268	23.7
600	30	4,275	- 7.2	44	269	25.8
550	30	4,941	-11.3	41	268	28.6
500	30	5,675	-15.8	39	267	31.7
450	30	6,455	-21.1	39	268	35.8
400	30	7,323	-27.3	39	267	39.6
350	30	8,271	-34.0	37	267	43.9
300	30	9,335	-41.3		263	50.3
250	29	10,543	-48.9		262	52.5
200	29	11,993	-53.2		265	55.4
175	29	12,853	-53.7		263	53.6
150	29	13,842	-54.7		262	45.9
125	27	14,997	-55.8		260	36.7
100	27	16,417	-56.1		263	28.0
80	27	17,839	-55.1		262	22.5
60	26	19,687	-53.8		260	17.1
50	26	20,861	-52.6		260	12.6
40	24	22,302	-51.2		262	10.9
30	23	24,184	-49.3		257	10.3
25	23	25,382	-48.3		260	8.4
20	21	26,857	-46.9		255	7.6
15	19	28,776	-44.4		261	6.4

5/ SEATTLE, WASH. (1001 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	125	13.0	90	98	2.7
1,000	30	135			98	2.9
950	30	572	15.8	65	142	1.4
900	30	1,029	14.5	58		.0
850	30	1,510	12.1	55	286	.6
800	30	2,016	9.6	53	270	1.0
750	30	2,551	7.1	46	287	3.3
700	30	3,115	4.4	39	280	6.0
650	30	3,713	1.0	38	284	7.2
600	30	4,354	- 2.7	35	288	9.9
550	30	5,034	- 7.1	34	297	13.2
500	30	5,776	-11.6	31	297	16.7
450	30	6,571	-17.1	31	298	19.0
400	30	7,450	-23.7	33	297	21.6
350	30	8,411	-31.5		300	22.0
300	30	9,483	-40.3		303	23.9
250	29	10,712	-49.4		305	24.7
200	29	12,149	-55.8		307	24.1
175	29	12,994	-58.2		302	23.1
150	29	13,961	-59.7		306	22.7
125	28	15,103	-61.5		306	20.0
100	27	16,484	-60.8		303	15.5
80	27	17,875	-59.6		309	10.9
60	26	19,685	-57.9		332	6.4
50	25	20,845	-56.9		328	4.7
40	23	22,261	-55.5		339	5.1
30	22	24,102	-53.3		337	4.1
25	20	25,282	-51.9		303	4.3
20	18	26,741	-49.3		301	6.4
15	13	28,626	-46.8		271	12.4

6/ SHREVEPORT, LA. (1006 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	76	19.0	93	54	2.1
1,000	30	131	19.6	87	54	2.9
950	30	575	19.1	73	95	4.3
900	30	1,038	16.9	69	81	4.1
850	30	1,525	14.5	64	88	1.9
800	30	2,036	11.6	61	40	1.7
750	30	2,571	9.0	52	1	2.1
700	30	3,142	6.0	45	340	2.7
650	30	3,745	3.3		329	3.9
600	30	4,392	- .6		311	6.0
550	30	5,077	- 4.8		290	5.2
500	30	5,826	- 9.3		285	7.8
450	30	6,629	-14.9		282	9.7
400	30	7,515	-21.0		282	14.6
350	30	8,489	-27.6		277	17.7
300	30	9,580	-35.6		273	23.1
250	30	10,824	-44.6		271	25.5
200	30	12,286	-54.4		267	28.0
175	30	13,132	-59.2		268	28.8
150	29	14,087	-63.8		268	25.1
125	28	15,194	-67.5		266	18.8
100	27	16,534	-68.5		278	9.1
80	26	17,882	-65.5		69	1.4
60	25	19,659	-59.7		107	8.7
50	23	20,805	-57.2		96	11.1
40	22	22,225	-54.1		85	14.8
30	21	24,088	-49.8		90	20.8
25	21	25,288	-47.5		92	20.0
20	20	26,777	-44.9		90	17.9
15	14	28,715	-42.6		78	19.2

7/ SPOKANE, WASH. (933 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	722	11.6	59	123	2.1
1,000	30	131				
950	30	569				
900	30	1,023	15.6	47	76	1.6
850	30	1,507	13.6	43	349	2.7
800	30	2,015	10.4	44	315	3.5
750	30	2,549	6.7	47	290	6.2
700	30	3,112	3.0	50	286	8.9
650	30	3,704	- .5	45	282	12.0
600	30	4,345	- 4.0	44	289	13.4
550	30	5,018	- 8.0	41	296	15.7
500	30	5,761	-12.9	38	305	18.1
450	30	6,544	-18.4	39	306	22.2
400	30	7,425	-24.9	37	303	23.1
350	30	8,383	-31.9		302	27.0
300	30	9,453	-40.2		298	27.0
250	30	10,674	-48.8		301	29.0
200	30	12,116	-55.4		300	29.5
175	30	12,965	-56.9		298	31.7
150	30	13,938	-58.7		299	28.0
125	30	15,078	-60.3		298	27.0
100	30	16,472	-59.6		300	22.2
80	29	17,871	-58.4		309	13.4
60	27	19,682	-57.5		311	10.3
50	27	20,836	-56.7		322	8.5
40	26	22,246	-55.5		327	7.6
30	25	24,088	-53.3		311	6.8
25	25	25,265	-52.3		316	8.0
20	23	26,713	-50.6		299	12.6
15	18	28,613	-48.0		288	15.3

TAMPA, FLA. (1015 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	8	23.3	93	90	4.7
1,000	30	138	23.6	90	109	7.6
950	30	590	22.4	82	143	12.0
900	30	1,058	20.0	75	148	10.7
850	30	1,549	17.2	73	148	10.3
800	30	2,065	14.3	69	149	9.1
750	30	2,605	11.5	62	148	8.0
700	30	3,183	8.2	58	163	7.4
650	30	3,790	4.9	54	168	7.2
600	30	4,441	1.1	53	178	5.2
550	30	5,129	- 2.9	53	198	5.2
500	30	5,886	- 7.5	50	210	5.8
450	30	6,695	-12.4	47	216	5.4
400	30	7,591	-18.5	42	216	6.0
350	30	8,574	-25.4	40	210	7.8
300	30	9,675	-33.8	41	208	7.8
250	30	10,927	-43.8		242	6.4
200	30	12,390	-55.1		274	8.4
175	30	13,231	-61.0		289	8.4
150	30	14,177	-66.4		295	5.1
125	30	15,272	-69.6		325	3.3
100	29	16,599	-70.0		82	6.2
80	29	17,935	-66.8		83	10.9
60	28	19,698	-61.1		91	17.5
50	28	20,840	-57.9		89	20.8
40	28	22,254	-55.5		91	23.7
30	28	24,105	-52.1		86	27.4
25	27	25,289	-50.1		87	30.1
20	26	26,754	-47.5		90	31.3
15	19	28,665	-44.2		89	34.2

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

1/ 10 mb., 9 obs., 31,441 m., -41.4°C.
2/ 10 mb., 18 obs., 31,502 m., -42.3°C.
7 mb., 9 obs., 33,897 m., -41.6°C.
5 mb., 5 obs., 36,240 m., -39.0°C.
3/ 10 mb., 7 obs., 31,282 m., -41.2°C.
4/ 10 mb., 14 obs., 31,491 m., -41.5°C.
5/ 10 mb., 8 obs., 31,296 m., -43.2°C.
6/ 10 mb., 10 obs., 31,471 m., -38.7°C.
7/ 10 mb., 13 obs., 31,298 m., -46.5°C.
7 mb., 7 obs., 33,580 m., -46.0°C.
5 mb., 5 obs., 35,668 m., -48.8°C.

RAWINSONDE DATA

Average monthly values

Standard pressure surface (mb.)	TATOOSH IS., WASH. (1012 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	31	12.4	90	97	8.2
1,000	30	129			100	8.4
950	30	567			142	6.0
900	30	1,024	13.9	59	165	4.9
850	30	1,504	11.4	58	191	3.3
800	30	2,009	9.5	48	230	2.1
750	30	2,539	7.2	42	209	2.9
700	30	3,108	4.3	36	254	4.5
650	30	3,700	.8	35	285	6.4
600	30	4,348	- 2.7		278	8.0
550	30	5,025	- 6.8	32	284	9.9
500	30	5,771	-11.7	32	280	11.5
450	30	6,559	-17.4	33	279	9.7
400	30	7,443	-23.9		259	2.9
350	30	8,404	-31.3		280	12.8
300	30	9,477	-39.9		299	14.2
250	30	10,700	-48.6		283	16.1
200	30	12,142	-56.0		303	15.3
175	30	12,988	-57.6		299	15.7
150	30	13,958	-59.0		300	15.3
125	27	15,119	-61.2		295	15.5
100	18	16,504	-61.1		319	10.9
80	16	17,907	-59.5		329	9.9
60	15	19,723	-57.4		354	5.8
50	13	20,894	-56.2			
40	13	22,316	-55.3		30	5.4
30	10	24,142	-53.8			
25	7	25,335	-51.8			
20						
15						

Standard pressure surface (mb.)	TONOPAH, NEV. (836 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	1,650	10.1	33	1	7.2
1,000	30	124				
950	30	560				
900	30	1,023				
850	30	1,506				
800	30	2,018	15.5	33	69	1.7
750	30	2,559	12.5	34	192	5.2
700	30	3,137	8.4	37	199	7.2
650	30	3,742	3.9	40	188	8.0
600	30	4,391	- .8	35	184	8.5
550	30	5,075	- 5.4	31	201	9.7
500	30	5,823	-10.3		210	8.7
450	30	6,620	-16.2		219	9.5
400	30	7,503	-22.8		225	10.5
350	30	8,468	-30.4		220	12.6
300	30	9,547	-38.4		230	13.2
250	30	10,779	-46.8		243	14.0
200	30	12,233	-54.4		257	20.2
175	30	13,081	-57.9		253	22.5
150	29	14,046	-61.3		256	20.6
125	29	15,170	-64.2		262	18.3
100	26	16,537	-65.0		275	12.0
80	18	17,894	-63.1		309	6.6
60	12	19,655	-59.1		302	3.9
50	12	20,800	-57.1		295	3.1
40	11	22,216	-55.0		48	2.7
30	10	24,054	-52.4			
25	8	25,239	-50.8			
20	8	26,698	-48.4			
15						

Standard pressure surface (mb.)	TOPEKA, KANS. (986 MB.)					
	Number of observation	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	269	12.8	93	167	1.0
1,000	30	146				
950	30	581	16.3	68	202	4.7
900	30	1,041	15.7	56	248	5.2
850	30	1,525	13.6	50	276	6.0
800	30	2,033	10.9	48	285	8.4
750	30	2,566	7.9	44	293	10.1
700	30	3,134	4.5	46	291	10.7
650	30	3,729	1.0	42	299	10.5
600	30	4,373	- 3.0	39	289	11.5
550	30	5,049	- 7.0		283	11.5
500	30	5,796	-11.4		277	14.6
450	30	6,587	-16.8		280	16.1
400	30	7,470	-23.3		278	21.0
350	30	8,433	-30.6		273	25.6
300	30	9,509	-39.0		269	29.5
250	30	10,736	-47.5		264	32.8
200	30	12,185	-55.3		269	42.9
175	30	13,031	-58.1		271	39.4
150	30	13.998	-60.4		274	33.6
125	29	15,128	-62.8		272	28.6
100	26	16,501	-62.6		277	17.7
80	23	17,886	-60.7		283	10.7
60	19	19,688	-57.7			.0
50	17	20,841	-55.1		98	1.9
40	16	22,279	-52.8		93	2.5
30	13	24,159	-50.0		90	8.4
25	9	25,357	-48.1			
20						
15						

Standard pressure surface (mb.)	TUCSON, ARIZ. (924 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	781	20.6	43	134	5.1
1,000	30	87				
950	30	535				
900	30	1,010	24.3	29	134	4.7
850	30	1,508	21.8	29	125	1.2
800	30	2,030	18.3	32	176	1.6
750	30	2,572	14.0	35	164	3.3
700	30	3,157	9.4	37	179	5.6
650	30	3,763	5.0	38	196	5.1
600	30	4,415	.7	35	221	5.1
550	30	5,101	- 3.5		249	7.6
500	30	5,857	- 7.8		258	12.6
450	30	6,664	-13.4		267	16.5
400	30	7,556	-19.9		266	20.8
350	30	8,534	-26.8		272	25.5
300	30	9,628	-35.0		268	33.6
250	30	10,875	-44.1		267	39.2
200	29	12,341	-54.0		265	42.4
175	27	13,189	-59.3		267	41.0
150	27	14,143	-64.4		268	38.1
125	27	15,245	-68.7		267	28.0
100	26	16,575	-70.1		269	14.2
80	26	17,914	-66.4		323	1.4
60	26	19,683	-60.5		85	9.1
50	26	20,827	-57.6		88	10.3
40	26	22,245	-55.2		88	14.2
30	22	24,085	-53.0		87	19.0
25	18	25,266	-51.4		87	18.8
20	5	26,717	-49.2			
15						

Standard pressure surface (mb.)	1/ WASHINGTON, D. C. (1009 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	88	17.8	90	78	1.2
1,000	30	164	18.1	85	72	1.7
950	30	603	17.2	76	248	1.9
900	30	1,065	15.2	71	263	6.2
850	30	1,549	13.0	68	265	10.1
800	30	2,057	10.6	66	260	12.8
750	30	2,592	7.9	65	258	16.5
700	30	3,160	4.7	63	257	18.1
650	30	3,758	1.3	61	254	19.4
600	30	4,402	- 2.4	58	256	22.9
550	30	5,082	- 5.8	54	258	28.0
500	30	5,831	- 9.9	46	258	28.4
450	30	6,631	-14.9	41	257	30.5
400	30	7,519	-21.0	40	255	30.5
350	30	8,491	-28.0	38	258	34.6
300	30	9,581	-35.9		260	39.6
250	30	10,822	-45.5		258	44.1
200	30	12,275	-55.7		263	46.6
175	30	13,116	-60.3		271	39.2
150	30	14,069	-64.0		264	34.4
125	30	15,180	-65.9		263	29.7
100	30	16,539	-64.6		270	19.2
80	30	17,911	-61.6		274	10.3
60	29	19,720	-57.0		92	1.4
50	29	20,882	-54.8		78	4.9
40	29	22,317	-52.5		84	9.9
30	29	24,192	-49.2		85	13.0
25	29	25,394	-47.0		83	13.4
20	29	26,880	-44.8		90	10.9
15	22	28,810	-42.2		95	8.7

Standard pressure surface (mb.)	WINNEMUCCA, NEV. (870 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	29	1,310	7.0	48	117	2.9
1,000	29	141				
950	29	571				
900	29	1,026				
850	29	1,504	15.3	34	96	4.5
800	29	2,017	14.8	30	115	1.0
750	29	2,557	11.6	30	307	2.3
700	29	3,133	7.7	30	257	5.4
650	29	3,736	3.3	32	245	7.0
600	29	4,383	- 1.4	35	241	7.2
550	29	5,064	- 6.1	35	235	7.8
500	29	5,812	-10.6		248	4.7
450	29	6,606	-16.2		253	4.7
400	29	7,492	-23.0		250	6.0
350	29	8,456	-30.4		258	6.6
300	29	9,533	-38.7		261	7.0
250	29	10,763	-47.5		273	7.8
200	29	12,212	-55.1		268	12.4
175	29	13,058	-58.0		266	13.4
150	29	14,025	-60.4		266	16.1
125	29	15,153	-62.9		273	15.3
100	29	16,526	-62.9		290	11.7
80	28	17,903	-61.4		303	7.0
60	28	19,698	-58.5		318	2.7
50	28	20,848	-56.9		332	3.5
40	28	22,268	-54.5		306	2.1
30	28	24,120	-51.8		259	2.7
25	23	25,297	-50.5		238	4.7
20	5	26,702	-50.3			
15						

Standard pressure surface (mb.)	YAKUTAT, ALASKA (1012 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	29	12	10.6	92	123	3.5
1,000	29	111			123	3.7
950	29	539	10.3	82	157	7.6
900	29	988	7.7	81	170	8.0
850	29	1,458	4.7	82	185	9.1
800	29	1,950	2.0	77	199	11.7
750	29	2,470	- .2	72	219	13.4
700	29	3,020	- 2.7	65	226	16.9
650	29	3,602	- 5.6	61	231	21.0
600	29	4,229	- 9.1	59	238	25.6
550	29	4,891	-13.1	59	246	29.9
500	29	5,620	-17.4	58	250	38.7
450	29	6,396	-22.0	51	248	42.7
400	29	7,261	-27.5	51	261	33.6
350	29	8,208	-34.6	46	263	30.5
300	29	9,268	-42.6		263	32.8
250	29	10,478	-50.4			
200	29	11,914	-54.7			
175	29	12,770	-53.7			
150	27	13,766	-53.9			
125	27	14,935	-54.6			
100	27	16,365	-53.9			
80	27	17,801	-53.5			
60	27	19,654	-53.4			
50	27	20,829	-53.3			
40	27	22,265	-53.6			
30	24	24,119	-53.2			
25	24	25,293	-53.1			
20	20	26,730	-52.8			
15	14	28,596	-52.0			

1/ 10 mb., 12 obs., 31,568 m., -37.8°C.

Note: All observations scheduled at 1200, G.C.T. "Number of observations" refers to those of dynamic height only. Temperature, humidity or wind data may be missing for one or more pressure surfaces of some observations. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Relative humidity data are not published for standard pressure surfaces having less than 16 actual observations.

Relative humidity data beginning with October 1, 1948, were computed and expressed in these tables on the basis of vapor-pressure over water. Upper air values of relative humidity at levels with temperatures less than 0°C, have formerly been computed and expressed on the basis of the vapor-pressure over ice. All relative humidity observations are obtained by electric hygrometer and have been adjusted to compensate for the value occurring below the operating range of the humidity element

These average values for standard pressure surfaces were obtained by rawinsondes, dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

SOLAR RADIATION DATA

SEPTEMBER 1957

Daily totals and average daily totals by weeks of solar and sky radiation, plus the radiation reflected from the ground, as received on a vertical surface facing south at Blue Hill, Mass. during the month

Date	3	4	5	6	7	8	9	Avg	10	11	12	13	14	15	16	Avg	17	18	19	20	21	22	23	Avg
Langleys	137	164	415	243	169	226	437	256	383	224	345	323	156	152	411	285	149	385	490	423	103	63	47	237
Date	24	25	26	27	28	29	30																	
Langleys	421	482	489	520	526	480	170	441																

Daily totals and average daily totals by weeks of diffuse (sky) radiation as received on a horizontal surface at Blue Hill, Mass. during the month

Date	3	4	5	6	7	8	9	Avg	10	11	12	13	14	15	16	Avg	17	18	19	20	21	22	23	Avg
Langleys	192	235	77	183	219	250	77	176	155	145	208	156	171	185	123	163	178	130	70	114	182	107	102	126
Date	24	25	26	27	28	29	30																	
Langleys	67	54	93	65	53	83	195	87																

Note: Langley is the unit used to denote one gram calorie per square centimeter

NET RADIATION

Net radiation in langleys per day (midnight to midnight) at Raleigh, N. C., during the month

SEPTEMBER 1957

Date.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langleys. . .	275	267	158	*182	*146	*89	162	*17	*217	*197	*238	296	285	296	261	*203	*161	*73	*88	*229	*187	*207	*236	258	209	189	136	-24	0	*142		199

* Estimated values owing to occurrence of rain during period. While rain is falling, radiation is assumed to be zero.

The measurement is made with a Beckman and Whitley net exchange radiometer over a plot of Bermuda grass. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the North Carolina State College at Raleigh. The instrument with which they were measured has not been checked by the Weather Bureau.

SOLAR RADIATION DATA

Solar radiation intensities, tabulated in langleys per minute on a surface normal to the direction of the sun.

SEPTEMBER 1957

Date	Sun's zenith distance								
	A. M.				*	P. M.			
	78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°
	BLUE HILL, MASS.								
	Air mass								
	4.89	3.92	2.94	1.96	*	1.96	2.94	3.92	4.89
Sept.									
5-----	----	----	1.16	1.31	----	----	----	----	----
6-----	0.82	0.93	1.04	----	----	----	----	----	----
9-----	----	.97	1.10	1.27	1.38	----	----	----	----
18----	.86	.95	1.06	----	----	----	----	----	----
19----	.86	.97	----	----	1.35	----	----	----	----
24----	----	----	----	----	1.45	1.29	1.16	1.03	0.91
25----	.97	1.06	1.17	1.29	1.38	1.22	1.01	----	----
26----	H.62	H.73	H.87	----	----	----	----	----	----
27----	1.07	1.15	1.25	1.37	1.48	----	----	----	----
28----	1.05	1.15	1.24	1.39	1.46	1.34	1.17	1.01	.91
29----	1.04	1.13	1.24	1.33	----	----	----	----	----
Averages	.91	1.00	1.13	1.33	1.42	1.28	1.11	1.02	.91

H Haze
S Slight haze - indeterminable
M Moderate haze - indeterminable
I Intense haze - indeterminable
* Values corresponding to true solar noon

Date	Sun's zenith distance								
	A. M.				*	P. M.			
	78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°
	MADISON, WIS.								
	Air mass								
	4.84	3.87	2.90	1.94	*	1.94	2.90	3.87	4.84
Sept.									
4-----	----	S1.03	S1.17	S1.32	S1.48	Ci			----
5-----	S0.86	----	----	----	----	----	----	----	----
8-----	M.75	M.87	M.98	S1.16	Cu	----	----	----	----
9-----	Ac	----	----	I1.06	Ac	----	----	----	----
10----	Clouds				M1.16	----	----	----	----
17----	Clouds		S1.00	S1.13	S1.19	Ci		----	----
18----	S.72	S.77	S.93	S1.12	S1.28	S1.12	Ci		
23----	Clouds				S1.35	----	S1.18	S1.06	S0.96
24----	S.98	S1.04	S1.14	Ac	S1.31	S1.18	S.97	S.79	S.62
25----	Clouds			S1.24	S1.28	S1.18	S1.00	Clouds	
27----	S.97	S1.06	S1.16	S1.31	S1.43	S1.20	S1.04	S.96	S.86
28----	S.94	S1.03	S1.14	S1.26	----	----	S1.04	S.88	S.72
29----	M.76	M.91	M.99	M1.14	M1.36	Ci			
30----	Clouds					M1.06	S.94	S.80	S.69
Averages	.85	.96	1.06	1.19	1.32	1.15	1.03	.90	.77
	WASHINGTON, D. C. (WBCO)								
	Air mass								
	5.00	4.00	3.00	2.00	*	2.00	3.00	4.00	5.00
Sept.									
1-4---	----	----	----	----	Clouds	----	----	----	----
5-----	0.65	0.75	0.89	1.03	----	----	0.84	0.71	0.60
6-23--	----	----	----	----	Clouds	----	----	----	----
24----	----	----	1.05	1.19	----	----	----	.85	.75
25----	.69	.79	----	----	----	----	----	----	----

Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station listed above appears in the February 1957 issue, Vol. 8, No. 2, page 63, of this publication.

SOLAR RADIATION DATA

Daily totals and weekly averages of solar radiation (direct and diffuse) received on a horizontal surface, tabulated in langleys. SEPTEMBER 1957

	Aklavik, MacKenzie	Albuquerque, N.Mex.	Annette, Alaska	Apalachicola, Fla.	Astoria, Oreg.	Atlanta, Ga.	Barrow, Alaska	Bethel, Alaska	Bismarck, N. Dak.	Blue Hill, Mass.	Boise, Idaho	Boston, Mass.	Brownsville, Tex.	Canton Island Pacific Area	Cape Hatteras, N.C.	Caribou, Me.	Charleston, S. C.	Cleveland, Ohio	Columbia, Mo.	Corvallis, Oreg.	Davis, Calif.	Dodge City, Kans.	E. Lansing, Mich.	Edmonton, Alberta	El Paso, Tex.	Ely, Nev.	Fairbanks, Alaska	Ft. Worth, Tex.	Fresno, Calif.	Gainesville, Fla.
1957																														
Sep. 3------	301	673	401	611	593	530	97	165	538	221	453	313	526	506	615	55	543	599	579	531	500	447	464	300	686	640	---	564	551	469
Sep. 4------	305	602	269	553	517	380	---	321	333	273	541	285	254	590	584	401	490	146	281	563	540	(435)	474	315	676	630	288	510	546	159
Sep. 5------	266	594	294	469	284	467	149	215	349	578	547	572	452	634	432	259	497	555	471	480	545	602	588	379	663	611	322	490	529	255
Sep. 6------	51	638	149	532	154	439	25	387	330	352	478	373	506	652	604	294	331	542	111	507	554	100	467	301	602	615	297	289	529	179
Sep. 7------	125	---	200	153	502	382	---	98	461	291	532	306	446	632	314	419	263	237	302	551	541	606	529	111	604	613	167	309	505	49
Sep. 8------	109	627	67	299	548	47	---	175	278	388	542	351	570	651	345	347	158	576	502	578	528	635	563	450	653	586	211	311	471	85
Sep. 9------	144	589	358	124	546	---	110	198	402	543	551	542	555	501	560	527	536	472	507	567	518	457	336	273	615	634	166	455	485	414
Average------	186	620	248	391	449	374	95	223	384	378	521	392	473	595	493	329	402	447	393	539	532	(469)	489	304	643	618	242	418	517	230
Sep. 10------	82	457	256	514	530	---	---	292	378	488	540	477	383	617	618	523	424	---	454	550	525	278	62	301	631	626	150	492	(500)	337
Sep. 11------	85	553	464	608	498	---	128	61	209	298	521	254	489	608	569	60	447	440	182	542	513	200	374	239	661	622	234	377	514	308
Sep. 12------	34	625	427	558	320	---	153	164	415	422	469	391	473	654	574	368	530	282	307	236	528	600	116	246	650	527	128	452	523	447
Sep. 13------	68	528	408	615	511	---	---	166	438	394	515	337	405	564	588	65	517	133	476	508	488	454	372	337	595	595	173	456	521	440
Sep. 14------	71	624	451	628	498	---	77	278	---	221	518	223	467	624	535	436	512	477	317	525	518	51	519	437	681	586	211	462	505	472
Sep. 15------	269	632	453	407	204	343	65	243	---	231	524	296	494	623	611	473	527	411	348	---	522	---	144	355	663	593	113	383	500	345
Sep. 16------	191	612	445	322	153	276	78	247	419	485	501	472	320	613	622	70	404	349	561	---	522	592	488	193	648	589	282	488	509	60
Average------	114	576	415	522	388	620	100	207	372	362	512	350	433	615	588	285	480	349	378	472	517	363	296	301	647	591	185	444	(510)	344
Sep. 17------	180	561	444	282	170	359	---	83	372	258	502	230	560	411	561	400	397	438	544	---	359	560	532	424	631	526	---	449	389	184
Sep. 18------	105	620	413	499	489	222	87	123	43	437	279	463	441	653	382	468	390	533	472	---	516	535	505	437	643	293	48	438	497	436
Sep. 19------	78	620	83	448	500	225	69	345	444	507	---	466	505	629	438	454	270	363	501	---	510	168	390	194	662	464	155	491	501	390
Sep. 20------	76	614	188	569	403	256	67	---	129	464	457	425	484	648	609	173	335	239	336	---	525	111	76	(303)	647	412	96	474	495	437
Sep. 21------	70	600	192	558	467	490	98	341	193	194	411	169	445	688	511	74	304	269	90	---	504	569	179	314	635	570	258	326	489	362
Sep. 22------	87	597	352	554	476	452	125	336	222	132	468	159	229	534	611	133	353	65	479	---	493	592	164	353	465	565	281	93	492	373
Sep. 23------	133	589	415	468	447	247	180	325	449	114	466	93	218	620	546	141	447	398	517	460	486	565	387	356	596	543	260	325	492	450
Average------	104	600	298	483	422	322	104	259	265	301	431	286	412	598	523	263	356	329	420	---	485	443	319	(340)	611	482	183	371	479	376
Sep. 24------	216	586	265	519	271	549	128	305	455	429	---	434	164	658	395	406	431	470	508	433	577	562	490	301	---	542	66	381	468	401
Sep. 25------	69	584	126	414	417	550	79	236	453	473	407	437	424	658	614	269	533	494	435	308	360	394	475	354	611	447	96	270	405	347
Sep. 26------	150	557	160	119	106	355	70	236	458	453	339	414	428	662	504	289	435	388	418	70	255	504	502	(318)	588	490	65	433	484	378
Sep. 27------	41	567	251	109	252	49	157	296	423	493	365	475	445	571	184	270	117	470	479	238	---	---	492	189	546	496	101	440	481	110
Sep. 28------	199	557	84	98	338	47	121	297	420	483	440	485	542	500	171	417	86	508	506	252	---	512	487	248	588	431	58	(407)	469	140
Sep. 29------	155	547	84	298	383	57	---	301	420	446	305	434	557	676	67	428	194	497	501	434	---	---	467	261	596	262	166	476	434	245
Sep. 30------	89	540	96	112	412	79	---	209	425	247	402	241	562	607	287	419	195	419	480	306	---	518	413	332	600	493	138	491	407	216
Average------	131	563	152	238	311	241	111	269	436	432	376	417	446	619	317	357	285	464	475	292	---	498	475	(286)	588	452	99	(414)	450	262

Note.--Langley is the unit used to denote one gram calorie per square centimeter.
Values in parentheses are interpolated.

SOLAR RADIATION DATA

Daily totals and weekly averages of solar radiation (direct and diffuse) received on a horizontal surface, tabulated in langleys.- Cont'd. SEPTEMBER 1957

	Glasgow, Mont.	Grand Junction, Colo.	Grand Lake, Colo.	Great Falls, Mont.	Greensboro, N. C.	Griffin, Ga.	Indianapolis, Ind.	Inyokern, Calif.	Ithaca, N. Y.	Lake Charles, La.	Las Vegas, Nev.	Lemont, Ill.	Lexington, Ky.	Little Rock, Ark.	Los Angeles, Calif. (urban)	Los Angeles, Calif.	Madison, Wis.	Matanuska, Alaska	Medford, Oreg.	Miami, Fla.	Midland, Tex.	Moosonee, Ontario	Nashville, Tenn.	Newport, R. I.	New York, N. Y.	North Omaha, Nebr.	Oak Ridge, Tenn.	Oklahoma City, Okla.	Ottawa, Ontario	Phoenix, Ariz.
1957																														
Sep. 3------	432	620	467	329	503	500	574	727	457	137	596	485	589	523	646	607	297	---	522	450	597	(510)	316	305	354	581	306	---	479	625
Sep. 4------	---	555	330	454	345	439	200	738	322	258	624	580	571	557	622	581	568	---	529	571	601	(508)	582	272	310	358	460	---	293	622
Sep. 5------	---	612	307	487	470	539	544	738	530	596	587	488	654	574	581	577	457	399	526	298	619	487	500	578	617	443	519	481	205	593
Sep. 6------	---	569	201	336	318	572	451	707	595	593	608	385	659	364	582	580	328	---	527	449	463	320	601	410	577	335	573	483	531	568
Sep. 7------	474	551	327	516	332	526	353	688	311	495	589	455	503	111	557	531	428	359	399	528	385	(263)	524	275	144	562	513	322	466	604
Sep. 8------	402	570	423	449	96	99	566	684	583	357	582	571	522	509	543	536	515	171	549	492	544	(485)	132	383	321	569	159	430	439	591
Sep. 9------	359	615	432	285	344	139	232	657	574	526	570	169	288	451	504	450	333	78	542	539	505	461	295	540	370	175	173	592	544	427
Average-------	417	584	355	408	344	402	417	706	482	423	594	448	541	441	576	552	418	252	513	475	531	(433)	421	395	385	432	386	462	423	576
Sep. 10------	350	624	295	452	263	363	170	665	149	580	584	338	493	478	555	536	434	193	529	486	379	317	517	444	152	69	470	496	129	600
Sep. 11------	187	592	446	361	444	546	384	671	346	98	599	241	513	508	587	587	(69)	110	509	517	471	385	509	400	510	315	219	213	367	610
Sep. 12------	537	555	463	212	492	557	234	656	299	148	438	86	344	149	411	408	190	---	496	554	344	264	385	377	345	541	353	409	276	---
Sep. 13------	451	511	174	454	474	544	260	687	91	---	578	509	189	386	477	428	521	78	499	516	508	103	171	437	446	117	273	539	330	557
Sep. 14------	472	586	376	492	456	494	388	701	336	481	599	506	271	491	485	445	258	187	515	301	525	274	265	257	258	150	342	254	452	602
Sep. 15------	530	574	400	443	495	280	269	686	287	364	601	208	365	383	581	546	412	326	491	274	556	45	195	164	249	541	441	389	166	596
Sep. 16------	510	428	337	483	213	247	366	---	66	215	603	559	108	518	234	330	511	324	430	494	551	251	199	425	392	514	83	596	246	590
Average-------	434	553	356	414	405	433	296	678	225	314	572	349	326	416	476	469	(342)	203	495	449	476	234	320	358	336	321	311	414	281	592
Sep. 17------	276	486	339	68	79	416	564	---	477	483	583	529	451	486	518	560	464	---	484	293	541	329	282	197	242	505	228	581	430	597
Sep. 18------	167	453	410	(78)	99	269	433	---	521	385	577	521	263	259	525	525	463	35	388	596	568	48	359	397	435	475	180	534	451	579
Sep. 19------	465	477	392	514	71	348	144	---	519	515	574	363	246	144	376	382	333	169	505	346	571	30	184	510	486	161	218	548	429	575
Sep. 20------	367	458	93	278	128	249	163	654	166	473	581	94	409	493	411	424	68	215	479	517	532	346	171	482	328	76	(275)	442	170	573
Sep. 21------	278	532	118	278	368	405	263	673	284	543	594	174	491	131	528	466	139	67	477	564	393	126	389	233	288	422	417	97	117	567
Sep. 22------	391	554	393	462	432	412	61	673	280	247	589	269	158	122	574	528	437	112	481	---	450	191	300	169	265	524	280	398	124	566
Sep. 23------	434	543	393	459	240	270	558	650	324	110	564	502	558	470	551	452	462	105	453	521	408	95	462	106	160	516	299	453	344	538
Average-------	340	500	305	(305)	202	338	312	662	367	394	580	350	368	301	497	477	338	117	467	473	495	167	307	299	315	383	(271)	436	295	571
Sep. 24------	427	---	399	439	525	418	528	618	431	484	531	501	606	486	502	511	424	73	442	384	287	239	545	417	518	498	538	357	461	541
Sep. 25------	437	524	394	429	518	465	488	578	434	275	471	455	585	308	523	517	439	50	227	262	479	272	511	477	445	480	502	325	343	543
Sep. 26------	406	511	271	401	345	340	453	634	362	180	528	239	385	439	522	491	432	43	75	295	500	227	286	360	409	260	302	304	(384)	530
Sep. 27------	372	499	354	341	92	79	---	629	378	149	526	497	540	362	528	517	459	266	167	472	558	387	315	499	509	454	365	436	363	529
Sep. 28------	393	496	372	416	117	39	530	620	506	---	430	486	391	447	510	462	433	41	129	475	554	344	---	489	491	465	59	453	440	533
Sep. 29------	415	466	357	417	42	75	487	486	451	308	474	481	195	468	497	457	437	171	96	438	547	206	92	438	316	455	126	523	422	531
Sep. 30------	401	478	361	388	104	74	214	---	366	275	514	434	394	343	526	527	390	262	220	535	535	107	214	194	141	439	256	522	394	507
Average-------	407	496	358	404	249	213	450	594	418	279	496	442	442	408	515	497	431	129	194	409	494	254	327	411	404	436	307	417	(401)	530

Note.--Langley is the unit used to denote one gram calorie per square centimeter.
Values in parentheses are interpolated.

SOLAR RADIATION DATA

Daily totals and weekly averages of solar radiation (direct and diffuse) received on a horizontal surface, tabulated in langleys.- Cont'd. **SEPTEMBER 1957**

	Portland, Me.	Raleigh, N. C.	Rapid City, S. Dak.	Resolute, N.W.T.	Riverside, Calif.	St. Cloud, Minn.	San Antonio, Tex.	Santa Maria, Calif.	S. Ste. Marie,Mich.	Sayville, N. Y.	Schenectady, N. Y.	Seabrook, N. J.	Seattle-Tacoma,Wash	Shreveport, La.	Spokane, Wash.	State College, Pa.	Swan Island, W. I.	Tampa, Fla.	Toronto, Ontario	Tucson, Ariz.	Wake Island Pacific Area	Washington, D. C. (Silver Hill Obs.)	Winnipeg, Manitoba
1957																							
Sep. 3------	245	522	(605)	161	628	219	574	548	91	506	321	460	367	397	487	454	590	550	456	633	---	406	308
Sep. 4------	246	426	560	238	625	445	609	572	617	355	311	297	517	629	---	391	102	307	318	612	630	399	424
Sep. 5------	396	284	571	42	564	299	603	567	542	(636)	230	580	194	505	---	615	113	411	540	584	699	583	381
Sep. 6------	345	179	522	205	552	451	583	588	461	583	402	430	108	399	494	572	637	515	443	597	671	295	416
Sep. 7------	369	292	559	101	530	472	314	589	481	251	198	219	415	155	467	455	---	284	398	597	319	---	519
Sep. 8------	341	187	500	257	582	463	584	583	464	332	399	235	492	476	502	539	675	101	450	612	164	365	160
Sep. 9------	568	315	549	159	562	102	633	562	479	471	463	131	507	448	437	179	699	431	519	597	675	103	398
Average-------	359	315	(552)	166	578	350	557	573	448	(448)	332	336	371	430	477	458	469	371	446	605	526	359	372
Sep. 10------	508	379	422	55	485	524	580	524	188	216	151	84	494	554	517	51	722	440	94	582	---	274	(358)
Sep. 11------	130	255	557	61	604	485	575	621	37	566	271	500	487	485	490	450	689	496	450	596	613	314	253
Sep. 12------	384	528	317	148	438	149	563	598	247	511	289	193	328	125	508	409	301	443	202	495	570	389	361
Sep. 13------	233	508	231	110	569	---	589	533	---	533	249	431	482	427	513	250	522	463	273	612	(688)	510	441
Sep. 14------	497	520	573	138	363	455	569	(582)	415	314	310	415	481	578	503	299	524	352	471	---	778	342	315
Sep. 15------	401	492	360	84	609	326	505	594	327	273	103	441	319	427	---	289	320	373	279	617	655	496	243
Sep. 16------	266	379	(568)	132	480	482	609	583	281	511	182	378	115	379	486	132	778	333	370	603	715	439	340
Average-------	345	437	(433)	104	507	404	570	(576)	249	417	222	349	386	425	503	269	551	414	305	584	(670)	395	(330)
Sep. 17------	266	261	446	119	---	241	563	583	392	222	345	116	102	522	431	283	730	480	429	618	678	130	348
Sep. 18------	518	121	423	125	---	236	529	573	380	435	412	362	482	321	191	320	682	558	466	615	719	252	229
Sep. 19------	498	139	236	147	---	219	568	561	177	590	413	525	461	540	430	380	---	459	163	611	719	453	470
Sep. 20------	216	374	399	96	474	359	414	567	370	492	189	350	423	476	445	83	580	599	153	605	---	234	125
Sep. 21------	298	341	339	84	550	394	458	547	29	367	279	304	432	457	465	381	723	465	225	598	658	397	175
Sep. 22------	308	365	488	129	590	407	44	532	323	231	291	358	450	111	465	425	628	477	121	584	628	428	341
Sep. 23------	108	420	523	113	562	469	153	474	301	197	179	---	425	423	452	322	655	493	273	574	664	153	218
Average-------	316	289	408	116	544	332	390	548	282	362	301	336	396	407	411	313	666	504	262	601	678	293	272
Sep. 24------	471	514	516	96	532	462	398	491	111	506	361	---	(379)	427	432	573	684	411	369	589	683	512	284
Sep. 25------	480	521	513	63	542	401	93	406	133	540	384	---	356	308	317	488	693	426	423	573	647	504	410
Sep. 26------	338	393	235	61	540	475	443	531	417	442	305	---	77	329	221	404	666	305	453	557	715	356	428
Sep. 27------	492	240	481	77	548	462	473	482	420	575	404	---	261	504	55	536	666	275	408	545	(687)	511	405
Sep. 28------	493	110	478	139	479	419	519	497	(377)	567	411	---	(342)	396	307	521	641	452	447	565	---	381	362
Sep. 29------	467	42	497	120	445	413	479	529	350	380	371	---	(412)	472	424	411	673	478	426	---	767	117	376
Sep. 30------	415	195	474	110	525	427	565	545	126	156	342	---	355	304	288	184	---	438	371	---	718	114	385
Average-------	451	288	456	95	516	437	424	497	(276)	452	368	---	(312)	391	292	445	670	398	414	566	(703)	356	379

Note.--Langley is the unit used to denote one gram calorie per square centimeter.
Values in parentheses are interpolated.

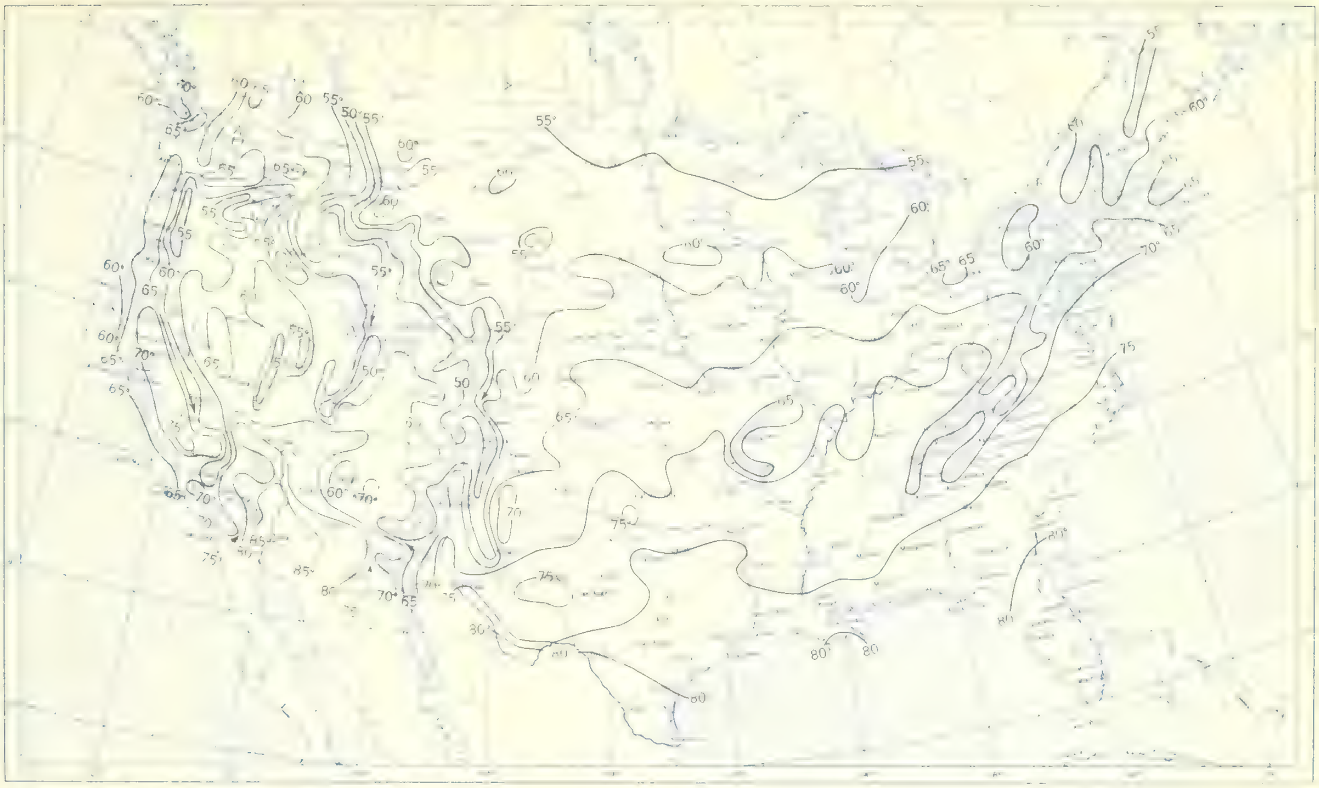
CHANGE IN CLIMATOLOGICAL CHARTS

Beginning on June 1, 1957, a change was made in surface observation times. This has had the following effect on the charts listed below. Charts not listed are not affected.

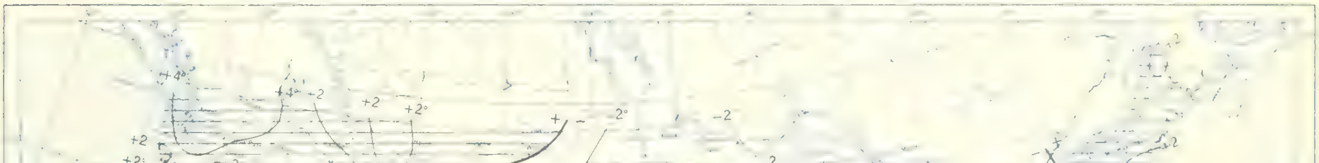
Chart V-B. Snow depth is now measured at 7 a.m. EST instead of 7:30.
Charts IX and X. Circle indicates cyclone and anticyclone positions at 7 a.m. EST instead of 7:30.
Chart XI. Average sea-level pressure is computed from the 7 a.m. and p.m. EST readings instead of 7:30 a.m. and p.m.
Charts XII-XVII. All the upper-air charts are now for 1200 GMT instead of 0300 GMT. All winds are based on rawinsonde observations. Use of pibal data has been discontinued in these charts.

USCOMM-WB-Asheville - 12/10/57 - 1850

Chart I. A. Average Temperature (F.) at Surface, September 1957.

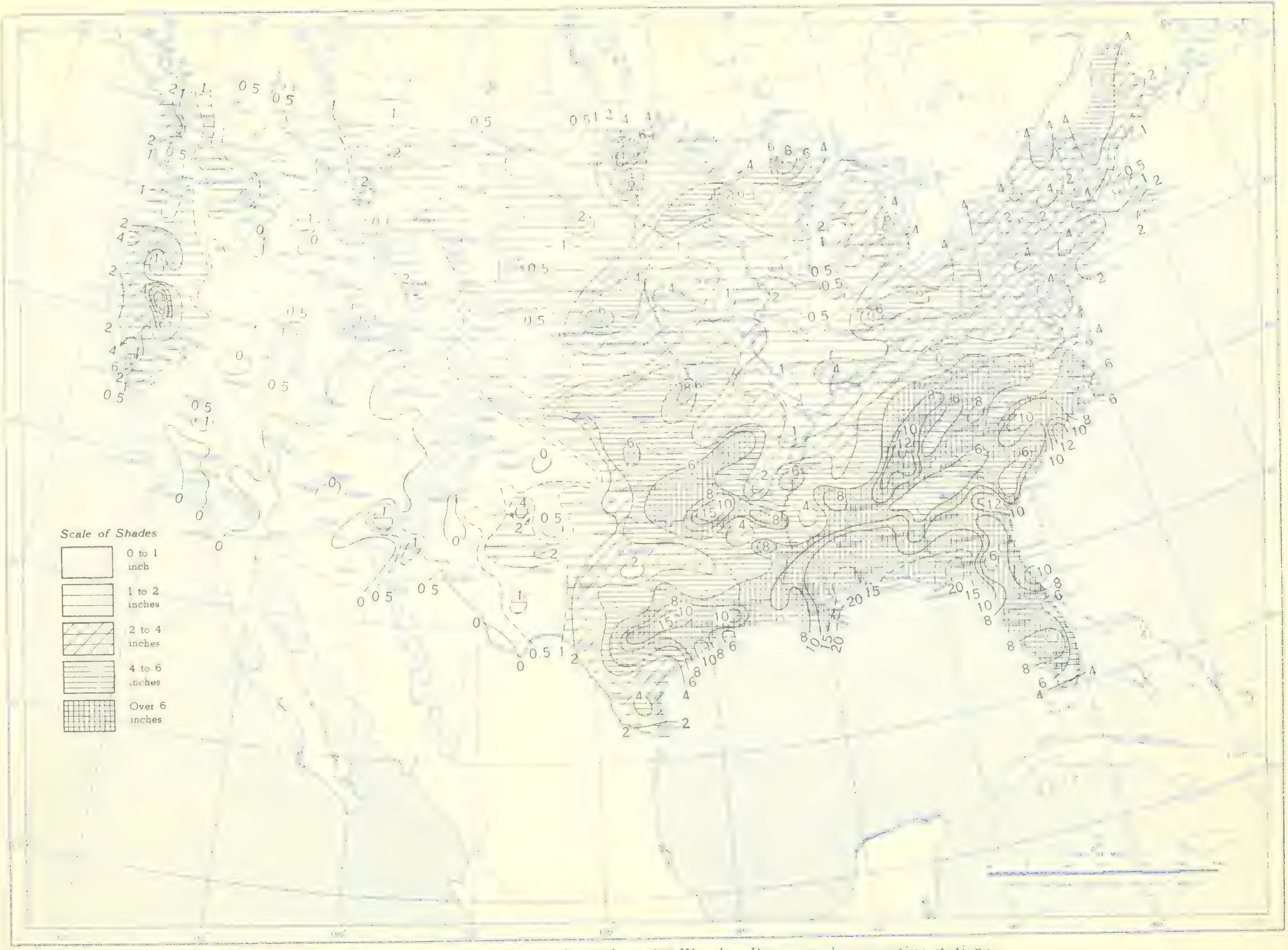


B. Departure of Average Temperature from Normal (°F.), September 1957.



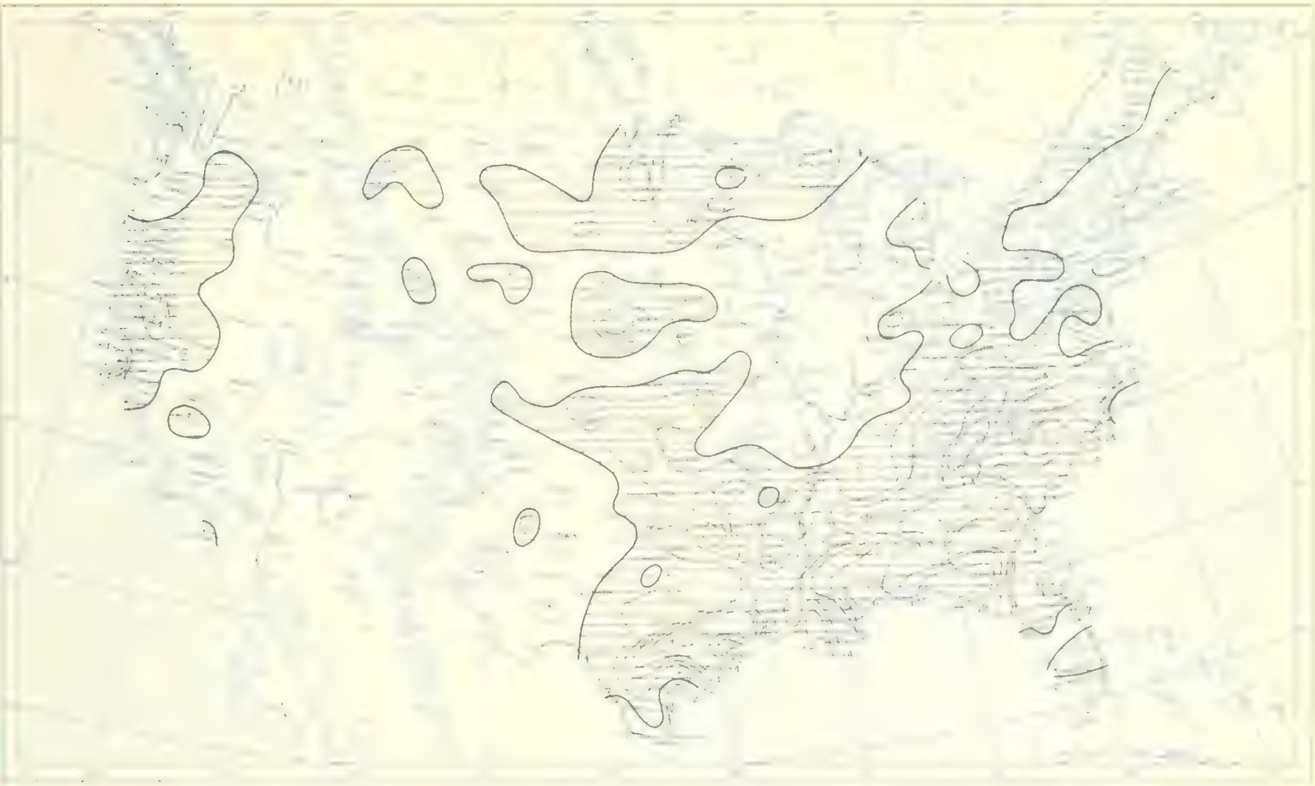
A. Based on reports from over 900 Weather Bureau and cooperative stations. The monthly average is half the sum of the monthly average maximum and monthly average minimum, which are the average of the daily maxima and daily minima, respectively.
B. Departures from normal are based on the 30-yr. normals (1921-50) for Weather Bureau stations and on means of 25 years or more (mostly 1931-55) for cooperative stations.

Chart II. Total Precipitation (Inches), September 1957.

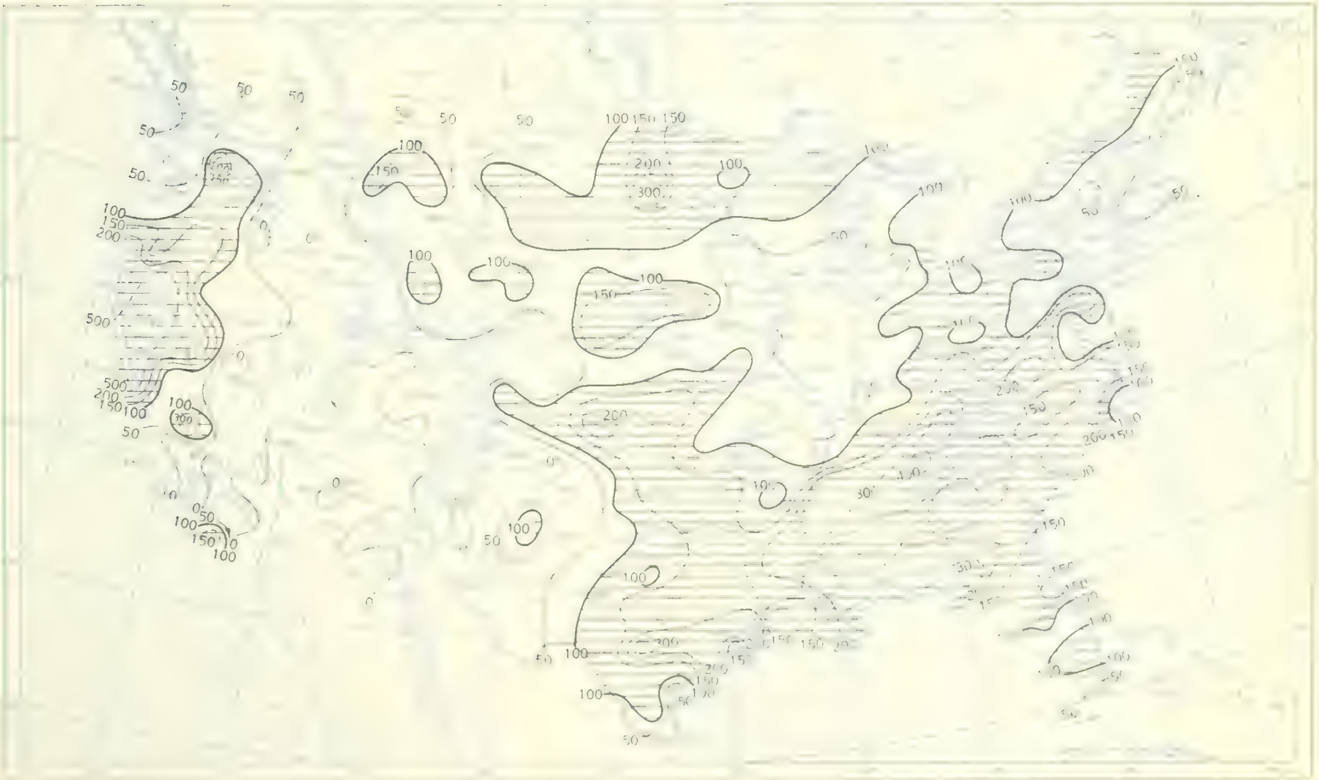


Based on daily precipitation records at about 800 Weather Bureau and cooperative stations.

Chart III. A. Departure of Precipitation from Normal (Inches), September 1957.

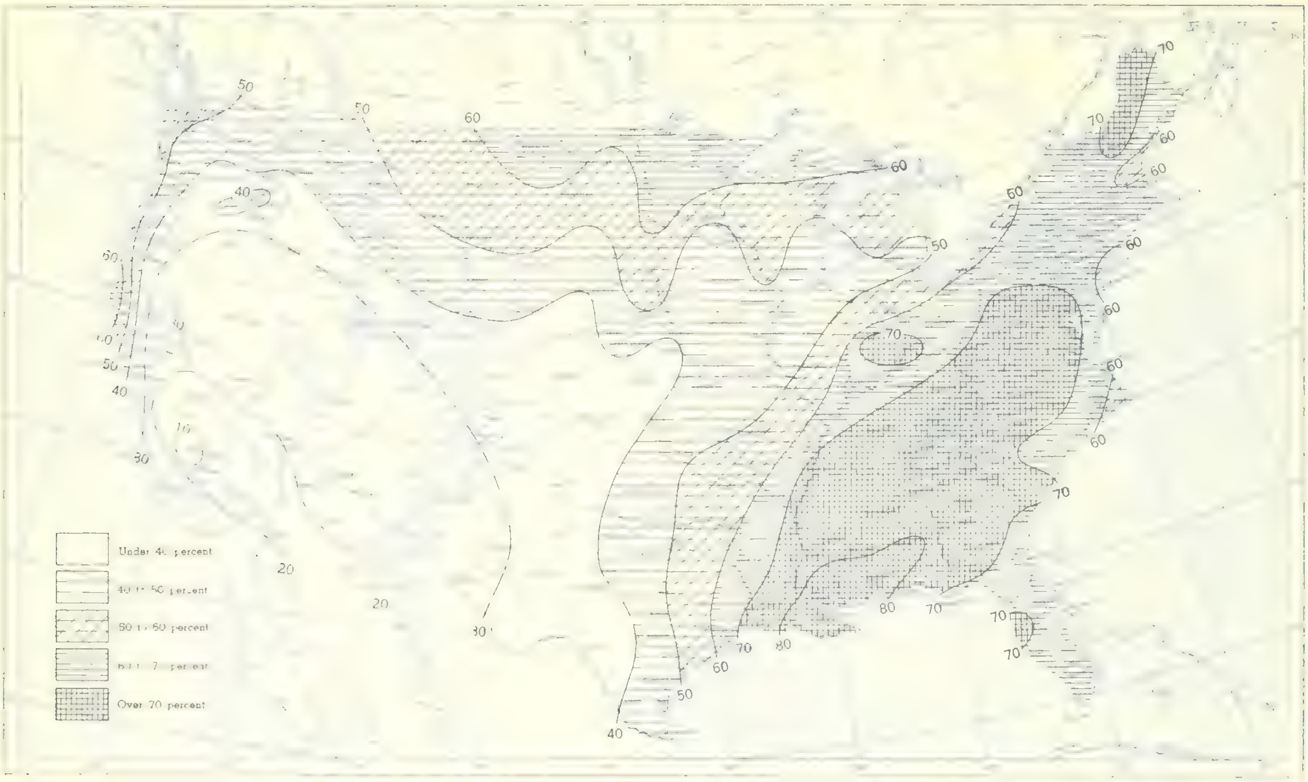


B. Percentage of Normal Precipitation, September 1957.

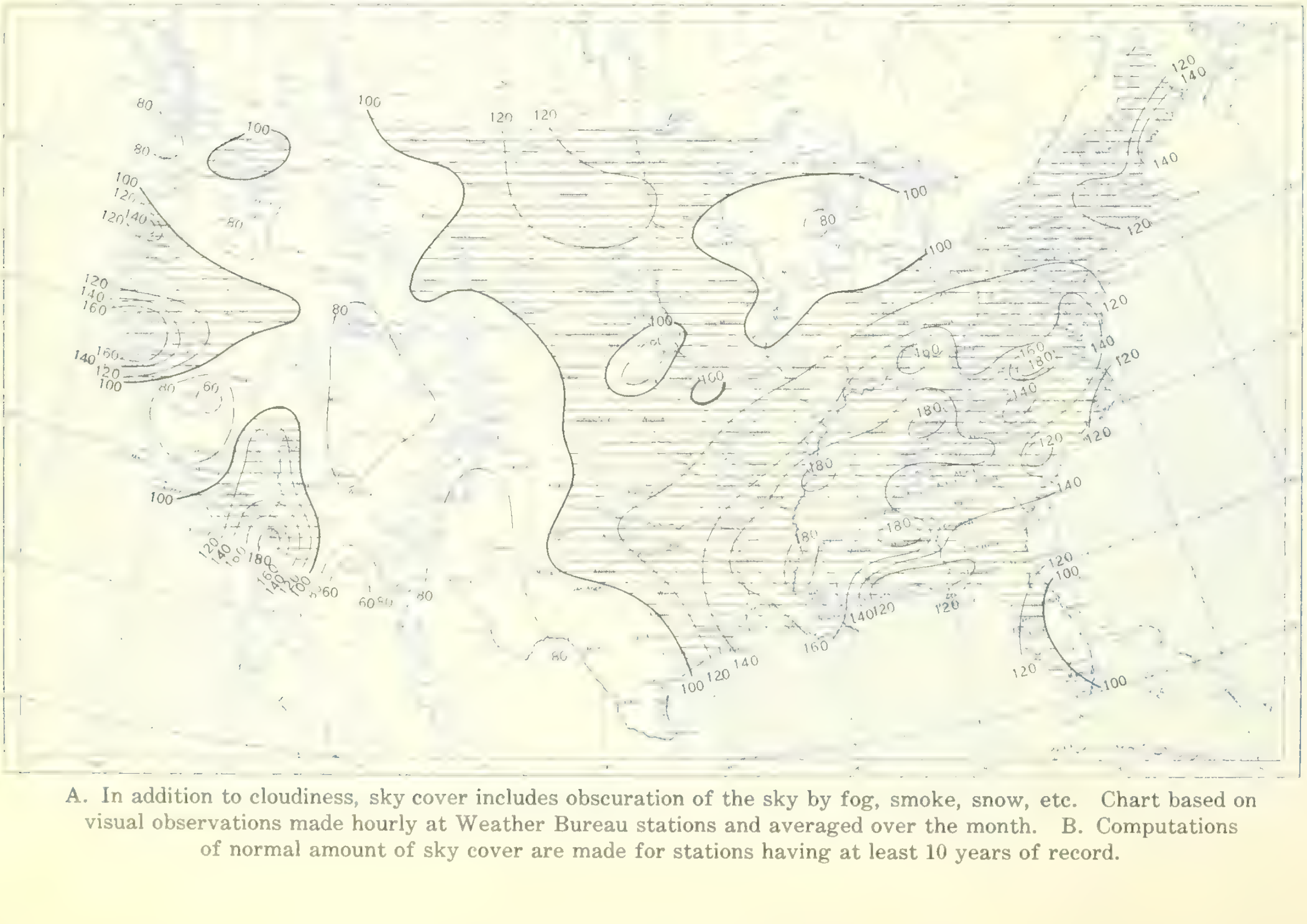


Normal monthly precipitation amounts are computed from the records for 1921-50 for Weather Bureau stations and from records of 25 years or more (mostly 1931-55) for cooperative stations.

Chart VI. A. Percentage of Sky Cover Between Sunrise and Sunset, September 1957.

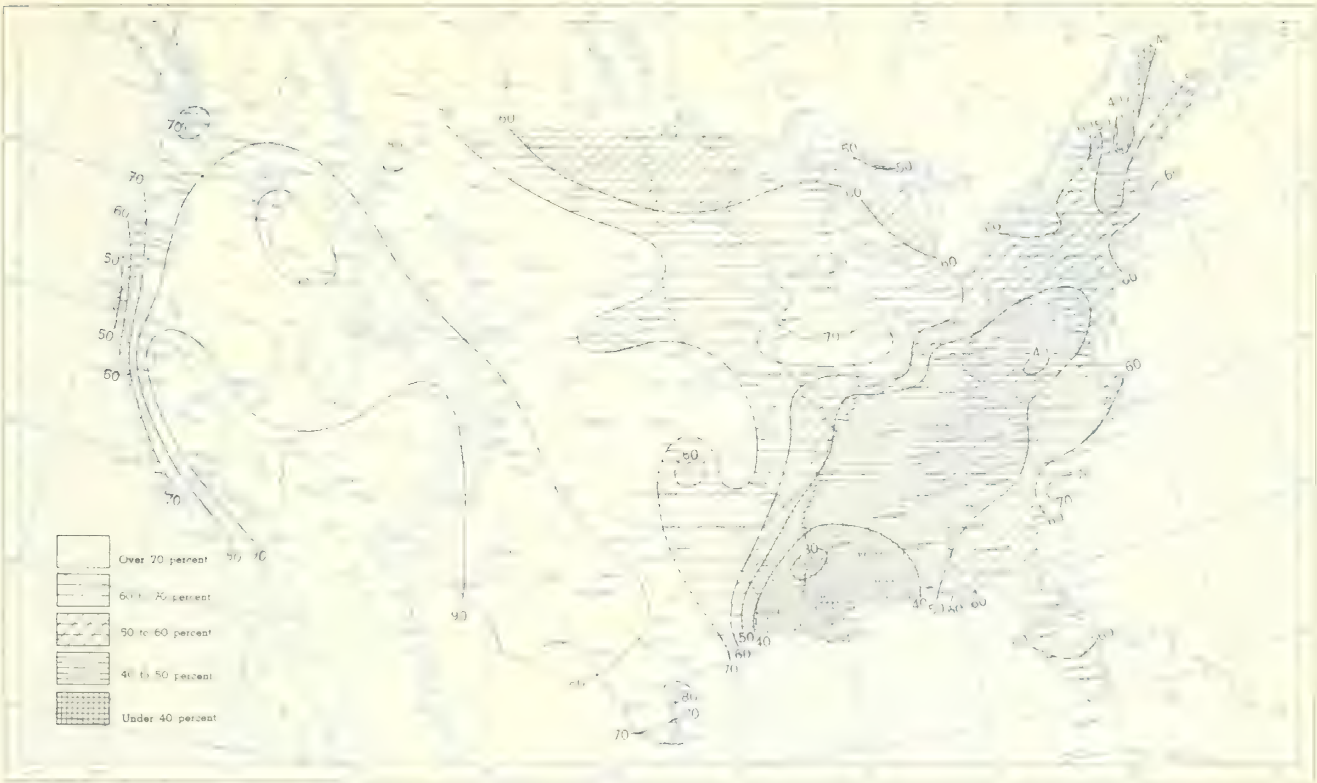


B. Percentage of Normal Sky Cover Between Sunrise and Sunset, September 1957.

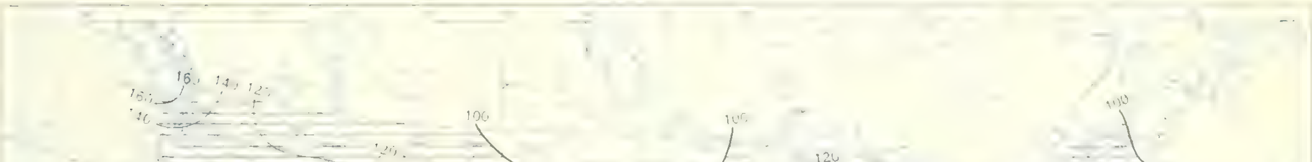


A. In addition to cloudiness, sky cover includes obscuration of the sky by fog, smoke, snow, etc. Chart based on visual observations made hourly at Weather Bureau stations and averaged over the month. B. Computations of normal amount of sky cover are made for stations having at least 10 years of record.

Chart VII. A. Percentage of Possible Sunshine, September 1957.



B. Percentage of Normal Sunshine, September 1957.



A. Computed from total number of hours of observed sunshine in relation to total number of possible hours of sunshine during month. B. Normals are computed for stations having at least 10 years of record.

Chart VIII. Average Daily Values of Solar Radiation, Direct + Diffuse, September 1957. Inset: Percentage of Mean Daily Solar Radiation, September 1957. (Mean based on period 1951-55.)

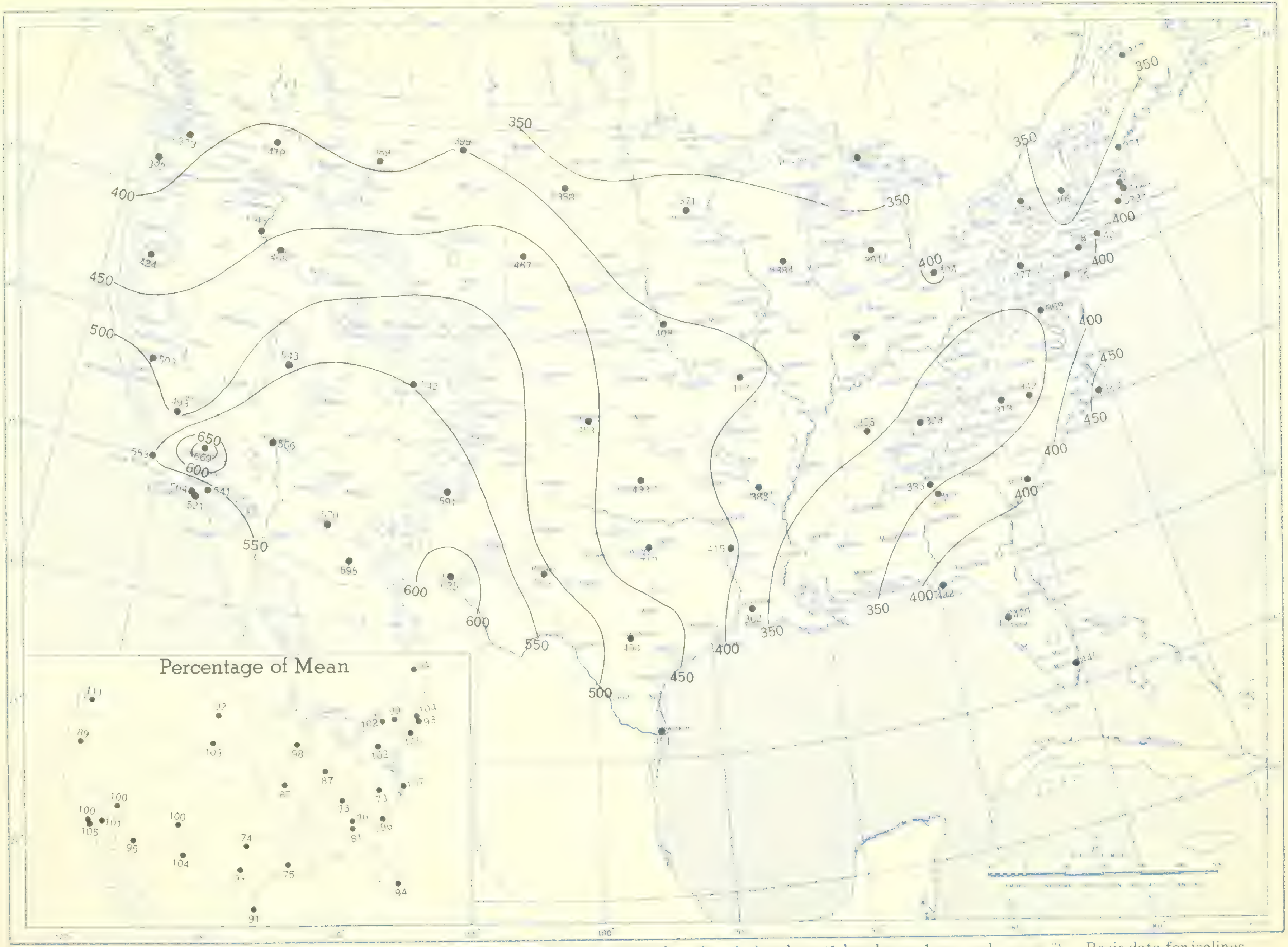
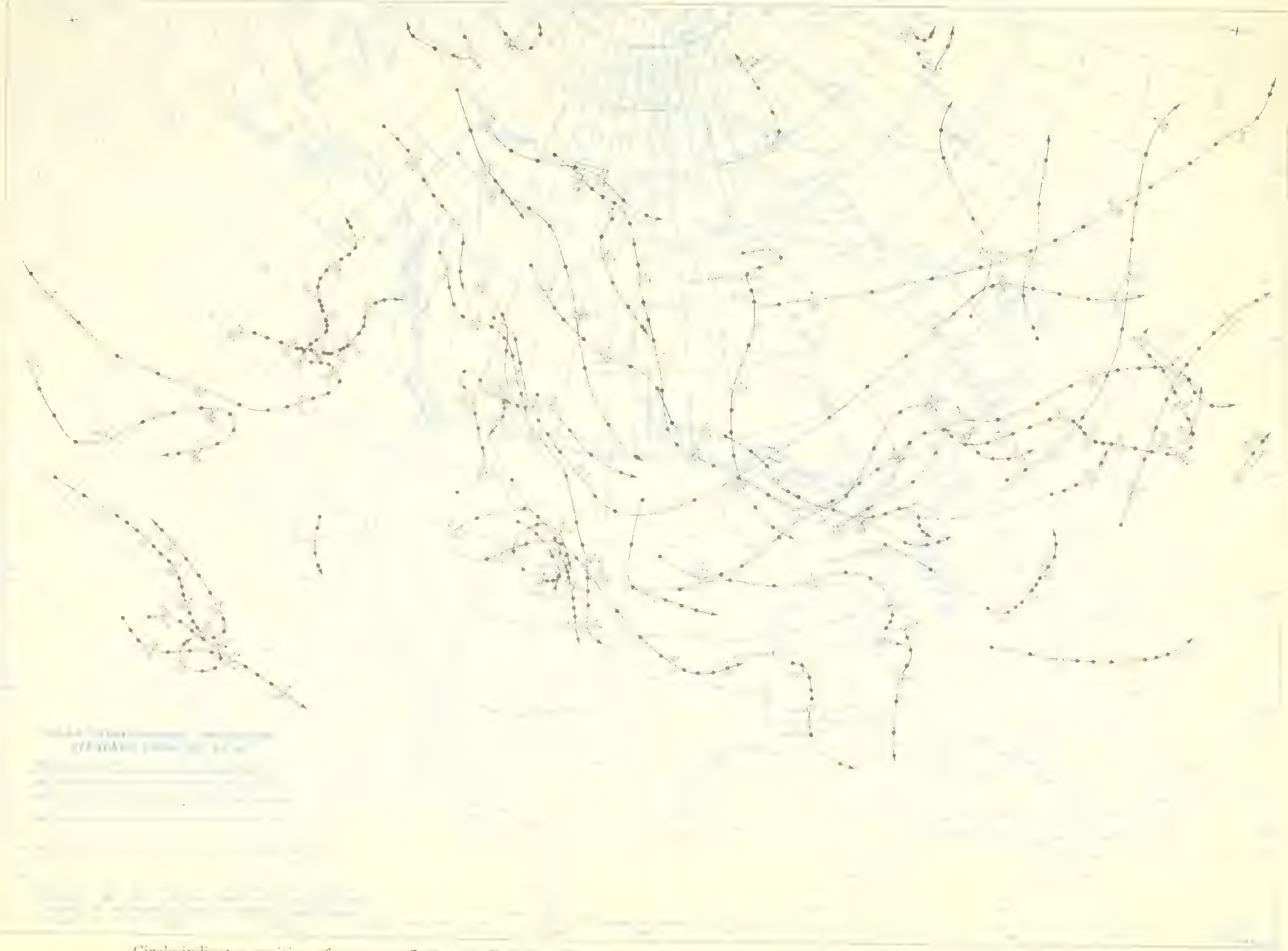


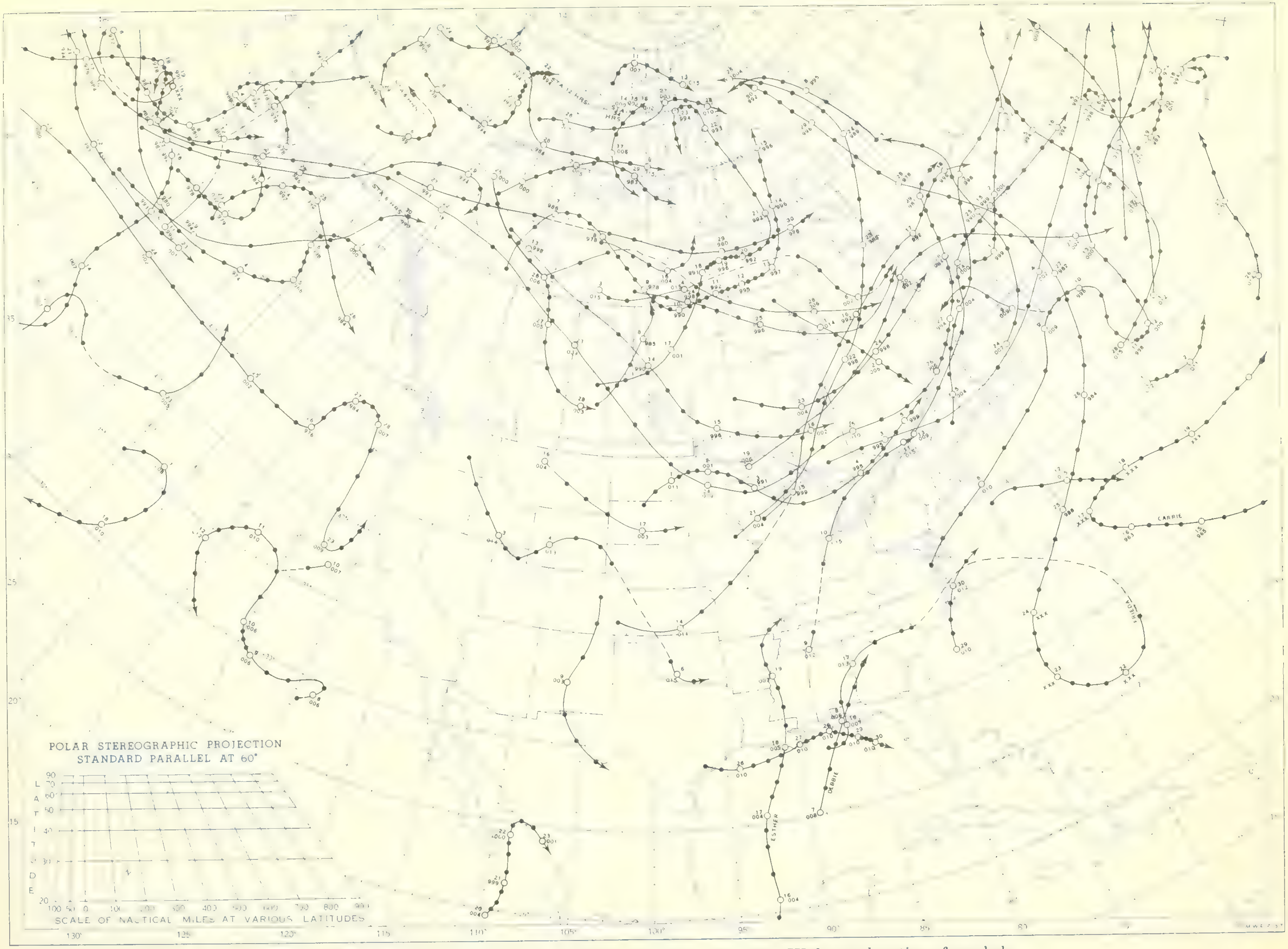
Chart shows mean daily solar radiation, direct + diffuse, received on a horizontal surface in langleys (1 langley = 1 gm. cal. cm.$^{-2}$). Basic data for isolines are shown on chart. Further estimates are obtained from supplementary data for which limits of accuracy are wider than for those data shown. The inset shows the percentage of the mean based on the period 1951-55.

Chart IX. Tracks of Centers of Anticyclones at Sea Level, September 1957.



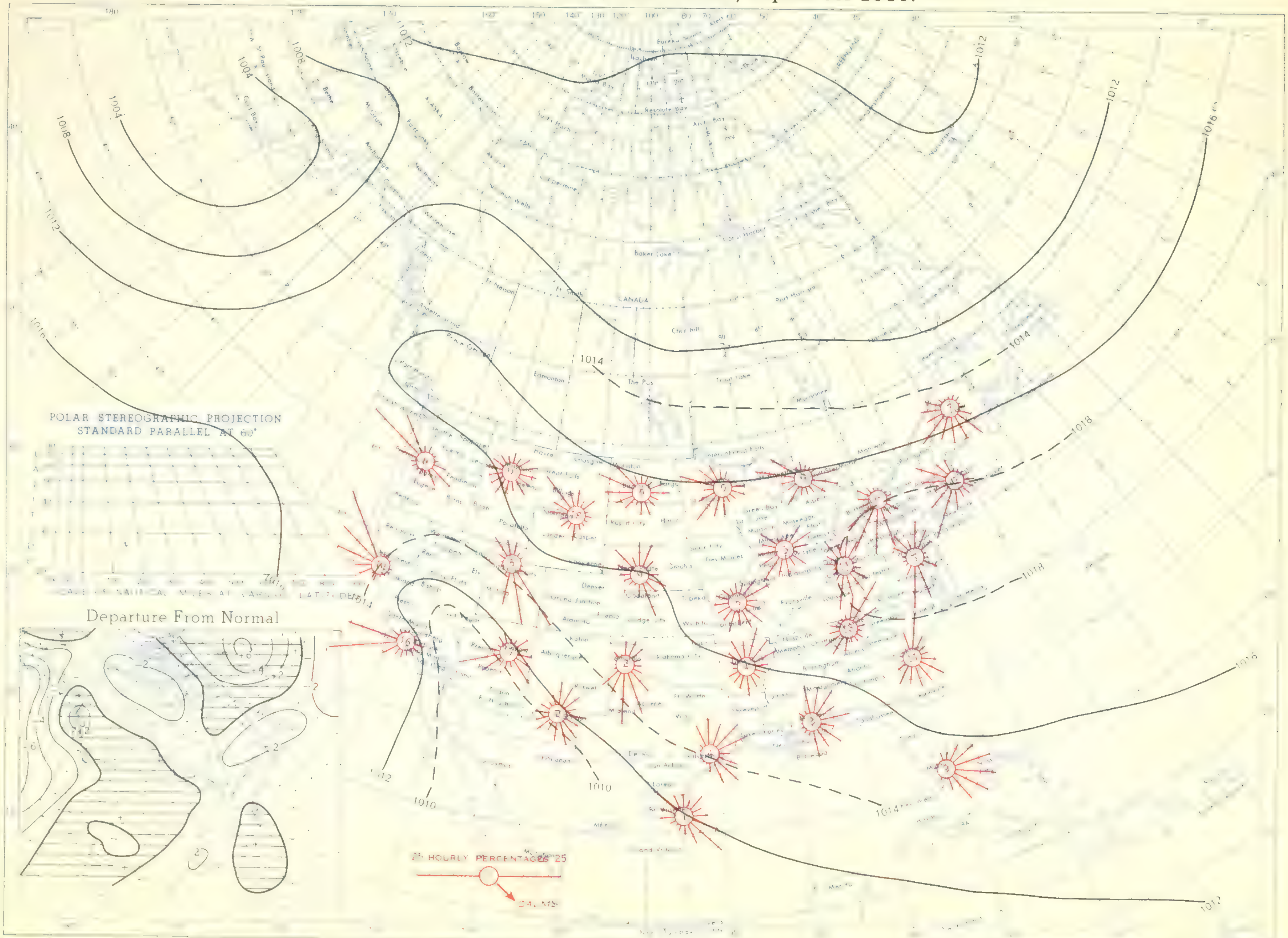
Circle indicates position of center at 7:00 a. m. E. S. T. Figure above circle indicates date, figure below, pressure to nearest millibar. Dots indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track

Chart X. Tracks of Centers of Cyclones at Sea Level, September 1957.



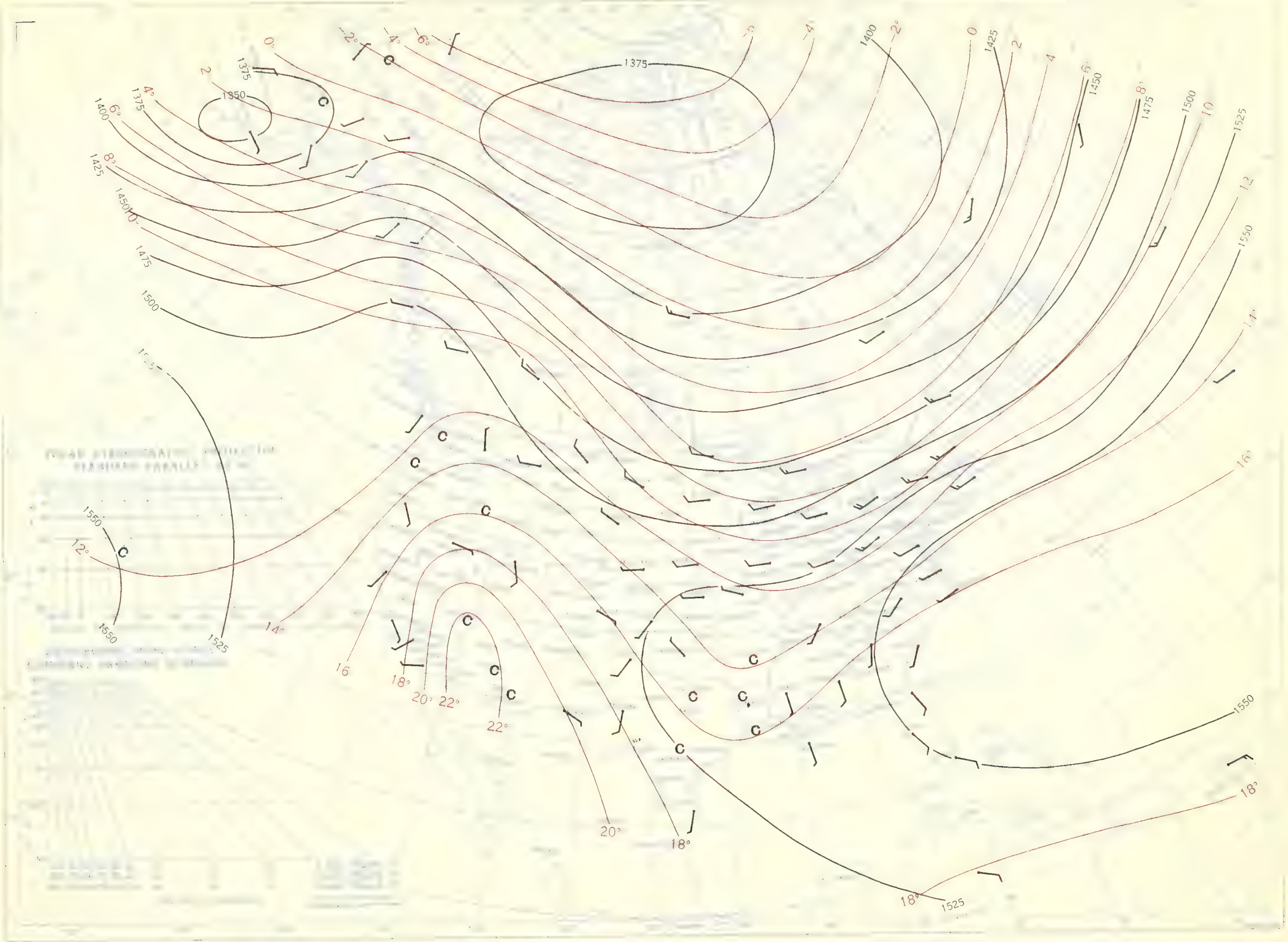
Circle indicates position of center at 7:00 a. m. E. S. T. See Chart IX for explanation of symbols.

Chart XI. Average Sea Level Pressure (mb.) and Surface Windroses, September 1957. Inset: Departure of Average Pressure (mb.) from Normal, September 1957.



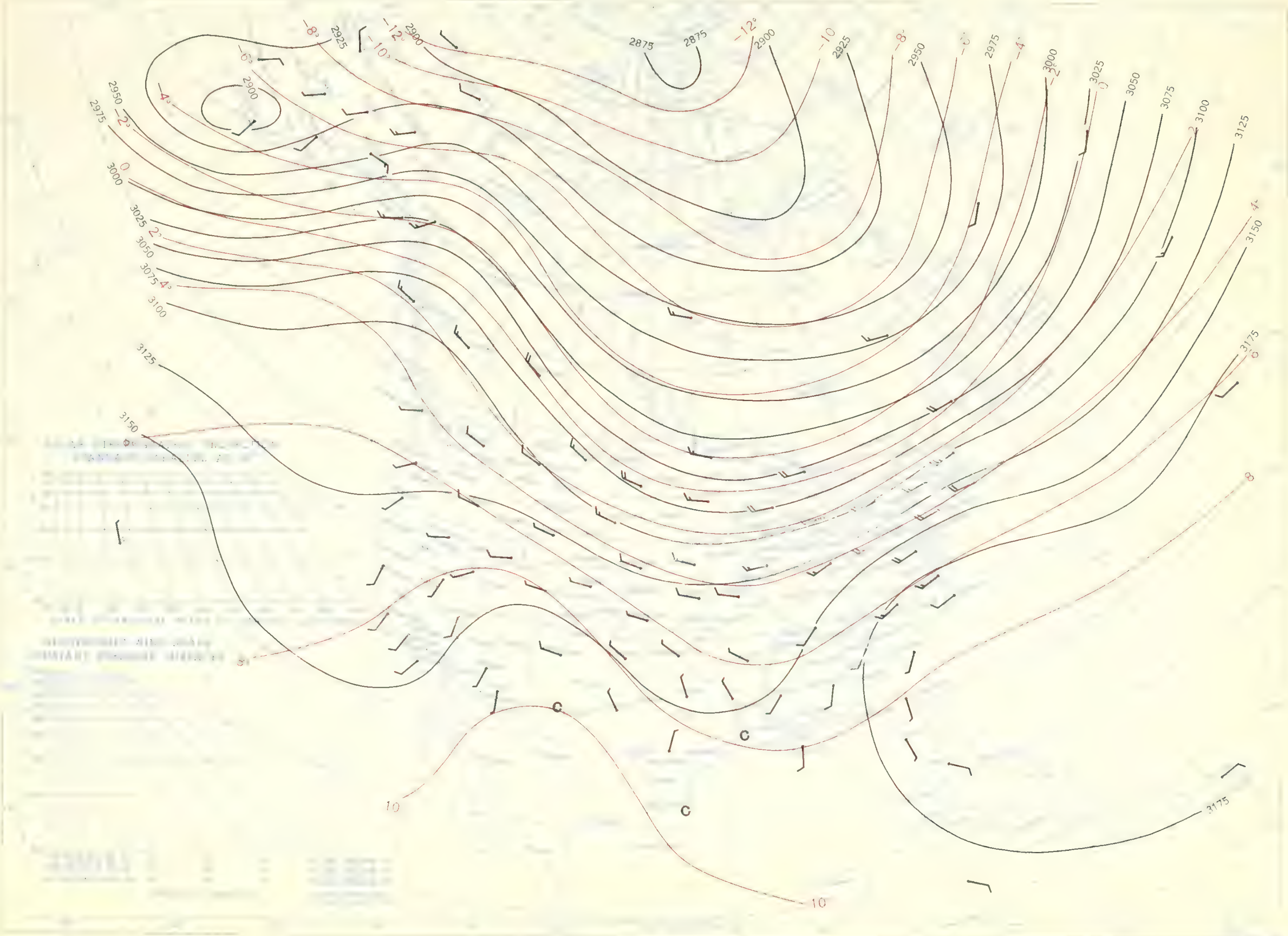
Average sea level pressures are obtained from the averages of the 7:00 a. m. and 7:00 p. m. E. S. T. readings. Windroses show percentage of time wind blew from 16 compass points or was calm during the month. Pressure normals are computed for stations having at least 10 years of record and for 10° inter-

Chart XII. 850-mb. Surface, 1200 GMT, September 1957. Average Height and Temperature, and Resultant Winds.



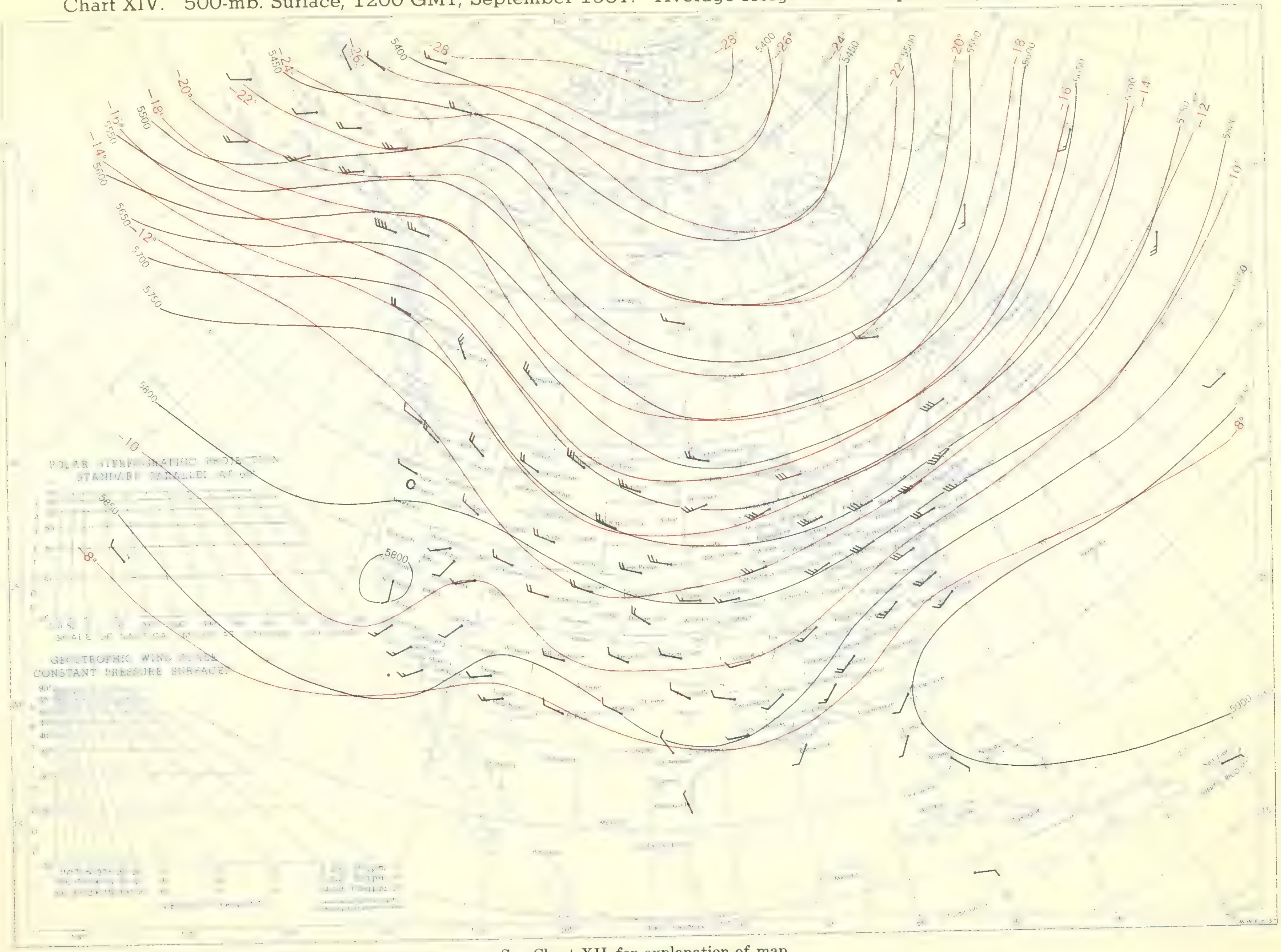
Height in geopotential meters (1 g.p.m. = 0.98 dynamic meters). Temperature in °C. Wind speed in knots; flag represents 50 knots, full feather 10 knots, and half feather 5 knots. All wind data are based on rawin observations.

Chart XIII. 700-mb. Surface, 1200 GMT, September 1957. Average Height and Temperature, and Resultant Winds.



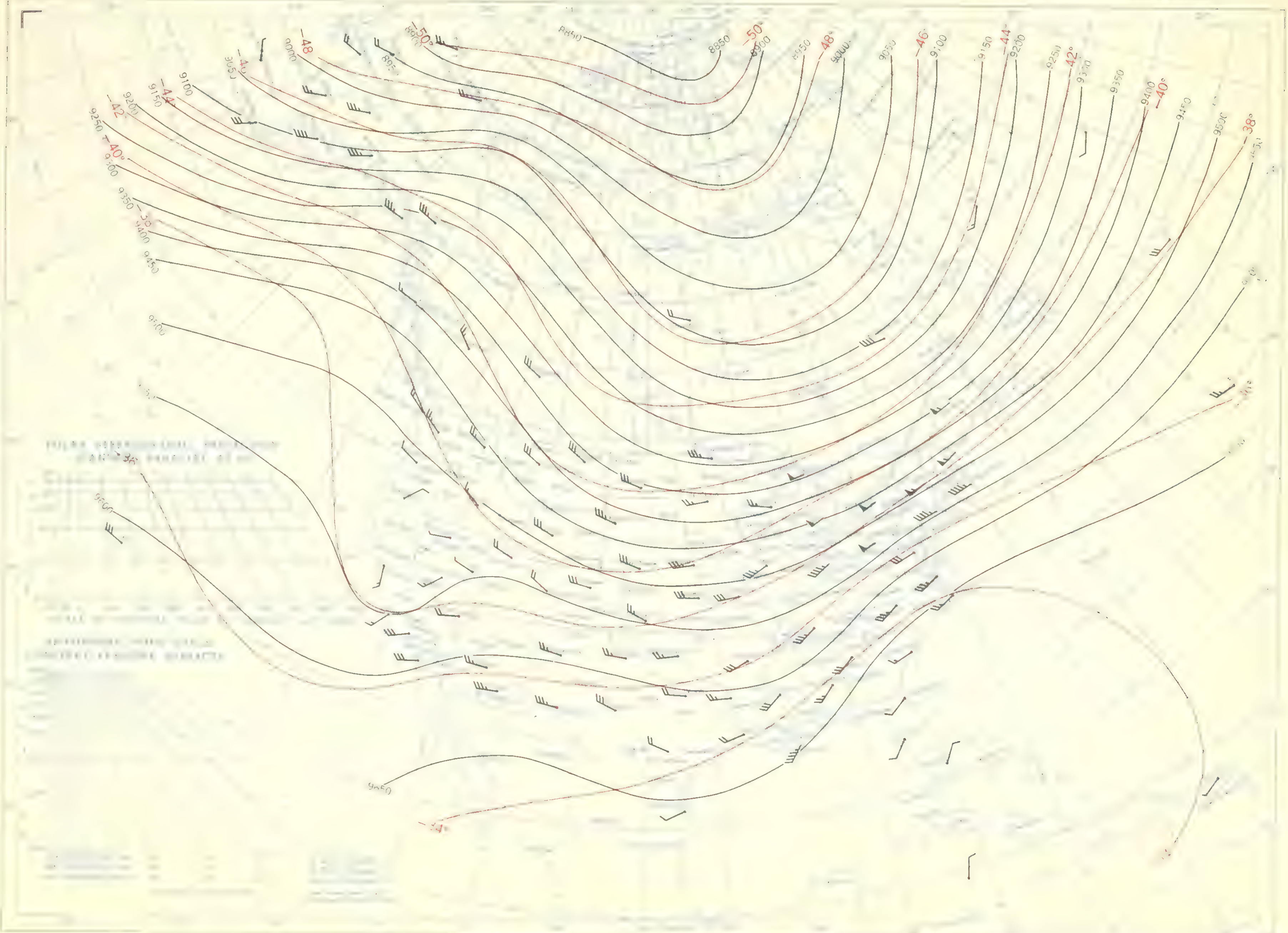
See Chart XII for explanation of map.

Chart XIV. 500-mb. Surface, 1200 GMT, September 1957. Average Height and Temperature, and Resultant Winds.



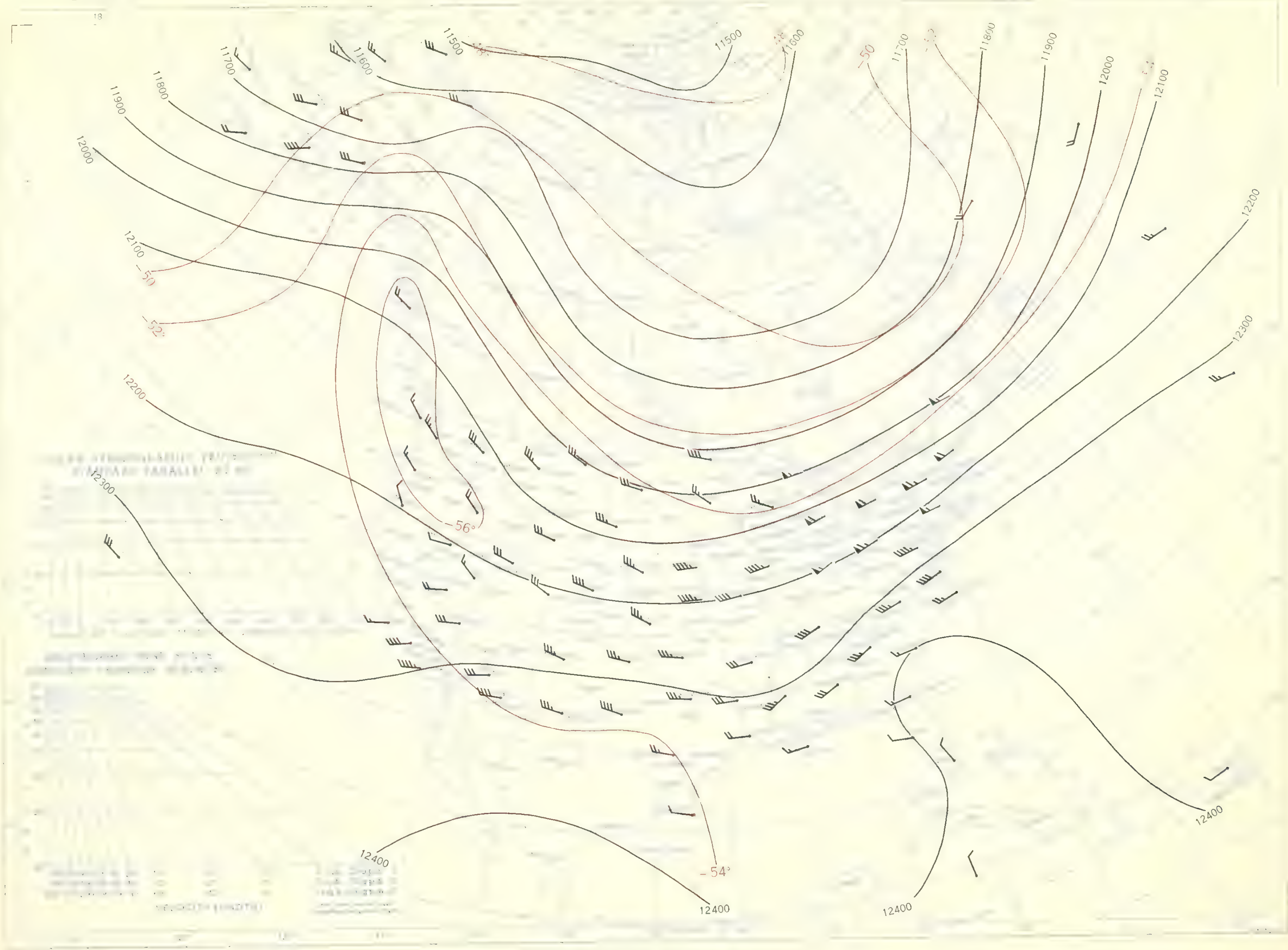
See Chart XII for explanation of map.

Chart XV. 300-mb. Surface, 1200 GMT, September 1957. Average Height and Temperature, and Resultant Winds.



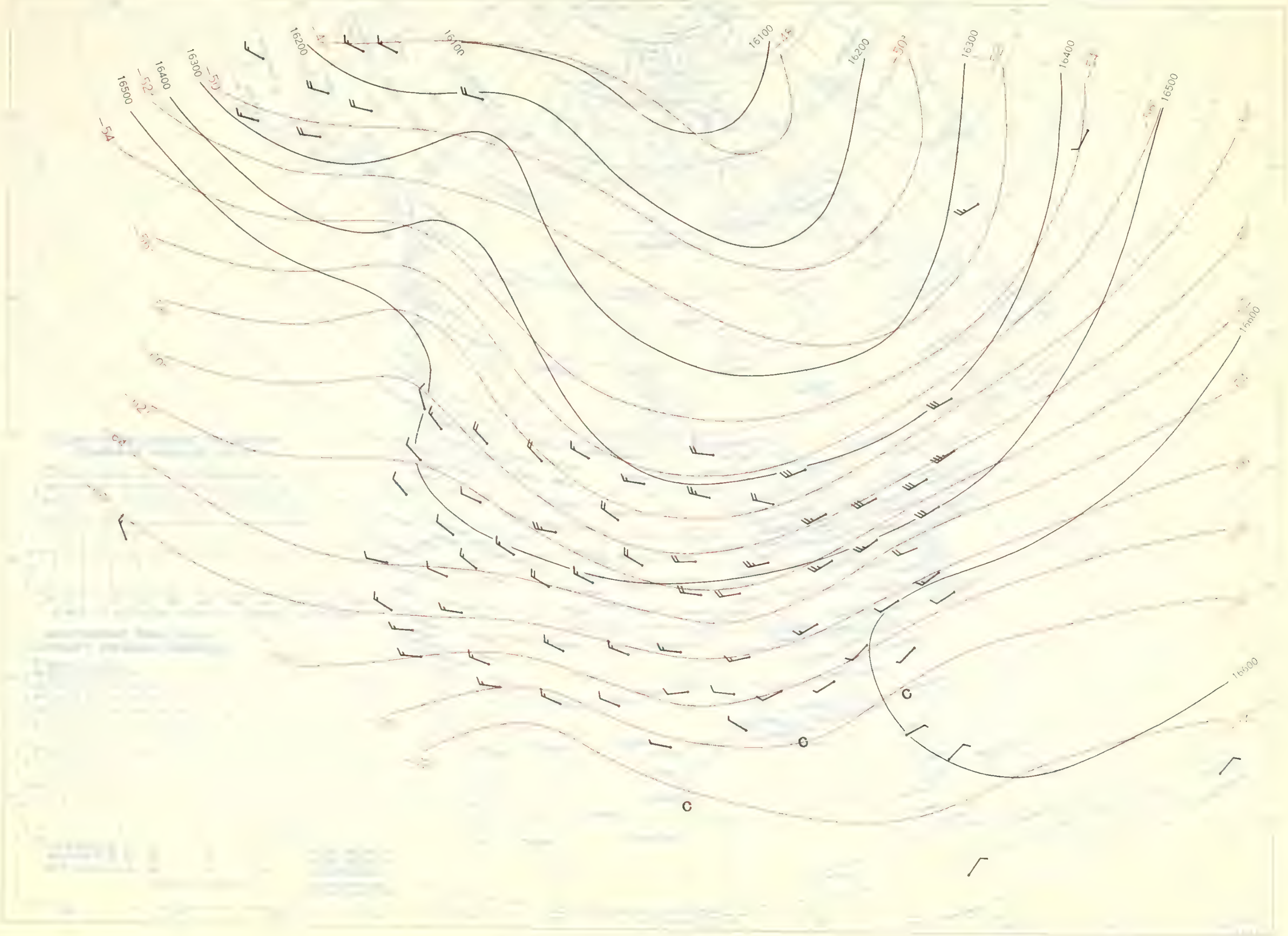
See Chart XII for explanation of map.

Chart XVI. 200-mb. Surface, 1200 GMT, September 1957. Average Height and Temperature, and Resultant Winds.



See Chart XII for explanation of map.

Chart XVII. 100-mb. Surface, 1200 GMT, September 1957. Average Height and Temperature, and Resultant Winds.



See Chart XII for explanation of map.

8/10

U. S. DEPARTMENT OF COMMERCE
SINCLAIR WEEKS, Secretary
WEATHER BUREAU
F. W. REICHELDERFER, Chief

JAN 16
AGRI. REF. DEPT.

CLIMATOLOGICAL DATA

NATIONAL SUMMARY

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OCTOBER 1957

Volume 8 No. 10

ASHEVILLE: 1958

CONTENTS

SURFACE DATA Page

General Summary of Weather Conditions---------------------- 453

Condensed Climatological Data - States-------------------- 454

Climatological Data - Stations--------------------------- 455

Heating Degree Days-- 459

Storm Data and Unusual Weather Phenomena------------------ 460

General Summary of River and Flood Conditions------------- 467

Flood Stage Data--- 468

UPPER AIR DATA

Rawinsonde Data-- 469

SOLAR RADIATION DATA

Solar Radiation Intensities------------------------------- 475

Blue Hill Data--- 476

Net Radiation-- 476

Daily Totals and Average Daily Totals by Weeks------------ 477

CHARTS I-XVII

NOTE.--This publication contains all of the climatic data formerly printed in the MONTHLY WEATHER REVIEW.

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CLIMATOLOGICAL DATA

NATIONAL SUMMARY

Volume 8 No. 10 OCTOBER 1957

GENERAL SUMMARY OF WEATHER CONDITIONS

October weather over most of the Nation was unseasonably cool with much cloudiness and mostly ample to locally excessive precipitation. Unusual features included heavy rainfall in the Far Southwest, early snowfall in central areas, unseasonably low temperatures in southern areas east of the Rocky Mountains, and floods in Texas. Cold, rainy weather delayed harvesting operations in many areas, prevented corn in the main Belt from drying enough for safe cribbing, damaged cotton and peanuts in parts of the South, caused widespread minor crop damage in California, and considerable crop damage in Arizona. Precipitation, however, provided adequate soil moisture nearly everywhere, and winter grain and pasture prospects generally were good to excellent.

TEMPERATURE.--Temperatures for the month, averaging slightly below normal in northern New England and along the California coast, were below normal virtually everywhere else with greatest departures from normal, 4° to 6°, in the Southern States and north-central Montana. Extreme temperatures for the month ranged from 109° at Dateland, Ariz., on the 5th to -12° at Redstone, Mont., on the 25th.

Below normal temperatures persisted almost all month in most areas. Main exceptions were slightly above normal warmth in Maine during most of the first 3 weeks, in the Great Plains the first week, in the Florida Peninsula and along the Canadian Border the third week, and about one-half the time along the Pacific Coast.

The lowest temperatures of the month occurred in nearly all areas on some date between the 24th and 29th when cold northern air overspread the North American Continent. The unusually rapid and far southward penetration of this cold air for the time of year reduced temperatures to record low levels for the season in many southern sections east of the Rockies, with some stations reporting the first freeze of the season as much as a month early. The first freeze at Little Rock, Ark., 31° on the 28th, was 18 days earlier than average. At Shreveport, La., 31° on the 28th was the earliest freeze there on record. Fort Myers, Fla., recorded 45° on the 28th, a record low there for October, and Key West, Fla., recorded 60° on the same date, a record low there for so early in the season. Crop damage from this early freeze was minor.

PRECIPITATION.--Precipitation for the month was featured mainly by the heavy amounts in the Far Southwest. This was among the wettest Octobers on record in California, Arizona, New Mexico, and Colorado where monthly totals ranged up to 18.35 inches, 10.21, 8.05, and 7.43 inches, respectively. In Arizona monthly totals, which exceeded 500 percent of normal at some stations, set new records for the month at Phoenix, Prescott, Winslow, and Yuma, and the 2.62 inches at Tucson was the second greatest amount there since 1867. Heaviest amounts fell during the third week. Soil moisture and winter grain and range prospects were the best in many years.

Moderate to heavy rains were frequent in Texas after the first week. In west-central Texas up to 10 inches of rain on the 12th caused major flooding in the Colorado River at Ballinger and serious flooding upstream from there. During the third week heavy rains in east Texas caused serious flooding along lower portions of most streams in the Gulf drainage area. Rains and muddy fields delayed cotton and sorghum harvests.

In most other parts of the country monthly totals generally ranged from 1 to 2 inches. In the Northeast precipitation ranged from about normal to much below. Topsoil moisture was improved and rains early in the month relieved the forest fire hazard in New England, but streamflow remained deficient and some wells were lower than during September in southern New England and northeastern New Jersey.

During the cold spell of the fourth week the earliest snow on record for Oklahoma City, Okla., fell on the 26th and for Evansville, Ind., and Dayton, Ohio, on the 27th. Snowfall of 6.1 inches at Spokane, Wash., was the greatest amount ever recorded there in October. Most of the Spokane snow fell during the fourth week when 1 to 4 inches of snow blanketed the northern half of eastern Washington as blowing dust and drifting snow brought traffic to a standstill.

DESTRUCTIVE STORMS.--On the 5th, 6th, and 7th a coastal storm with winds up to 50 m.p.h. and high tides damaged shore installations and some boats from North Carolina to southern New England.

Nearly all of the tornado damage occurred in Texas, Louisiana, and Mississippi. One of these storms caused considerable property damage and minor crop losses near Vicksburg, Miss., on the 15th and 16th. Several caused damage in Louisiana, one of the worst killing 1 person, injuring 29, and destroying at least 15 houses in a path near Leonville and Opelousa on the 15th. Several houses were destroyed or damaged by others occurring in various parts of the State on the 16th and 23d.

In New Mexico hail, wind, and rain damaged cotton and lettuce in the lower Rio Grande Valley on the 11th, and in the Lower Pecos Valley on the 13th, and at Silver City a tornado damaged an airport hangar and some planes on the 12th.

Flash floods caused damage in numerous places in the Far West.

CONDENSED CLIMATOLOGICAL SUMMARY

OCTOBER 1957

Section	Temperature						Precipitation			
	Monthly extremes						Monthly extremes			
	Station	Highest	Date	Station	Lowest	Date	Station	Greatest	Station	Least
		°F			°F			In.		In.
Alabama	Coden	87	10	2 Stations	21	28	Collinsville	7.48	Haynesville	0.20
Arizona	Dateland	109	5	3 Stations	19	8+	Mt. Lemmon Summit	10.21	Copper Mine TP	.89
Arkansas	3 Stations	87	3+	Lead Hill	17	28	Leola	11.11	Greenwood	.60
California	4 Stations	104	1+	Bridgeport	7	7	Cazadero	18.35	Inyokern	.01
Colorado	Bonny Dam	91	1	2 Stations	3	23+	Wolf Creek Pass 4W	7.43	2 Stations	.26
Connecticut	3 Stations	78	9	Coventry	18	12	East Haven	5.69	Cream Hill	1.92
Delaware	do	78	2+	3 Stations	29	13+	Middletown 2S	3.75	Wilmington N Castle WBAP	2.51
Florida	2 Stations	93	1	Jasper 3SE	29	28	South Miami 3W	9.61	Cedar Key	.57
Georgia	Quitman	89	17	Blairsville Exp. Sta.	18	29	Tray Mountain	10.37	Colquitt	.98
Idaho	2 Stations	93	1	Obsidian 2NNW	10	19	Wallace	4.91	Grasmere	.07
Illinois	Jerseyville	88	1	2 Stations	21	20+	Warsaw	5.91	Galena	1.10
Indiana	3 Stations	84	1+	do	21	20+	Collegeville	6.23	Seymour	1.93
Iowa	Bedford	83	1	4 Stations	17	27	Bedford	6.20	Mason City CAA AP	.98
Kansas	Hoxie	93	1	3 Stations	15	27	Elmo	9.81	Syracuse	.68
Kentucky	2 Stations	87	1+	Golden Pond 8N	20	28	Shawnee Steam Plant	5.44	Burdine 2NE	1.05
Louisiana	Ashland	89	6+	3 Stations	24	28	Logansport	10.39	New Orleans ACF	.72
Maine	Rumford 1SSE	78	9+	Corinna	15	28	South Andover	2.89	Woodland	.94
Maryland	Ocean City	81	9	Oakland 1SE	17	13	New Germany	6.16	Annapolis USN Acad	1.64
Massachusetts	2 Stations	80	1+	West Cummington	17	14	Ipswich	3.88	New Bedford	1.10
Michigan	Greenville	79	7	2 Stations	15	25	Niles	5.15	Grand Marais CAA AP	.94
Minnesota	4 Stations	81	1+	Meadowlands 2SSW	12	26	Comfrey	4.17	Milaca	.78
Mississippi	Gulfport Naval Center	88	10	2 Stations	23	28	Nitta Yuma	10.08	Pearlington 2NNE	.57
Missouri	2 Stations	88	1+	Anderson 1SW	15	28	Brookfield	8.21	Lampe Forest Service	.87
Montana	Miles City	93	1	Redstone	-12	25	Hungry Horse Dam	3.74	Harden	.20
Nebraska	6 Stations	88	1+	Nenzel 20S	14	26	Firth	6.51	Valentine WB AP	.72
Nevada	Overton	100	1	Deeth	5	6	Austin	3.25	Gibbs Ranch	.29
New Hampshire	Windham	80	1	First Conn Lake	17	22	Mount Washington	4.65	Bethlehem.	1.35
New Jersey	2 Stations	81	9+	Runyon	22	13	Cedar Grove	4.77	Tuckerton	1.35
New Mexico	Tucumcari 3NE	94	2	2 Stations	14	8+	Tererro	8.05	Rutledge Ranch	.71
New York	Poughkeepsie	83	10	Old Forge 2SW	13	12+	Slide Mountain	6.21	Mount Morris 2W	.49
North Carolina	Clinton	82	24	Celo 2S	17	29	Lake Toxaway 2SW	11.99	Sloan 3S	.30
North Dakota	Watford City 14S	93	2	Crosby	-7	26	Montpelier	4.33	Trotters 6SE	.44
Ohio	Milford	86	15	New Lexington 2NW	18	28	Montpelier	4.99	Mohicanville Dam	1.22
Oklahoma	5 Stations	95	1+	3 Stations	18	26+	Grandfield	5.24	Dewar 3ENE	T
Oregon	Owyhee Dam	87	1	Seneca	14	21	Port Orford	11.58	Owyhee Dam	.56
Pennsylvania	Marcus Hook	81	9	Kane 1NNE	17	14	Springs 1SW	6.04	Barto 4NW	.40
Rhode Island	Greenville	76	16	Kingston	26	21	Kingston	3.03	Block Island WB AP	2.42
South Carolina	Kingstree	85	10	Landrum 5ENE	23	29	Sassafras Mountain	7.97	Lake City	.36
South Dakota	2 Stations	92	1	Deerfield 5NW	5	25	Wilmot 1ENE	3.92	Mystic	.51
Tennessee	Paris	85	3	Mountain City 2	18	29	Haw Knob	8.22	Little Chucky	.83
Texas	2 Stations	100	15+	Spearman	21	26	Rusk	16.25	2 Stations	.00
Utah	Mexican Hat	94	1	Woodruff	6	29	La Sal	5.49	do	.11
Vermont	Vernon	80	10	Mount Mansfield	12	28	Canaan	3.46	Montpelier CAA AP	1.27
Virginia	Farmville	79	9	Rockymount	16	28	Mathews 1SSW	7.71	Speedwell	.60
Washington	Wawawai 2NW	85	1	Mt. Spokane Summit	9	22	Blue Glacier	15.01	Sequim	.72
West Virginia	Williamson	82	4	Canaan Valley	15	14	Pickens 1	7.06	Bluefield 1	.93
Wisconsin	2 Stations	80	2	Danbury 1SE	10	25	Spring Valley	2.58	Necedah 2NNW	.44
Wyoming	Arvada 3N	93	1	Jackson	5	25	Albin	2.69	Jackson	.18
Puerto Rico	5 Stations	95	1+	2 Stations	56	18+	Maricao Fish Hatchery	12.92	Mona Island	.25
Hawaii	Puunene CAA AP	93	1	US Mag Obsy	23	25	Pepeekeo AF	33.40	3 Stations	.00

+ And also on a later date or dates.

Note: Dates in Table 1 apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for times of observations).

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure		Temperature												Precipitation							Wind					No. of days (sunrise to sunset)				
												No. of days							No. of days		Snow, Sleet				Fastest mile							
		Ø Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F or above	Min 32° F or below	Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy	Sky cover, tenths (sunrise to sunset)	Possible sunshine
	Ft.	Mb	Mb.	°F	°F	°F.	°F	°F.		°F				°F	%	In	In.	In			In.	In.	M p h		M p h			0–3	4–7	8–10	0–10	%
ALABAMA																																
Birmingham	610	994.3	1020.0	68	49	58.5	-5.2	79	3	27	28	0	4	49	74	1.81	-1.05	0.95	7	1	0.0	0	8.8	N	29	SE	16	9	5	17	6.2	51
Mobile	211	1011.1	1019.1	74	54	63.8	-5.3	81	9	32	28	0	1	54	74	1.26	-2.49	.61	5	1	0	0	11.4	N	--	--	--	15	4	12	5.0	--
Montgomery	198	1011.1	1019.4	72	52	62.1	-4.3	82	3+	31	28	0	2	52	73	.87	-1.49	.67	7	0	0	0	7.4	N	28	SE	15	12	4	15	5.5	55
ARIZONA																																
Flagstaff	6993	------	------	57	34	45.3	-.8	75	1	25	23+	0	15	--	--	3.66	2.20	1.12	9	5	.6	1	---	---	--	--	-	6	11	14	6 5	--
Phoenix	1114	973.2	1011.9	81	60	70.6	-.2	99	1	50	23	5	0	53	58	2.66	2.26	1.06	8	2	0	0	4.7	E	*23	SW	3	8	11	12	5.5	83
Prescott	5014	846.3	1010.9	66	43	54.7	-2.3	83	1	32	23	0	1	--	--	1.99	1.31	.66	10	3	.0	0	8.4	SSW	61	S	11	8	10	13	6 0	58
Tucson	2558	923.8	1011.3	79	56	67.9	-1.7	98	1	44	23+	4	0	47	52	2.62	2.15	.93	8	5	.0	0	7.8	ESE	38	E	26	10	11	10	5.3	79
Winslow	4880	850.7	1012.1	68	44	56.3	.0	87	1	34	23+	0	0	38	58	2.45	1.90	.77	11	4	.0	0	7.0	SW	*33	SW	21	8	8	15	6.1	--
Yuma	199	1006.1	1011.2	86	61	73.5	-2.9	103	1	51	23	9	0	47	46	2.68	2.36	2 09	6	2	0	0	6.4	WNW	29	SE	27	18	7	6	3.8	89
ARKANSAS																																
Fort Smith	458	1002.7	1019.8	71	49	59.6	-4.3	84	1	25	28	0	3	50	76	1.03	-2.60	.52	6	2	.0	0	7.2	ENE	26	SE	14	10	7	14	5.7	67
Little Rock	257	1006.8	1020.2	70	51	60.9	-3.2	81	2+	31	28	0	2	49	69	5.42	2.61	2.51	8	4	.0	0	8.4	NNW	40	S	23	12	9	10	5.2	64
Texarkana	361	------	------	72	52	62.1	-4.9	84	3+	30	27	0	2	--	--	7.88	4.50	4.56	7	3	.0	0	7.1	NE	--	--	--	--	--	--	---	--
CALIFORNIA																																
Bakersfield	489	996.6	1014.7	77	53	64.8	-1.7	93	9	46	5+	1	0	49	60	.78	.41	.40	5	0	.0	0	3 3	NW	*22	NNW	10	13	5	13	5.4	--
Bishop	4108	872.0	1012.5	71	37	53.9	-3.2	79	1+	26	6	0	6	--	--	1.58	1.24	1.05	9	0	.2	T	---	---	--	---	--	10	12	9	4 9	--
Blue Canyon	5280	837.8	1014.2	54	41	47.3	-5.8	63	26+	33	5+	0	0	--	--	6.17	3.00	3 44	8	2	.3	T	---	---	--	---	--	8	8	15	6.3	--
Burbank	699	987.5	1013.8	75	54	64.4	-.7	87	25	46	21+	0	0	53	68	2.42	1.90	1.39	7	2	.0	0	3.5	S	*16	SSW	20	10	7	14	5.5	--
Eureka (U)	43	1012.5	1014.9	62	50	56.2	2.0	73	8	45	7	0	0	--	--	6.00	3.30	1.54	15	1	.0	0	6.6	---	30	SE	23	7	5	19	7.1	46
Fresno	331	1002.0	1013.9	75	50	62.5	-1.6	87	9	41	5	0	0	48	63	.43	-.23	.35	3	0	.0	0	5.0	NW	20	NW	3	12	10	9	4.7	77
Los Angeles (U)	312	------	------	75	59	67.1	.5	88	25	53	21+	0	0	55	69	1.51	1.01	.61	6	1	.0	0	5.9	---	26	E	26	10	7	14	5.6	62
Los Angeles	99	1009.8	1013.7	74	58	66.2	2.8	87	27	53	21+	0	0	55	71	1.27	.84	.59	7	0	.0	0	6.3	WSW	*22	SSW	20	13	6	12	5.4	--
Mt. Shasta (R)	3544	891.6	1015.9	57	36	46.3	-4.7	69	29	27	7	0	10	--	--	5.60	2.99	2.08	13	0	T	0	---	---	--	---	--	8	8	15	6.4	--
Oakland	3	1014.6	1014.7	70	54	51.8	1.8	78	17	48	21+	0	0	52	72	2.62	1.71	1.37	7	0	.0	0	7.6	WNW	*24	SE	13	11	11	9	5.4	--
Red Bluff	341	1001.7	1014.6	70	50	60.0	-5.1	78	29	43	7	0	0	47	66	4.30	2.81	1.89	11	0	.0	0	8.0	NW	31	SE	23	11	4	16	5.9	63
Sacramento	17	1012.9	1013.9	71	51	61.0	-1.7	78	2+	46	4+	0	0	50	71	.92	.01	.36	5	0	.0	0	8 3	NNW	24	SE	13	14	6	11	5.1	77
Sandberg (R)	4517	861.2	1012.9	60	44	51.8	-6.5	74	8	33	20+	0	0	--	--	.59	-.07	.32	7	0	.0	0	12.6	---	*41	NNW	7	10	12	9	5.2	--
San Diego	19	1010.2	1013.3	72	59	65.6	.6	83	25	53	22	0	0	57	75	1.76	1.13	.68	10	2	.0	0	6.1	WSW	22	S	11	12	7	12	5.3	55
San Francisco (U)	52	------	------	68	57	62.3	1.3	75	8+	54	20+	0	0	--	--	3.46	2.39	1.47	9	0	0	0	7 2	--	26	W	1+	--	--	--	---	62
San Francisco	8	1014.2	1014.9	69	54	61.2	1.8	75	8+	48	30+	0	0	53	75	2.87	1.95	1.57	9	1	.0	0	7.7	WNW	33	WNW	2	11	10	10	5.4	-
Santa Maria	238	1005.8	1014.4	72	49	60.6	.6	83	27	39	5	0	0	51	75	1.18	.56	.50	4	1	.0	0	5.7	WNW	*29	WNW	6	14	9	8	4.4	--
COLORADO																																
Alamosa	7536	772.1	1017.4	59	28	43.6	-.5	76	1	14	27	0	23	--	--	.26	-.32	.12	5	2	T	T	---	---	--	---	--	5	15	11	6 5	--
Colorado Springs	6173	811.0	1015.9	63	40	51.1	-.3	80	1+	23	26+	0	5	36	63	2.02	1.39	.50	12	6	1.0	T	7.1	SE	*26	NNW	22+	4	13	14	6.6	--
Denver	5292	838.1	1015.2	62	41	51.4	-.1	84	2	22	26	0	6	36	63	2.62	1.61	.82	12	4	3.9	3	9.2	SSW	31	W	22	5	10	16	6 7	49
Grand Junction	4849	859.1	1014.8	64	45	54.3	-.1	85	1	34	26	0	0	36	57	2.24	1.40	1.24	13	3	.0	0	9.2	ESE	42	SW	3	5	14	12	6.5	51
Pueblo	4639	857.1	1015.5	67	42	54.6	1.8	86	1	25	27	0	3	39	65	4.91	4.21	3.77	10	3	.6	T	5.9	E	35	W	14+	5	12	14	6.6	64
CONNECTICUT																																
Bridgeport	7	1019.4	------	63	45	54.0	-.4	77	9	34	26	0	0	--	--	3.22	.39	1.61	7	1	T	T	---	---	--	---	--	11	8	12	5.6	--
Hartford	169	1013.6	1019.6	63	40	51.2	-1.7	78	9	27	12	0	8	41	72	2.06	-.74	.77	8	1	T	0	11.3	NW	37	SW	24	11	7	13	5.8	54
Middletown (U)	133	1014.2	------	62	41	51.8	----	76	9	30	21	0	3	--	--	3.38	----	1.26	7	0	T	T	9.0	---	#40	ENE	6	--	--	--	---	--
New Haven	6	1018.7	1019.3	62	43	52.7	-.6	77	9	32	27	0	1	--	--	5.13	2.13	2.10	9	1	T	T	6.8	---	24	E	6	10	9	12	5.7	65
DELAWARE																																
Wilmington	78	1016.8	1020.1	63	44	53.3	-2.9	76	9	31	28	0	2	44	74	2.51	-.48	.91	6	1	T	0	8.7	NW	--	---	--	9	8	14	6.0	--
DIST. OF COLUMBIA																																
Washington (U)	72	------	------	64	47	55.0	-3.4	74	23	34	28	0	0	--	--	2.36	- 61	1.44	5	0	0	0	7.2	---	29	NE	6	--	--	--	---	--
Wash. Nat'l. AP	14	1015.8	1020.4	64	47	55.4	-2.8	74	9+	35	28	0	0	44	68	2.49	-.36	1.47	4	0	T	0	9.9	NNW	63	N	6	7	11	13	6.1	58
FLORIDA																																
Apalachicola (U)	13	1015.8	------	75	60	67.5	-3.5	83	17	39	28	0	0	--	--	2.75	.20	.94	6	1	.0	0	8.1	--	30	E	15	15	6	10	4.3	79
Daytona Beach	31	1015.6	1017.4	79	63	71.1	-2.3	87	1+	43	28	0	0	62	77	1.80	-4.09	1.10	7	2	.0	0	10.9	NW	27	NE	12	8	10	13	6.3	--
Fort Myers	15	1015.2	------	83	64	73.7	-2.6	88	1+	45	28	0	0	--	--	3.19	-.96	1.87	8	2	.0	0	9.3	--	23	NE	28	11	13	7	5.0	--
Jacksonville	24	1016.5	1017.9	76	61	68.3	-2.6	84	18	38	28	0	0	60	79	3.50	-1.21	1.75	6	1	.0	0	9 7	NW	31	NE	13	8	4	19	6.5	36
Key West (U)	9	1014.2	------	85	72	78.5	-1.0	91	1	60	28	3	0	--	--	7.18	.40	1.67	13	3	.0	0	7.3	---	28	W	3	7	14	10	6.0	60
Lakeland (U)	214	------	------	80	64	71.8	-2.5	87	17	43	28	0	0	--	--	2.99	.46	1.97	7	3	.0	0	7.1	---	--	---	--	13	10	8	4.9	59
Miami (U)	8	------	------	82	70	75.9	-1.7	87	8+	53	28	0	0	--	--	6.27	-1.61	2.13	13	5	0	0	11 3	---	40	NE	20+	6	19	6	5 6	63
Miami	8	1014.0	1015.2	84	69	76.4	-1.5	88	1+	54	28	0	0	67	77	7.64	-.59	3.11	12	6	.0	0	8.1	ENE	23	W	25+	4	18	9	6.3	--
Miami Beach	9	------	------	82	72	77.4	-1.3	88	10	55	28	0	0	--	--	6.51	-.56	3.48	13	--	.0	0	- -	---	--	---	--	6	12	13	- -	--
Orlando	106	1012.4	1016.9	81	63	72.1	-2.6	88	1+	43	28	0	0	63	77	1.68	-2.23	.97	6	2	.0	0	9 2	NNE	29	ESE	14	12	12	7	5.0	--
Pensacola (U)	13	1016.0	------	74	57	65.4	-4.9	82	9	36	27+	0	0	--	--	3.27	-.61	1.77	6	1	0	0	10.9	---	24	SE	16	--	--	--	---	61
Tallahassee	64	1015.3	1018.0	75	56	65.6	-3.2	83	17+	35	28	0	0	56	76	1.63	-.75	.66	5	1	.0	0	6.1	NNW	--	---	--	11	11	9	4.9	--
Tampa	19	1015.3	1016.9	81	63	71.8	-2.8	86	13+	42	28	0	0	61	75	2.28	-.86	1.51	4	1	0	0	9.1	N	23	E	14+	11	8	12	5 5	60
West Palm Beach	15	1014.3	1015.4	84	69	76.3	-1.3	89	2	52	28	0	0	65	74	2.94	-5.38	.67	14	3	.0	0	11 4	ENE	33	ESE	14	5	11	15	6.7	--
GEORGIA																																
Athens	798	989.2	1019.8	68	48	58.4	-5.5	78	10	29	28	0	3	50	77	6.13	3.19	2.26	9	0	.0	0	9.1	NE	28	SSW	23	12	4	15	6.0	--
Atlanta	975	977.9	1019.4	67	50	58.4	-5.0	77	10	31	28	0	1	49	76	2.69	.09	1.24	9	1	.0	0	10.9	ENE	29	S	24	12	5	14	5.7	55
Augusta	143	1012.4	1019.3	71	49	59.9	-4.8	78	8+	29	29	0	2	52	81	2 69	.16	.76	7	0	.0	0	5.7	NE	18	ESE	15+	12	4	15	5.9	--
Columbus	385	1005.0	------	72	52	61.8	-4.0	81	23	30	29	0	2	--	--	1.05	-.99	.34	9	1	.0	0	---	---	--	---	--	13	5	13	5.1	--
Macon	356	1005.1	1018.9	73	51	62.2	-4.4	84	17	31	28+	0	2	51	73	1.81	-.46	.69	7	1	.0	0	9.0	NNE	25	SE	16+	12	4	15	5.6	56
Rome	637	996.7	------	68	47	57.4	-4.8	78	9+	26	29	0	3	--	--	3.02	.16	1.04	10	2	.0	0	---	---	--	---	--	9	7	15	6.2	--
Savannah	48	1015.9	1018.5	72	54	63.1	-3.9	81	18+	32	29	0	1	54	77	1.77	-.68	1.13	8	0	.0	0	8.2	NE	21	N	14	9	6	16	6.0	54
Thomasville (U)	283	------	------	75	55	65.0	-4.3	85	10	33	28	0	0	--	--	1.86	-.41	.91	5	0	.0	0	---	---	--	---	--	--	--	--	---	--
IDAHO																																
Boise	2842	919.4	1016.1	60	39	49.5	-3.1	73	12	29	19+	0	4	37	63	.42	-.52	.11	10	0	0	0	8 3	SE	43	W	2	5	8	18	7.0	67
Idaho Falls 46W (R)	4933	848.3	1016.9	58	30	43.8	-.1	82	1	17	19	0	20	--	--	1.03	.35	.65	3	0	T	0	6 3	---	a28	SW	22	--	--	-	---	--
Idaho Falls 42NW (R)	4790	------	------	58	28	42.7	-1.6	83	1	13	8	0	22	--	--	.52	.05	.28	6	--	---	-	7.7	---	a29	S	4+	-	-	-	--	--
Lewiston	1413	964.4	1016.3	59	42	50.5	-1.4	70	9	32	20	0	1	--	--	1.80	.59	.52	13	2	0	0	---	---	--	--		2	6	23	8.2	-
Pocatello	4444	862.5	1016.1	61	34	47.5	-1.8	85	1	23	8	0	14	34	63	.57	-.47	.28	4	0	T	0	9.0	SW	31	W	22	3	9	19	7.6	59
ILLINOIS																																
Cairo (U)	314	1007.5	------	67	49	57.9	-4.1	82	2	32	28	0	1	--	--	4.90	1.93	2.49	6	1	.0	0	8.4	N	33	SW	23	14	5	12	4.9	68
Chicago	610	998.6	1021.9	60	44	52.0	-2.1	73	2	31	27	0	2	41	68	3.15	.59	1.62	6	0	1 9	2	8.2	NW	33	N	24	10	7	14	5.9	44
Moline	589	999.3	1022.0	61	38	49.8	-4.1	74	1+	27	20+	0	7	39	70	2.00	-.27	1.15	4	0	.0	0	9.1	E	26	N	24	15	5	11	5.0	59
Peoria	654	999.0	1021.8	62	41	51.6	-3.1	77	1	28	26+	0	3	41	69	4.34	1.90	3.03	6	0	T	T	10.5	N	36	N	24	12	7	12	5.4	59
Springfield	589	998.3	1022.0	63	41	52.2	-3.7	79	1	28	27+	0	6	40	67	2.85	-.36	1.47	6	1	T	0	9.9	ENE	37	N	23	14	6	11	5.0	63
INDIANA																																
Evansville	383	1005.1	1021.3	66	43	54.1	-5.2	83	1	30	27+	0	3	42	69	3.51	.69	2.13	3	0	T	0	8.9	NNW	31	S	23	14	4	13	5.5	55
Fort Wayne	801	989.8	1021.5	60	40	49.8	-3.4	74	8	29	28	0	8	40	73	3.57	.95	1.88	8	1	.2	T	8 9	ENE	31	NW	24	8	9	14	5.8	51
Indianapolis	793	991.5	1022.0	61	42	51.4	-4.5	78	1	30	28	0	3	40	70	2.94	.42	1.66	7	0	T	0	12.0	NE	28	NW	24	10	5	16	6.1	47
South Bend	768	992.9	1021.6	60	39	49.6	-3.3	72	2	30	12+	0	6	41	76	5.25	2.26	2.24	8	0	T	0	9.9	NNW	*29	NNW	24	12	4	15	5.9	--

See footnotes at end of table.

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure		Temperature										Average dew point	Average relative humidity	Precipitation							Wind					No. of days (sunrise to sunset)			Sky cover, tenths (sunrise to sunset)	Possible sunshine
												No. of days							No. of days		Snow, Sleet				Fastest mile							
		ø Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F. or above	Min. 32° F. or below			Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max. depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy		
	Ft	Mb.	Mb	°F	°F	°F	°F	°F		°F				°F	%	In.	In.	In.			In.	In.	M. p. h.		M. p. h.			0–3	4–7	8–10	0–10	%
IOWA																																
Burlington	694	995.6	1021.8	62	41	51.6	-3.4	75	1	27	27+	0	6	40	67	3.99	1.04	1.86	5	0	T	0	9.8	ESE	27	N	24	11	9	11	5.2	72
Des Moines	948	990.2	1022.3	60	41	50.2	-4.3	77	1	22	27	0	4	40	71	3.29	1.09	1.05	9	2	T	T	10.9	SE	34	N	23	11	4	16	6.0	61
Dubuque	1065	996.3	1022.3	58	38	48.4	-2.5	71	1+	26	27+	0	7	37	66	3.45	1.25	1.69	6	0	T	0	---	---	--	---	--	13	8	10	5.2	--
Sioux City	1094	979.0	1021.2	59	41	50.3	-2.3	79	1	21	27	0	5	39	68	2.77	1.33	1.16	10	2	T	T	13.2	SE	38	N	23	8	4	19	6.6	47
Waterloo	870	------	------	59	37	48.3	-3.6	74	1+	22	27	0	11	--	--	3.15	.99	2.03	5	0	.0	0	9.0	---	--	---	--	--	--	--	---	--
KANSAS																																
Concordia (U)	1375	969.5	------	63	46	54.5	-3.2	84	6	22	27	0	4	--	74	1.00	-.72	.50	8	1	1.1	1	7.5	SE	27	N	23	9	5	17	6.3	55
Dodge City	2594	929.6	1018.0	64	46	54.9	-2.9	88	4+	20	26	0	4	44	71	.71	-.86	.45	9	0	T	T	15.9	SSE	43	N	23	6	8	17	7.0	47
Goodland	3645	889.3	1016.9	62	39	50.2	-1.9	85	3+	21	25+	0	7	40	72	.83	-.21	.52	6	1	.7	T	11.2	SSE	*29	SSE	20	8	6	17	6.6	--
Topeka	877	984.8	1021.1	64	43	53.4	-4.5	81	1	23	28	0	5	45	75	4.30	1.74	2.06	8	5	T	T	10.5	E	40	N	23	7	6	18	6.9	47
Wichita	1321	970.2	1019.3	64	47	55.2	-5.0	85	5	23	27	0	4	47	76	2.72	.54	.99	9	3	T	T	12.4	SSE	38	N	23	6	4	21	7.3	44
KENTUCKY																																
Lexington	979	984.9	1021.4	63	43	52.9	-5.0	78	1	27	28	0	4	43	74	2.70	.26	1.93	8	1	T	T	9.7	N	--	---	--	12	1	18	6.4	--
Louisville	474	1001.2	1020.9	65	44	54.6	-4.0	79	1	30	28	0	3	43	68	2.26	-.19	1.61	3	0	T	0	9.1	N	37	SE	23	8	6	17	6.3	47
LOUISIANA																																
Baton Rouge	64	1015.9	1019.1	76	55	65.5	-4.1	85	17	32	28	0	1	56	76	3.29	.31	1.75	5	3	.0	0	8.6	N	--	---	--	13	6	12	5.3	--
Lake Charles	12	1016.9	1018.4	77	57	66.9	-3.4	86	4	37	28	0	0	57	74	5.21	1.77	3.89	6	3	.0	0	6.7	N	*27	SE	15	15	6	10	4.8	--
New Orleans (U)	9	1016.3	------	74	61	67.7	-5.1	82	17	42	28	0	0	--	--	1.69	-1.97	1.12	7	2	.0	0	7.0	---	17	W	16+	17	3	11	4.4	61
New Orleans	3	1016.3	1018.5	75	59	66.8	-4.6	83	17	41	28+	0	0	57	74	2.15	-1.03	1.93	5	1	.0	0	7.7	NNW	*25	NNW	25	17	3	11	4.5	--
Shreveport	252	1009.8	1019.1	74	53	63.5	-5.0	85	4	31	28	0	1	52	70	6.78	3.68	3.88	5	3	.0	0	8.4	ESE	--	---	--	12	10	9	4.9	74
MAINE																																
Caribou	624	994.3	1017.9	55	37	45.7	3.6	72	6+	21	30	0	11	38	79	2.37	-1.10	1.34	11	1	.3	T	10.5	NW	*38	WSW	25	4	5	22	7.8	--
Portland	61	1014.8	1018.9	60	39	49.6	1.2	73	15+	26	13	0	9	42	77	2.13	-.85	.83	6	0	.0	0	10.5	S	29	NW	20	12	4	15	5.9	57
MARYLAND																																
Baltimore (U)	14	------	------	65	50	57.6	-1.7	79	9	36	27+	0	0	--	--	1.71	-1.66	.62	6	--	---	--	---	---	--	---	--	--	--	--	---	--
Baltimore	146	1015.5	1020.5	63	43	53.2	-3.3	75	9	32	13+	0	2	44	73	2.21	-1.16	.85	6	1	.0	0	12.4	NW	65	NE	6	7	10	14	6.3	55
Frederick	294	------	------	62	40	51.2	-5.6	74	9	29	13	0	5	--	--	2.37	-.92	1.11	6	--	.0	0	---	---	--	---	--	--	--	--	---	--
MASSACHUSETTS																																
Blue Hill Obs.(R)	629	995.2	1018.8	60	43	50.7	-.4	75	1	30	28	0	4	--	73	3.53	.08	1.32	11	0	.1	T	14.5	NW	42	S	24	8	8	15	6.1	52
Boston	15	1013.6	1018.2	62	47	54.6	-.4	78	1	35	28	0	0	43	69	2.67	-.12	.86	9	1	T	0	11.0	NNW	*33	N	20	12	5	14	5.7	62
Nantucket	43	1018.0	1018.5	60	47	53.5	.5	71	16	35	21	0	0	47	79	2.41	-1.19	1.24	8	4	.0	0	12.9	---	35	NW	20	8	4	19	6.5	58
Pittsfield	1153	976.1	------	58	37	47.1	-.4	72	9+	27	12+	0	13	--	--	1.44	-1.49	.67	8	0	T	T	---	---	--	---	--	--	--	--	---	--
Worcester	986	982.3	------	59	41	49.9	-.7	73	1+	28	28	0	5	--	--	3.00	-.17	1.12	8	1	T	0	13.1	---	*34	NW	20	9	8	14	5.8	--
MICHIGAN																																
Alpena (U)	587	998.6	------	54	39	46.5	-1.4	67	8	26	25	0	5	--	73	1.93	-.05	.96	8	0	.3	T	8.7	---	26	NW	17	9	5	17	6.4	46
Detroit	619	994.6	1021.7	59	42	50.8	-2.1	71	15	31	26	0	2	40	69	4.83	2.54	2.19	8	0	T	T	10.1	N	33	NNW	24	12	8	11	5.5	58
Detroit (Willow Run)	722	992.2	1021.0	60	41	50.5	-2.0	73	8	29	25+	0	5	39	69	4.44	2.27	2.40	7	1	T	0	10.0	NNW	*25	NW	24	10	7	14	5.7	--
East Lansing (U)	856	------	------	60	39	49.6	-.9	75	8	28	25	0	5	--	--	3.73	1.28	1.97	9	0	1.4	1	4.4	N	16	N	24	--	--	--	---	50
Escanaba (U)	594	998.6	------	54	39	46.7	-.4	71	1	28	27	0	4	--	78	1.74	-.30	.91	8	0	.1	T	9.1	---	39	N	23	12	4	15	5.9	47
Flint	761	993.2	1021.7	58	36	47.4	-3.0	71	8	23	12	0	13	38	75	3.65	1.17	1.71	8	0	T	0	7.4	NNW	*21	WSW	28	9	7	15	6.1	--
Grand Rapids	681	995.9	1021.8	59	38	48.3	-2.0	71	2+	27	12+	0	7	39	74	3.29	.78	1.64	9	0	T	T	8.8	S	24	N	24	10	4	17	6.2	47
Marquette (U)	677	993.9	------	55	42	48.2	.7	70	1	30	25	0	2	--	68	1.07	-1.19	.60	11	0	.4	T	7.3	---	28	SW	31	9	6	16	6.4	48
Muskegon	627	998.3	1022.0	58	39	48.4	-1.9	70	2	29	12+	0	6	39	72	2.93	.41	1.06	9	0	T	0	---	---	--	---	--	12	2	17	5.8	--
Sault Ste. Marie	721	998.6	1021.8	54	37	45.6	1.2	70	7	23	25	0	7	38	77	1.53	-1.45	.80	6	0	T	T	8.4	WNW	*24	NW	17	11	5	15	5.9	49
MINNESOTA																																
Duluth	1409	979.7	1022.0	52	34	43.3	-.7	72	1	18	26	0	13	36	78	1.75	-.47	.73	10	0	.3	T	11.6	NW	36	NW	16	8	7	16	6.2	52
Intern'l. Falls	1179	979.0	1021.1	54	33	43.4	1.5	75	2	18	27	0	14	36	76	1.75	-.06	.49	9	1	T	T	11.0	SE	*24	SE	3	9	6	16	6.2	--
Minneapolis	830	988.2	1022.6	57	40	48.7	-1.7	79	2	25	25+	0	8	39	72	1.40	-.25	.72	7	0	T	T	10.6	SE	28	S	6+	9	5	17	6.7	41
Rochester	1017	984.4	1022.3	58	37	47.5	-1.6	74	2	21	27	0	10	35	64	1.74	.05	.97	8	0	T	0	9.1	SE	--	---	--	9	5	17	6.5	--
St. Cloud	1034	982.7	1021.4	55	36	45.9	-.7	75	2	19	26	0	8	38	76	.94	-.70	.30	8	0	T	0	---	---	--	---	--	8	5	18	6.7	--
MISSISSIPPI																																
Jackson	305	1007.4	1019.6	71	51	61 3	-5.1	80	9+	28	28	0	3	52	76	2.79	.61	1.23	8	3	.0	0	6.9	N	35	SE	16	11	5	15	5.8	52
Meridian	294	1005.4	------	72	50	61 4	-3.3	80	8+	27	28	0	3	--	--	1.28	-1.10	.89	7	1	.0	0	---	---	--	---	--	12	6	13	5.3	--
Vicksburg (U)	234	1010.0	------	70	54	62.2	-5.5	80	9	36	27+	0	0	--	--	2.83	.61	1.56	9	3	.0	0	7.9	---	26	SE	22	7	10	14	6.3	48
MISSOURI																																
Columbia	778	991.9	1021.1	65	44	54.7	-3.4	83	1+	25	26	0	4	41	64	4.35	1.14	2.21	6	0	.0	0	9.8	SE	36	NW	24	9	6	16	5.8	52
Kansas City	741	986.1	1021.4	64	47	55.4	-4.2	80	1	28	26	0	3	43	65	3.97	1.04	1.95	9	1	T	0	8.8	N	31	NW	23	8	8	15	6.4	59
St. Joseph	809	985.1	------	62	44	53.1	-5.0	79	3	25	27	0	5	--	--	4.54	2.01	1.83	7	1	T	0	10.4	N	*35	NNW	23	7	9	15	6.4	--
St. Louis (U)	465	------	------	64	48	56.0	-4.6	82	1	31	27	0	1	--	--	2.79	-.11	1.34	6	1	.0	0	8.8	NE	32	S	23	12	7	12	5.2	65
St. Louis	552	1000.7	1021.4	65	45	54.9	-4.5	83	1	28	27	0	2	41	63	2.34	-.74	1.28	5	0	.0	0	8.4	NNW	--	---	--	13	5	13	5.3	--
Springfield	1265	972.2	1020.3	65	45	55 0	-3.4	82	1	23	27+	0	3	44	70	2.34	-1.06	1.10	7	3	.0	0	11.7	SSE	34	SE	14+	9	12	10	5.7	61
MONTANA																																
Billings	3568	892.7	1018.1	54	35	44.7	-4.5	81	1	21	23	0	14	34	70	2.58	1.44	1.05	10	0	9.2	5	8.3	NE	31	SW	30	4	6	21	7.9	37
Butte	5530	829.7	1018.6	51	28	39.3	-1.7	79	1	12	23	0	24	32	--	.93	.14	.32	12	0	4.2	2	6.7	SSE	*29	SSE	22	0	7	24	8.7	--
Glasgow (U)	2277	943.1	1018.8	53	32	42.5	-3.0	88	1	15	26	0	16	--	72	.45	-.35	.16	7	1	1.3	1	---	---	--	---	--	6	10	15	6.7	--
Great Falls	3664	889.9	1018.6	49	32	40.7	-7.4	87	1	10	22+	0	15	31	73	1.89	1.17	.90	12	0	14.2	5	11.2	SW	56	SW	30	2	5	24	8.4	58
Havre (U)	2488	928.5	1019.0	51	30	40.5	-6.3	86	1	14	24	0	20	--	--	1.78	1.10	.86	9	0	7.6	6	6.1	---	40	W	30	5	11	15	7.1	37
Helena	3893	874.7	1019.2	50	32	41.0	-4.1	80	1	10	22+	0	16	32	72	1.27	.59	.49	12	1	8.2	4	6.6	NW	31	S	2	0	9	22	8.6	30
Kalispell	2965	------	------	49	33	40.7	-3.7	79	1	17	23	0	15	--	--	2.00	.64	.78	18	2	2.3	1	---	---	--	---	--	3	4	24	8.3	--
Miles City	2629	933.0	1018.4	58	35	46.3	-2.0	90	1	17	23	1	13	35	--	.50	-.44	.15	6	0	3.0	1	9.1	SE	*29	NW	22	3	14	14	6.9	--
Missoula	3200	903.2	1019.2	51	33	42.2	-2.7	79	1	20	23	0	12	35	76	1.35	.28	.69	14	2	1.2	1	5.7	WNW	30	NW	1	1	4	26	9.2	18
NEBRASKA																																
Grand Island	1841	952.6	1019.7	61	42	51.6	-2.4	84	6	20	26+	0	6	42	74	1.08	-.23	.33	9	2	.9	1	11.7	SE	--	---	--	12	1	18	6.1	--
Lincoln (U)	1166	------	------	61	44	52.5	-3.9	81	6	22	27	0	4	--	--	4.36	2.70	2.69	9	2	T	T	9.8	E	31	NW	23	10	4	17	6.2	49
Norfolk	1544	964.1	1020.5	59	41	49.9	-2.2	78	1+	18	27	0	7	41	72	1.80	.44	.99	9	1	T	T	---	---	--	---	--	11	3	17	6.4	--
North Platte	2779	918.1	1018.1	58	40	49.4	-2.3	80	1	20	27	0	7	42	79	1.45	.41	.73	12	1	.9	1	10.7	SE	38	SE	3	8	4	19	6.9	41
Omaha	978	980.7	1021.4	60	43	51.8	-3.7	81	1	25	27	0	4	42	72	3.81	2.08	1.04	9	2	T	T	11.3	SE	42	N	23	9	4	18	6.4	46
Omaha, N. Omaha AP	1323	972.2	------	59	41	49.9	-3.8	77	3	21	27	0	5	--	--	3.00	1.27	.95	10	1	T	T	---	---	--	---	--	8	5	18	6.5	--
Scottsbluff	3950	880.1	1016.8	60	40	49.9	-.6	87	1	21	26	0	7	40	77	1.49	.48	.55	10	1	2.5	1	10.0	ESE	*29	NE	6	4	12	15	7.0	--
Valentine	2587	926.5	------	58	39	48.6	-.9	85	1	15	26	0	6	--	--	.72	-.45	.50	6	0	T	0	11.0	---	45	SE	3	6	5	20	7.2	37
NEVADA																																
Elko	5075	843.9	1015.7	61	27	44.0	-3.4	73	9+	13	29	0	23	28	56	.42	-.39	.11	7	2	T	T	4.6	SW	*24	SSE	19	7	8	16	6.7	--
Ely	6257	807.7	1014.9	59	28	43.5	-3.4	74	1	17	4	0	26	27	58	.77	-.05	.24	8	2	.6	T	9.0	S	40	S	1	7	11	13	6.4	61
Las Vegas	2162	946.5	1011.7	75	53	63.7	-3.7	91	1	42	22	1	0	37	42	.49	.17	.25	6	2	.0	0	8.3	SW	*35	SW	3	13	12	6	4.2	71
Reno	4397	860.8	1015.4	62	32	46.8	-3.9	75	9	25	6+	0	16	34	63	1.27	.72	.86	5	0	2.0	T	5.0	WNW	35	S	5	11	7	13	5.6	74
Winnemucca	4299	867.3	1015.9	60	31	45.3	-3.3	76	9	20	29	0	19	34	66	1.77	.98	.81	12	2	T	T	6.6	NE	29	W	5	5	4	22	7.5	42
NEW HAMPSHIRE																																
Concord	339	1008.2	1019.1	61	37	49.3	1.3	75	9	25	12	0	13	39	72	3.21	.41	1.35	6	0	.0	0	7.3	NW	26	S	24	10	7	14	5.9	54

See footnotes at end of table.

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure		Temperature												Precipitation							Wind					No. of days ([illegible] to sunset)				
												No. of days							No. of days		Snow, Sleet				[illegible]							
		Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F or above	Min 32° F or below	Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max depth on ground	Average hourly speed	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Ft.	Mb.	Mb.	°F	°F	°F.	°F.	°F		°F				°F	%	In.	In	In			In	In	M. p. h.		M			0–	4–	10	0–10	
NEW HAMPSHIRE (Cont'd.)																																
Mt. Washington	6262	------	------	36	26	30.8	-.9	50	7	10	20	0	23	--	88	4.65	-1.25	1.66	7	1	1.3	[illegible]	27.2	[illegible]	‡106	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	7.3	[illegible]
NEW JERSEY																																
Atlantic City (U)	8	1013.5	------	63	50	56.5	-1.5	74	9	33	28	0	0	--	--	1.62	-1.59	.68	6	0	0	0	16.5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Newark	11	1018.3	1019.6	65	47	55.6	.0	80	9	34	28	0	0	43	66	2.13	-1.07	1.10	6	1	T	T	10.1	NNW	[illegible]	[illegible]	[illegible]	10	8	[illegible]	[illegible]	[illegible]
Trenton (U)	56	1012.4	1019.6	63	46	54.7	-1.4	77	9	33	26	0	0	--	--	1.95	-.70	.73	5	1	T	0	9.0	[illegible]	[illegible]	[illegible]	[illegible]	9	11	[illegible]	[illegible]	[illegible]
NEW MEXICO																																
Albuquerque	5310	849.3	1014.1	67	46	56.6	-1.6	85	1	35	24+	0	0	41	61	2.59	1.95	1.27	11	5	T	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	8	[illegible]	[illegible]	5.9	[illegible]
Clayton	4969	846.6	1015.2	64	42	52.7	-2.4	85	1+	23	26	0	4	--	--	1.51	.21	.59	11	3	T	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	9	7	[illegible]	6.3	[illegible]
Raton	6379	807.0	1015.9	63	38	50.6	-.5	81	2	27	28	0	7	--	--	6.02	4.92	2.39	9	2	T	T	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6	7	[illegible]	7.2	[illegible]
Roswell	3612	894.3	1015.2	70	46	58.1	-2.8	90	2	29	27	1	2	46	68	2.91	1.93	.84	12	4	.0	0	9.7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6.6	[illegible]
NEW YORK																																
Albany	277	1015.4	1019.4	60	40	50.2	-.5	74	6+	28	12	0	7	40	72	2.57	.36	1.69	11	0	.2	T	8.2	S	[illegible]	NW	[illegible]	6	[illegible]	[illegible]	7.3	[illegible]
Binghamton	1601	960.3	1020.3	55	39	47.0	-1.3	70	1	24	26	0	7	37	72	2.63	-.41	1.25	9	0	.7	T	10.6	NW	[illegible]	NW	[illegible]	5	[illegible]	17	7.1	[illegible]
Buffalo	693	992.3	1021.0	59	42	50.1	-1.1	75	16	30	27+	0	4	41	71	1.12	-1.37	.89	5	0	T	T	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6	10	[illegible]	[illegible]	[illegible]
New York (U)	10	1017.8	------	63	49	56.2	-.8	77	9	33	28	0	0	--	--	3.00	-.04	1.69	6	1	.0	0	13.1	[illegible]	[illegible]	NW	[illegible]	14	[illegible]	[illegible]	[illegible]	[illegible]
New York	19	1017.7	1019.5	64	50	56.9	-.7	78	9	36	28	0	0	44	64	3.73	.82	2.01	6	0	.0	0	13.6	NW	[illegible]	NW	[illegible]	10	7	[illegible]	5.6	[illegible]
Rochester	543	1000.9	1020.5	59	40	49.4	-1.4	74	16	28	21	0	4	40	74	.97	-1.53	.49	7	0	1.4	1	11.1	WSW	42	W	[illegible]	[illegible]	12	[illegible]	7.2	44
Schenectady	217	------	------	60	42	51.1	.8	73	16	32	21+	0	3	--	--	2.24	-.42	1.38	10	0	T	0	--	-	[illegible]	[illegible]	[illegible]	12	13	[illegible]	4.5	[illegible]
Syracuse	424	998.6	1021.1	60	41	50.1	-2.3	73	16	26	26	0	6	40	71	.93	-2.11	.51	7	0	T	T	10.0	WNW	[illegible]	W	[illegible]	3	13	[illegible]	7.4	[illegible]
NORTH CAROLINA																																
Asheville (U)	2203	940.3	------	61	43	52.0	-5.0	75	1	28	29	0	4	--	--	2.18	-.36	.56	11	0	T	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	7	6	[illegible]	6.8	11
Cape Hatteras (R)	9	1017.6	1018.3	68	57	62.3	-4.0	76	17	41	28	0	0	54	77	7.19	3.14	4.54	10	3	0	0	12.1	NNE	[illegible]	[illegible]	[illegible]	11	[illegible]	[illegible]	5.9	[illegible]
Charlotte	725	992.2	1020.7	68	48	57.6	-3.9	77	9+	31	29	0	1	48	73	2.44	-.55	1.19	7	1	.0	0	8.7	NNE	[illegible]	[illegible]	18	[illegible]	[illegible]	[illegible]	6.0	[illegible]
Greensboro	891	988.9	1021.4	65	44	54.4	-4.6	75	2	27	28	0	3	45	75	1.54	-1.06	.44	7	0	.0	0	7.2	NE	[illegible]	NE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Raleigh	433	1006.3	1020.3	66	45	55.5	-5.6	76	9+	27	28	0	2	47	76	1.71	-1.11	.62	6	0	.0	0	7.3	N	[illegible]	NNE	[illegible]	9	5	17	6.4	[illegible]
Wilmington	30	1017.8	------	71	51	60.6	-4.7	80	10+	33	29	0	0	--	--	1.26	-1.52	.85	7	0	.0	0	10.4	[illegible]	[illegible]	[illegible]	[illegible]	17	2	12	[illegible]	[illegible]
Winston-Salem	967	985.0	1020.8	65	46	55.6	-4.2	75	2+	29	28	0	2	45	72	2.73	-.40	1.47	7	0	0	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	7	9	[illegible]	[illegible]	[illegible]
NORTH DAKOTA																																
Bismarck	1650	959.0	1020.4	55	36	45.5	-.2	86	2	15	25+	0	10	36	74	1.59	.59	.69	8	4	T	T	11.9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	7.5	37
Devils Lake (U)	1471	966.1	------	53	35	43.7	-.2	81	2	12	26	0	15	--	78	1.56	.30	.72	9	2	[illegible]	T	8.3	[illegible]	[illegible]	[illegible]	[illegible]	6	[illegible]	[illegible]	6.8	47
Fargo	895	986.5	1021.8	55	38	46.5	.4	80	2	18	26	0	11	38	76	1.64	.38	1.18	8	0	T	T	15.0	SSE	[illegible]	[illegible]	[illegible]	9	[illegible]	[illegible]	[illegible]	[illegible]
Williston (U)	1877	950.6	1019.6	54	34	43.8	-1.7	92	2	4	25	1	13	33	69	.74	-.03	.38	5	1	1.5	[illegible]	6.8	S	[illegible]	[illegible]	[illegible]	[illegible]	5	22	[illegible]	[illegible]
OHIO																																
Akron	1210	983.5	1022.0	58	40	48.9	-4.1	72	15	26	28	0	4	41	79	1.54	-.85	.67	9	0	2.1	1	[illegible]	S	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Cincinnati Obs.	761	------	------	63	44	53.3	-4.1	82	1	32	28	0	1	--	--	2.01	-.18	1.21	7	2	.3	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Cincinnati	869	988.6	1021.2	63	43	53.1	-2.9	80	1	30	28	0	3	40	65	2.34	.17	1.34	6	1	T	T	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6.9	[illegible]
Cleveland (U)	787	992.7	1021.1	60	44	51.8	-2.6	75	15	31	28	0	1	41	70	2.64	.22	1.30	11	1	2.5	1	12.3	S	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6.5	[illegible]
Columbus (U)	724	------	------	61	44	52.4	-3.7	75	1	31	27	0	2	--	--	1.33	-.67	.90	8	0	T	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Columbus	815	991.3	1021.7	62	41	51.5	-3.0	77	1	27	28	0	4	40	80	1.27	-.91	.91	9	0	T	0	8.1	NNW	[illegible]	NW	[illegible]	[illegible]	[illegible]	[illegible]	6.5	[illegible]
Dayton	1002	984.7	1021.7	60	43	51.5	-3.6	75	1	29	28	0	4	39	66	2.07	-.23	1.09	8	0	.5	T	[illegible]	[illegible]	[illegible]	SW	[illegible]	7	8	16	6.5	[illegible]
Sandusky (U)	603	998.3	------	59	44	51.6	-3.4	70	2+	30	28	0	2	--	--	2.63	.53	1.75	9	0	T	T	7.8	[illegible]	25	N	24+	[illegible]	11	12	5.7	[illegible]
Toledo	676	995.9	------	60	39	49.6	-3.1	74	8	28	12	0	8	--	--	3.34	1.02	1.71	7	1	T	0	8.5	---	30	NW	24	[illegible]	6	15	6.2	[illegible]
Youngstown	1178	978.4	1021.7	58	40	49.1	-4.8	72	16	27	28	0	4	40	75	2.43	-.34	1.07	11	0	1.7	T	10.4	NNE	25	WNW	24	9	[illegible]	17	6.5	[illegible]
OKLAHOMA																																
Oklahoma City	1280	975.3	1019.4	66	48	57.3	-5.9	85	1+	22	27	0	4	49	78	2.65	-.01	1.08	6	2	T	T	12.4	SSE	36	NW	23	8	[illegible]	19	6.8	[illegible]
Tulsa	672	994.9	1019.6	69	49	58.6	-4.8	85	1	27	26	0	4	48	70	1.58	-1.51	1.00	9	0	T	0	8.0	SE	[illegible]	NW	23	7	[illegible]	20	6.6	[illegible]
OREGON																																
Astoria	8	1014.2	1014.9	62	45	53.1	-1.0	72	10	33	21	0	0	48	83	5.43	-1.72	1.04	20	0	0	0	6.2	SE	[illegible]	SSW	[illegible]	[illegible]	[illegible]	17	6.8	--
Burns (U)	4140	872.3	1015.6	57	34	45.6	-1.6	70	10+	26	16	0	14	35	69	1.84	1.04	.54	12	0	T	T	---	-	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	17	6.5	-
Eugene	361	1002.0	1015.8	63	42	52.4	-.3	71	1	30	21	0	1	--	--	3.13	-.44	.86	16	0	.0	0	6.4	---	*32	S	23	2	[illegible]	[illegible]	7.3	-
Meacham	4050	------	------	50	35	42.8	-2.7	68	10	28	31	0	11	--	--	3.82	.88	1.59	12	0	1.8	T	---	---	---	---	--	2	[illegible]	26	8.9	--
Medford	1312	968.2	1016.2	62	41	51.8	-2.7	73	10	30	19+	0	5	44	81	1.64	-.27	.28	12	0	0	0	4.1	SSE	[illegible]	[illegible]	[illegible]	[illegible]	11	[illegible]	[illegible]	--
Pendleton	1492	962.4	1016.6	57	41	49.1	-4.5	70	12	32	20	0	1	42	77	1.79	.61	1.09	9	0	.0	0	6.6	SE	*32	W	[illegible]	[illegible]	7	19	[illegible]	[illegible]
Portland	21	1010.2	1015.8	61	44	52.8	-1.9	72	10	34	21	0	0	46	79	3.53	.36	.80	14	0	.0	0	8.3	ESE	29	E	[illegible]	[illegible]	6	20	[illegible]	[illegible]
Roseburg	505	996.6	1015.2	63	44	53.3	-1.0	73	29	33	21	0	0	--	--	3.66	.73	.82	17	1	.0	0	3.4	---	[illegible]	N	19	1	[illegible]	[illegible]	[illegible]	[illegible]
Salem	195	1008.8	1015.4	63	43	53.3	-1.2	72	11	34	18+	0	0	47	80	2.98	-.72	.66	17	1	.0	0	6.8	S	*26	SSW	22	[illegible]	[illegible]	20	7.2	--
Sexton Summit (R)	3836	------	------	52	39	45.9	-4.4	64	21	31	3+	0	3	--	--	3.30	-.54	.76	14	0	6.7	3	-	---	--	[illegible]	--	[illegible]	[illegible]	18	[illegible]	--
PENNSYLVANIA																																
Allentown	376	1006.0	1020.5	62	41	51.5	-1.7	77	9	29	12	0	4	41	73	2.85	-.12	1.28	6	0	T	0	10.5	ENE	[illegible]	[illegible]	[illegible]	11	[illegible]	12	5.6	[illegible]
Erie	732	------	------	58	41	49.7	-2.6	74	16	30	28	0	3	--	--	1.98	-1.03	.82	8	0	1.2	1	12.0	[illegible]	[illegible]	S	[illegible]	[illegible]	[illegible]	[illegible]	6.6	-
Harrisburg	335	1006.6	1020.6	62	43	52.7	-2.5	74	1+	30	27+	0	2	40	66	1.78	-1.29	.72	5	1	T	0	6.8	WNW	[illegible]	SE	[illegible]	[illegible]	[illegible]	[illegible]	6.3	[illegible]
Philadelphia (U)	26	------	------	64	49	56.7	-1.8	80	9	36	26+	0	0	--	--	---	---	----	--	--	---	--	-	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Philadelphia	10	1015.0	1019.6	64	45	54.1	-2.5	77	9	32	28	0	1	43	69	2.05	-.55	.73	4	0	T	0	9.7	N	[illegible]	NE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Pittsburgh (U)	749	------	------	61	44	52.2	-3.7	75	1	31	28	0	2	--	--	1.42	-1.07	.74	10	--	.4		- -									[illegible]
Pittsburgh	1151	990.5	1021.5	59	40	49.6	-3.4	72	1+	28	28	0	7	40	73	1.74	-.70	.76	10	0	1.5	T	7.2	NW	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6.8	[illegible]
Reading (U)	266	1007.9	1020.3	63	45	54.0	-2.1	77	9	34	12+	0	0	--	--	2.09	-.66	.71	5	0	0	0	10.3	-	17	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	5.7	[illegible]
Scranton	940	986.3	1021.2	59	39	49.2	-3.0	72	9+	28	12	0	6	38	70	2.54	-.84	1.56	5	0	T	T	8.9	NNW	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6.0	[illegible]
Shippingport (U)	736	------	------	60	39	49.7	----	73	16	29	28	0	7	--	-	1.49	----	.72	10	0	T	T	1.9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Williamsport	527	1001.5	------	62	40	51.1	-1.9	77	9	30	12+	0	5	--	--	1.50	-1.87	.45	9	-	T	T	--	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
RHODE ISLAND																																
Block Island	110	1014.6	1018.7	61	49	54.6	.1	70	9	38	26+	0	0	--	--	[illegible]	-.68	.83	8	0	0	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1	7	[illegible]	5.6	[illegible]
Providence	55	1012.6	1018.8	63	43	52.9	.2	75	1	33	21+	0	0	42	72	2.52	-.31	1.04	8	1	T	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	5.7	[illegible]
SOUTH CAROLINA																																
Charleston (U)	9	------	------	71	57	64.0	-4.2	81	1	39	28	0	0	--	--	2.36	-.08	1.42	8	0	0	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	---	59
Charleston	41	1016.9	1018.9	72	52	61.8	-4.7	80	1+	32	29	0	1	54	82	1.83	.90	1.37	6	0	0	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Columbia	217	1010.9	1019.5	71	49	60.0	-4.9	80	9+	29	29	0	2	50	76	1.80	-.62	.63	6	0	0	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	5.5	62
Florence	146	1013.9	------	71	50	60.6	-3.5	82	10	32	28+	0	2	--	--	.80	-1.47	.50	8	1	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	5.2	--
Greenville	1018	982.3	1020.0	66	49	57.3	-5.2	77	8+	32	28	0	1	45	68	2.65	-.81	.69	9	1	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Spartanburg	801	------	------	66	48	57.1	-5.1	76	9+	31	28	0	2	-	-	2.52	.88	.95	11	1	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SOUTH DAKOTA																																
Huron	1282	972.6	1020.4	57	41	48.8	-1.2	81	1	17	25	0	7	40	76	2.89	1.63	1.51	9	1	T		12.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Rapid City	3165	903.2	1018.5	57	38	47.5	-1.6	89	1	19	26	0	9	35	66	1.29	.16	.54	9	0	T	[illegible]	9.9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Sioux Falls	1420	968.5	1021.0	57	39	48.3	-1.7	78	1	18	25	0	8	38	69	1.24	-.22	.46	10	1	T	T	10.6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TENNESSEE																																
Bristol	1519	966.3	------	63	44	53.5	-4.4	74	1+	27	29	0	4	--	--	1.12	-1.27	.34	9	0	T	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Chattanooga	670	992.3	1020.3	66	47	56.4	-4.4	76	8	26	28	0	3	48	78	2.70	-.54	.88	11	2	0	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Knoxville	950	985.0	1020.7	66	48	56.6	-3.7	77	1	28	28	0	2	48	76	3.43	.80	1.71	10	2	0	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Memphis (U)	271	------	------	67	52	59.5	-5.5	80	2	34	27	0	0	--	--	5.63	2.45	3.02	7	0	0	0										
Memphis	263	1005.1	1020.2	69	50	59.6	-4.0	81	2	29	28	0	2	48	69	3.64	.37	1.63	8	2	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	7	13	[illegible]	[illegible]
Nashville	577	1000.4	1020.7	66	47	56.6	-5.2	81	2+	28	28	0	3	48	77	3.89	1.37	1.23	10	1	0	[illegible]	[illegible]	NNW	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	16	[illegible]	[illegible]

See footnotes at end of table.

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure		Temperature											Average relative humidity	Precipitation							Wind					No. of days (sunrise to sunset)			Sky cover, tenths (sunrise to sunset)	Possible sunshine
												No. of days							No. of days		Snow, Sleet				Fastest mile							
		Station ø	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F. or above	Min. 32° F. or below	Average dew point		Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max. depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy		
	Ft.	Mb	Mb.	°F.	°F.	°F.	°F.	°F.		°F.		#		°F.	%	In.	In.	In.			In.	In.	M. p. h.		M. p. h.			0–3	4–7	8–10	0–10	%
TENNESSEE (Cont'd.)																																
Oak Ridge (R)	905	987.6	------	66	48	57.0	-1.8	78	1	28	28	0	2	--	--	4.16	1.74	2.04	10	1	T	T	4.0	---	33	---	23	6	7	18	7.0	--
TEXAS																																
Abilene	1759	957.0	1017.6	73	53	62.6	-3.6	91	3+	28	27	4	1	50	70	4.35	1.78	2.85	7	4	.0	0	12.1	SSE	34	SE	13+	9	6	16	6.2	61
Amarillo	3590	890.6	1016.5	66	46	56.0	-2.7	88	1+	25	26	0	3	44	70	2.57	.64	1.30	[illegible]	2	T	T	12.0	SSE	36	W	22	8	8	15	6.2	59
Austin	615	997.0	1018.8	75	56	65.3	-5.6	88	4	32	28	0	1	56	75	8.79	5.84	4.69	5	3	.0	0	6.9	N	27	NE	14	9	10	12	5.9	56
Brownsville	16	1014.2	1016.7	84	66	75.0	-1.0	91	15	49	28	4	0	64	71	2.03	-.88	1.99	3	2	.0	0	13.0	SE	31	S	14	8	16	7	5.2	64
Corpus Christi	41	1015.9	1017.3	82	63	72.3	-2.2	92	15	43	27	2	0	61	72	.40	-2.06	.31	4	2	.0	0	10.8	NNE	35	S	14	10	12	9	5.3	76
Dallas	487	1000.3	1019.0	73	54	63.5	-5.3	89	3+	30	27	0	2	52	69	4.02	1.35	2.03	6	3	.0	0	9.2	SE	36	SW	22	11	8	12	5.6	68
Del Rio (U)	957	------	------	79	61	69.6	-1.9	90	1+	42	28	3	0	--	--	1.97	-.23	1.33	6	4	.0	0	---	---	--	---	--	--	--	--	---	--
El Paso	3920	886.9	1014.5	72	53	62.4	-2.8	87	1+	40	28	0	0	45	58	2.34	1.51	1.30	10	3	.0	0	12.9	E	47	NW	22	9	9	13	5.8	65
Fort Worth	544	998.0	1019.0	72	53	62.3	-6.2	89	4	29	27	0	2	52	73	3.53	.84	1.85	6	5	.0	0	11.2	ESE	*44	W	22	14	4	13	5.5	--
Galveston (U)	7	------	------	75	65	69.8	-3.8	83	4	45	26+	0	0	--	--	3.00	-.59	1.78	4	--	.0	0	12.3	---	43	SE	14	--	--	--	---	77
Galveston	5	1016.3	1018.5	75	65	69.7	-4.1	84	4	45	26	0	0	61	74	3.62	-.22	2.06	5	3	.0	0	13.2	N	--	---	--	11	12	8	4.9	--
Houston (U)	41	1012.9	------	77	60	68.5	-4.1	88	4	37	27	0	0	--	--	6.61	3.22	5.88	6	3	.0	0	9.6	N	38	SE	14	9	16	6	5.2	73
Houston	50	1015.9	1018.7	77	59	67.9	-3.5	88	4	37	27	0	0	58	75	11.53	7.83	8.80	6	3	.0	0	10.8	NNW	--	---	--	11	12	8	5.3	--
Laredo	500	1001.0	1016.3	84	63	73.5	-3.0	94	3+	42	28	12	0	58	63	1.05	-.52	.92	3	2	.0	0	10.8	SE	*23	SE	12+	8	13	10	5.6	--
Lubbock	3243	905.2	1016.7	69	47	58.3	-2.9	89	2	30	27	0	1	46	71	4.20	2.13	2.21	10	4	T	0	12.3	S	*65	WSW	22	8	7	16	6.4	--
Midland	2854	918.1	1016.7	72	52	61.9	-4.7	90	2	33	27	2	0	48	65	1.78	.00	1.18	9	3	.0	0	10.3	ENE	*29	NE	8	3	12	16	6.9	--
Port Arthur	16	1017.3	1018.9	76	57	66.6	-3.9	86	4	35	27	0	0	59	78	6.59	3.66	5.35	6	4	.0	0	10.2	N	38	W	14	11	13	7	5.0	64
San Angelo	1903	950.2	1017.6	73	53	62.8	-5.2	92	2	29	27	1	1	51	70	2.55	.30	1.35	9	5	.0	0	10.0	S	*35	E	8	9	6	16	6.3	--
San Antonio	792	992.9	1017.9	77	57	66.9	-4.4	88	16	34	27	0	0	55	70	4.71	2.61	3.57	6	1	.0	0	8.1	NNE	26	NW	23	8	9	14	5.9	60
Victoria	110	1013.2	1017.7	79	59	68.7	-4.9	86	4+	36	28	0	0	59	72	3.10	.22	2.16	7	2	.0	0	9.7	NNE	‡45	S	14+	10	9	12	5.5	--
Waco	500	997.3	1018.5	74	55	64.5	-4.9	89	4	32	28	0	1	55	73	5.40	2.99	3.15	6	3	.0	0	10.3	N	*24	WNW	15+	10	8	13	5.8	--
Wichita Falls	1020	982.1	1018.5	71	51	60.9	-4.4	92	4+	25	27	4	2	49	70	3.83	1.05	1.75	7	3	.0	0	8.3	SE	*37	W	22	9	7	15	6.0	--
UTAH																																
Milford	5028	843.2	1014.2	64	35	49.7	-.4	82	1	21	5	0	11	--	--	1.24	.36	.71	9	5	T	0	---	---	--	---	--	9	6	16	6.0	--
Salt Lake City	4220	866.6	1014.7	65	40	52.2	-.7	88	1	26	29	0	3	36	58	.78	-.56	.40	7	3	.0	0	8.2	SE	27	SW	3	5	11	15	6.7	67
VERMONT																																
Burlington	331	1005.3	1019.6	57	40	48.6	.4	74	9	25	21	0	[illegible]	39	72	1.55	-1.34	.95	9	0	T	T	8.0	SSW	32	S	24	5	4	22	7.9	48
VIRGINIA																																
Lynchburg	947	986.7	------	62	44	53.3	-4.5	75	2	30	28	0	1	--	--	1.93	-.94	1.07	6	0	T	0	6.7	---	24	NW	6	6	7	18	6.7	46
Norfolk	26	1018.3	1019.6	66	51	58.2	-3.0	77	24	34	29	0	0	49	75	3.44	.99	2.10	10	0	.0	0	11.5	NNE	43	W	6	9	7	15	6.0	54
Richmond	162	1014.5	1020.8	65	45	54.6	-4.2	76	[illegible]	30	28+	0	2	46	76	5.35	2.74	3.96	[illegible]	0	.0	0	7.7	NW	32	NW	6	10	5	16	6.5	51
Roanoke	1174	978.4	1021.3	63	44	53.5	-4.4	74	2+	30	13	0	3	42	69	2.37	-1.02	1.63	9	0	1.0	T	6.9	NW	--	---	--	6	9	16	6.6	--
WASHINGTON																																
Olympia	190	1008.1	1015.6	60	42	50.7	-.3	73	10	28	21	0	3	43	79	4.74	.24	1.39	16	0	.0	0	5.4	N	*29	WNW	2	1	9	21	8.0	--
Seattle (U)	14	------	------	60	48	53.8	-.6	72	10	41	15+	0	0	--	--	3.96	.88	1.10	17	0	.0	0	7.8	---	42	S	30	2	9	20	7.9	35
Seattle	14	1014.6	1015.7	--	--	----	---	--	--	--	--	--	--	44	74	----	---	----	--	--	---	--	5.8	S	--	---	--	--	--	--	---	--
Seattle-Tacoma	386	1001.7	1015.7	58	44	50.7	-1.0	70	10	35	19	0	0	44	81	3.79	.47	1.05	16	0	.0	0	10.5	NNE	*35	SSW	30	3	11	17	7.7	--
Spokane	2357	947.5	1017.3	53	38	45.0	-3.6	65	1+	24	22+	0	4	39	81	2.33	1.00	.67	15	0	6.1	4	6.8	NE	29	SW	30	3	4	24	8.2	33
Stampede Pass (R)	3958	878.4	1017.8	45	34	39.6	-2.8	58	10+	24	23	0	12	--	--	4.86	-4.48	1.53	16	0	8.8	6	---	---	--	---	--	4	4	23	8.0	--
Tatoosh (R)	101	1011.5	1014.5	57	49	52.7	.8	64	9	36	22	0	0	47	80	5.23	-3.49	2.19	14	0	.0	0	19.2	E	52	E	22	8	4	19	6.7	50
Walla Walla (U)	949	979.7	1015.6	57	43	50.4	-4.8	68	12	34	23	0	0	--	--	1.97	.49	1.22	11	1	.0	0	4.1	---	22	SW	2	2	9	20	7.8	54
Yakima	1061	977.3	1016.6	59	37	47.9	-2.7	72	10+	27	4	0	10	38	70	1.40	.78	.54	10	0	.4	T	4.6	WNW	*25	WNW	30	10	3	18	6.6	--
WEST VIRGINIA																																
Charleston	950	985.2	1021.2	63	42	52.5	-4.9	76	1	30	21	0	6	42	71	3.14	.33	1.19	[illegible]	0	.8	1	4.7	NE	16	WSW	24	5	9	17	7.2	--
Elkins	1970	------	------	59	35	46.9	-4.8	74	16	24	29	0	12	38	--	4.59	1.73	1.94	10	0	2.0	2	3.7	NW	17	NW	24	5	8	18	7.4	--
Huntington (U)	565	------	------	64	43	53.4	-5.8	78	1	33	21+	0	0	--	--	1.97	-.46	1.13	12	0	T	0	---	---	--	---	--	--	--	--	---	--
Parkersburg (U)	615	------	------	62	42	52.3	-4.6	78	1	28	28	0	4	--	--	2.89	.77	1.34	10	0	T	T	5.3	---	19	NW	24	6	10	15	6.4	45
WISCONSIN																																
Green Bay	689	999.0	1022.1	57	35	45.8	-2.6	70	1	23	25	0	13	39	78	1.35	-.45	.72	5	0	T	0	9.1	SW	31	NE	23	11	8	12	5.5	56
La Crosse	652	997.0	1022.0	58	39	48.3	-2.5	75	2	25	27	0	7	39	69	1.30	-.63	.57	7	0	.0	0	8.1	SE	*25	N	17+	9	6	16	6.1	--
Madison	857	986.1	1022.2	59	35	47.4	-3.0	76	2	24	25	0	13	37	71	2.14	.06	1.49	3	0	T	T	8.3	S	32	N	23	13	7	11	5.2	62
Milwaukee	672	996.6	1022.2	57	40	48.6	-2.8	69	[illegible]	27	25	0	6	40	72	1.34	-.63	.58	5	0	T	T	12.7	NNW	46	N	23	14	3	14	5.4	59
WYOMING																																
Casper	5322	838.8	1015.3	58	35	46.4	.0	85	1	22	26	0	12	34	69	2.00	.89	.86	10	0	1.7	1	10.1	SW	*35	WSW	4+	6	7	18	7.2	--
Cheyenne	6131	811.7	1015.7	58	36	46.9	.5	80	2	20	26	0	6	34	69	1.35	.22	1.01	[illegible]	2	.5	1	9.9	SSE	34	W	11	4	16	11	6.6	55
Lander	5563	835.4	1015.9	58	35	46.2	1.6	79	1	23	29	0	11	33	63	.95	-.58	.50	5	0	.0	0	5.5	---	38	S	3	7	6	18	7.0	57
Sheridan	3942	885.2	1017.8	56	33	44.5	-2.1	88	1	21	26	0	14	34	71	1.61	.34	.59	7	0	4.8	4	8.1	NW	40	NW	22	7	7	17	7.1	45
PACIFIC AREA																																
Canton Island	9	1009.5	1009.9	91	79	85.0	.9	93	15	75	2	27	0	75	75	4.60	4.21	1.59	8	1	.0	0	11.2	E	*22	ENE	5+	2	5	24	8.9	--
Guam (Taguac) (R)	361	------	------	86	72	78.9	---	91	28	67	15+	3	0	--	--	20.59	----	4.36	28	--	.0	0	---	---	--	---	--	--	--	--	---	67
Hilo	31	1013.2	1015.4	84	68	75.8	1.3	87	25	65	10+	0	0	69	81	13.23	2.21	6.65	21	0	.0	0	9.0	SW	*23	ESE	2	7	14	10	5.7	51
Honolulu	7	1014.2	1014.7	86	72	79.2	1.0	90	25	69	19+	1	0	68	71	.11	-1.78	.07	5	0	.0	0	10.7	NE	27	NE	15	13	17	1	4.1	76
Koror (R)	94	1006.8	1010.5	88	76	82.2	1.1	90	12+	72	9	7	0	77	84	19.22	6.68	6.18	20	7	.0	0	---	---	--	---	--	0	9	22	8.4	--
Lihue	115	1009.1	1014.8	86	70	78.0	1.5	90	5+	64	21	2	0	69	78	1.55	-3.08	.82	11	0	.0	0	8.9	NE	25	NE	29	9	16	6	5.1	75
Majuro	10	1009.8	1010.2	86	77	81.8	---	89	22	71	13	0	0	76	83	14.24	----	6.58	19	1	.0	0	---	---	--	---	--	0	4	27	9.2	--
Ponape (R)	120	1005.1	1010.5	90	73	81.4	.7	94	5	71	22	19	0	76	87	8.62	-7.77	1.05	27	6	.0	0	---	---	--	---	--	0	4	27	9.1	--
Truk, Moen Is.	[illegible]	1010.2	1010.5	86	76	81.1	.4	90	24	72	19	1	0	77	86	11.97	.94	1.82	25	9	.0	0	---	---	--	---	--	0	0	31	10.0	--
Wake Island	11	1013.2	1013.6	87	78	82.2	.8	89	1+	74	22	0	0	74	76	2.11	-3.93	.51	20	1	.0	0	13.5	ENE	*25	ENE	10+	9	17	5	5.0	--
Yap (R)	53	1007.8	1009.8	89	76	82.2	.3	93	24	73	8+	15	0	77	85	9.33	-3.49	2.57	22	2	.0	0	---	---	--	---	--	0	6	25	9.0	--
WEST INDIES																																
San Juan, P.R. (U)	47	------	------	86	75	80.4	.3	92	7	71	25	4	0	--	--	6.98	1.71	2.26	13	10	.0	0	---	---	--	---	--	--	--	--	---	--
San Juan P.R.	15	1011.1	1012.8	88	72	80.1	---	91	6+	68	25	5	0	72	80	6.40	----	2.50	16	10	.0	0	7.6	ENE	24	E	5	2	21	8	6.1	54
Swan Island	31	1010.4	------	86	77	81.6	-.1	88	1+	73	3	0	0	--	--	22.68	13.43	8.88	17	2	.0	0	---	---	--	---	--	6	13	12	6.6	--
ALASKA																																
Anchorage	92	1006.1	1011.1	46	31	38.1	2.1	56	19	21	6	0	18	32	79	.93	-.94	.41	10	0	T	T	6.1	N	*23	ESE	16	8	5	18	6.9	51
Annette	110	1011.5	1015.7	54	42	47.7	.8	62	[illegible]	34	10	0	0	39	75	9.84	-4.54	3.57	14	0	.0	0	10.3	SE	*42	SE	12	7	4	20	7.0	--
Barrow	22	1011.2	1011.8	24	14	19.1	2.0	42	22	-2	19	0	31	16	87	1.11	.59	.18	22	0	7.7	4	14.8	S	40	W	13	1	2	28	9.2	--
Barter Island	39	1010.8	1012.9	26	14	20.0	---	42	8	-4	31	0	31	17	85	1.18	----	.24	18	0	10.8	13	16.0	W	*48	W	1	2	3	26	8.7	--
Bethel	10	1005.4	1006.6	42	30	36.3	4.5	57	4	18	31	0	21	32	86	1.07	-.68	.34	15	0	.1	T	10.8	NE	*30	NE	31	0	7	24	8.7	--
Cold Bay	90	999.0	1002.6	49	38	43.3	2.8	55	3+	28	25	0	8	40	85	4.54	.16	1.03	15	0	T	0	17.0	SSE	*52	ESE	3	4	4	23	7.9	--
Cordova	40	1009.8	1011.7	51	34	42.6	1.8	59	22	23	3	0	15	35	80	11.97	-3.59	4.68	16	0	.0	0	5.8	E	*29	ESE	16	7	7	17	7.0	--
Fairbanks	436	995.6	1013.0	37	21	29.2	1.7	50	16	-5	31	0	30	25	85	.74	-.18	.21	10	0	8.5	4	4.0	N	*20	W	30	3	11	17	7.6	--
Juneau	15	1014.6	1015.5	50	34	41.9	.0	56	12	23	23	0	15	35	80	3.94	-4.53	1.25	15	0	.0	0	6.6	ESE	29	E	24	9	3	19	6.9	40
King Salmon	44	1004.7	1006.5	49	34	41.6	5.8	59	4	16	12+	0	13	37	82	2.27	-.25	.52	17	0	.0	0	10.7	E	*43	E	27	3	4	24	8.4	--
Kotzebue	10	1010.5	1011.0	32	23	27.1	1.6	45	5	-1	31	0	24	24	85	1.28	.70	.28	15	0	12.0	7	13.0	ESE	*35	E	21	3	6	22	8.0	--
McGrath	334	998.0	1011.0	38	24	30.9	3.3	53	5	4	31	0	25	26	84	1.43	-.24	.44	16	0	4.7	4	4.1	N	*18	S	1+	3	4	24	8.4	--
Nome	13	1008.8	1009.1	37	27	31.8	1.8	48	4+	10	30	0	20	29	86	3.36	1.66	2.28	13	0	2.6	2	9.1	NE	*27	NNE	28	4	2	25	8.2	23
St. Paul Island	22	1002.0	1003.1	44	37	40.3	1.2	48	8	27	1+	0	5	38	87	4.67	1.55	1.35	22	0	.0	0	---	---	--	---	--	1	3	27	8.8	--
Yakutat	28	1012.5	1013.7	51	36	43.6	1.9	56	5+	25	2+	0	12	39	86	14.39	-5.54	2.41	18	0	.0	0	8.1	E	*43	SE	28	8	2	21	7.3	--

Data from airport unless otherwise specified. U indicates Urban, R indicates Rural, sites.
* Data entered in column "Fastest Mile" is the fastest mile observed. This station is not equipped with automatic recording wind instrument.
+ And also on a later date or dates.
a Maximum hourly average ‡ Peak gust
# Number of days maximum 70° or above for Alaskan stations.
ø Station pressures apply to elevations shown in Table 10b of the annual issue of this publication.

HEATING DEGREE DAYS

(Base 65°F.)

OCTOBER 1957

State and station	Current season: This month	Current season: Period July through this month	Normals July through this month
ALABAMA			
Birmingham	217	241	136
Mobile	108	115	28
Montgomery	133	150	69
ARIZONA			
Flagstaff	603	948	956
Phoenix (U)	19	19	13
Phoenix	12	12	22
Prescott	316	333	295
Tucson	41	41	24
Winslow	269	275	294
Yuma	0	0	0
ARKANSAS			
Ft. Smith	194	197	140
Little Rock	164	164	120
Texarkana	132	132	69
CALIFORNIA			
Bakersfield	45	45	41
Bishop	337	349	308
Blue Canyon	541	776	551
Burbank	48	48	70
Eureka (U)	267	588	1114
Fresno	79	79	86
Los Angeles (U)	16	16	58
Los Angeles	16	16	196
Mt. Shasta (R)	571	816	682
Oakland	97	153	394
Red Bluff	149	159	59
Sacramento (U)	102	105	92
Sacramento	120	123	120
Sandberg (R)	404	472	237
San Diego	8	8	94
San Francisco (U)	81	464	604
San Francisco	110	251	555
San Jose	70	77	141
Santa Maria	137	335	460
COLORADO			
Alamosa	655	1087	1142
Colorado Springs	423	600	575
Denver	420	561	561
Grand Junction	340	406	369
Pueblo	324	405	457
CONNECTICUT			
Bridgeport	338	417	400
Hartford	421	571	499
New Haven	377	476	474
DELAWARE			
Wilmington	359	424	329
DIST. OF COLUMBIA			
Washington (U)	305	348	263
Washington	292	332	274
FLORIDA			
Apalachicola (U)	60	60	17
Daytona Beach	31	31	0
Fort Myers	14	14	0
Jacksonville	50	50	16
Key West (U)	0	0	0
Miami (U)	5	5	0
Miami	1	1	0
Miami Beach	0	0	0
Orlando	23	23	0
Pensacola (U)	90	92	18
Tallahassee	80	80	31
Tampa	25	25	0
West Palm Beach	3	3	0
GEORGIA			
Athens	200	240	105
Atlanta	207	243	118
Augusta	168	187	59
Columbus	132	149	78
Macon	129	151	63
Rome	239	258	148
Savannah	107	110	38
IDAHO			
Boise	470	555	524
Lewiston	441	492	539
Pocatello	538	717	670
ILLINOIS			
Cairo (U)	226	233	189
Chicago	397	486	440
Chicago University	396	490	
Moline	467	605	467
Peoria	408	478	436
Springfield	392	464	404
INDIANA			
Evansville	333	361	274
Ft. Wayne	467	612	501
Indianapolis	415	507	385
South Bend	469	630	500
IOWA			
Burlington	407	504	419
Des Moines	449	564	471
Dubuque	510	709	629
Keokuk (U)	340	411	
Sioux City	450	584	558
KANSAS			
Concordia (U)	340	394	332
Dodge City	336	391	302
Goodland	454	596	508
Topeka (U)	318	354	284
Topeka	355	410	338
Wichita	321	357	251
KENTUCKY			
Lexington	370	409	315
Louisville	316	338	283
Pikeville (U)	288	313	
LOUISIANA			
Baton Rouge	93	94	27
Lake Charles	82	82	22
New Orleans (U)	63	69	5
New Orleans	72	77	7
Shreveport	115	115	53
MAINE			
Caribou	592	1169	1282
Greenville (U)	595	1114	
Portland	468	761	785
MARYLAND			
Baltimore (U)	233	266	236
Baltimore	358	416	328
Frederick	418	507	323
MASSACHUSETTS			
Blue Hill Obs. (R)	444	577	
Boston	317	381	399
Nantucket	354	464	539
Pittsfield	548	900	844
MICHIGAN			
Alpena (U)	565	928	880
Detroit	432	569	485
Detroit (Willow Run)	443	573	499
East Lansing (U)	468	633	
Escanaba (U)	561	953	959
Grand Rapids	511	727	649
Marquette (U)	516	926	935
Muskegon	508	734	688
S. Ste. Marie	590	1119	1172
MINNESOTA			
Duluth (U)	649	1134	1048
Duluth	669	1155	1096
Internat. Falls	663	1235	1260
Minneapolis	500	697	641
Rochester	536	763	743
St. Cloud	586	888	880
MISSISSIPPI			
Jackson	148	165	69
Meridian	149	171	80
Vicksburg (U)	137	149	51
MISSOURI			
Columbia	321	368	330
Kansas City	302	331	284
St. Joseph	365	419	319
St. Louis (U)	281	298	240
St. Louis	310	340	278
Springfield	310	351	318
MONTANA			
Billings	623	839	719
Glasgow	702	973	862
Great Falls	750	1023	871
Havre (U)	753	995	892
Helena	738	1066	1039
Kalispell	744	1191	1095
Miles City	586	784	729
Missoula	699	961	994
NEBRASKA			
Grand Island	418	550	459
Lincoln (U)	386	462	396
Norfolk	461	612	561
North Platte	482	664	563
Omaha	404	495	424
Scottsbluff	469	662	593
Valentine	511	704	627
NEVADA			
Elko	644	906	809
Ely	659	956	855
Las Vegas	89	89	61
Reno	556	718	696
Tonopah	488	582	523
Winnemucca	604	797	705
NEW HAMPSHIRE			
Concord	482	733	787
Mt. Washington Obs.	1054	2961	
NEW JERSEY			
Atlantic City (U)	258	299	259
Newark	289	343	348
Trenton (U)	311	371	340
NEW MEXICO			
Albuquerque	269	272	228
Clayton	387	472	386
Roswell	222	232	164
NEW YORK			
Albany	450	635	606
Binghamton	552	828	789
Buffalo	456	635	601
New York (U)	268	315	302
New York	247	287	278
Rochester	477	701	616
Schenectady	425	561	
Syracuse	457	636	542
NORTH CAROLINA			
Asheville (U)	398	458	312
Cape Hatteras (R)	108	109	63
Charlotte	229	266	154
Greensboro	324	377	231
Raleigh	295	334	165
Wilmington	156	160	73
Winston-Salem	290	345	210
NORTH DAKOTA			
Bismarck	605	913	891
Devils Lake (U)	655	1066	1038
Fargo	568	877	867
Grand Forks	615	986	
Pembina	567	898	
Williston (U)	668	962	937
OHIO			
Akron	491	647	478
Cincinnati (U)	291	321	264
Cincinnati	361	409	378
Cleveland	403	506	425
Columbus	413	486	414
Dayton	410	487	403
Sandusky (U)	409	505	393
Toledo	471	625	501
Youngstown	486	665	457
OKLAHOMA			
Oklahoma City	263	280	168
Tulsa	225	230	170
OREGON			
Astoria	359	785	733
Burns (U)	597	792	818
Eugene	382	533	592
Meacham	683	1173	1089
Medford	405	467	403
Pendleton	483	548	457
Portland (U)	295	332	392
Portland	370	475	482
Roseburg	354	475	
Salem	359	490	483
Sexton Summit (R)	584	1045	782
PENNSYLVANIA			
Allentown	410	511	464
Harrisburg	376	452	377
Philadelphia (U)	256	296	252
Philadelphia	335	399	316
Pittsburgh (U)	394	458	354
Pittsburgh	469	584	491
Reading (U)	338	402	347
Scranton	479	666	522
Williamsport	424	544	494
RHODE ISLAND			
Block Island	316	400	445
Providence	368	483	514
SOUTH CAROLINA			
Charleston (U)	90	92	34
Charleston	130	135	52
Columbia	160	180	82
Florence	156	172	94
Greenville	234	277	141
Spartanburg	242	282	143
SOUTH DAKOTA			
Huron	501	709	647
Pierre	498	679	
Rapid City	553	764	749
Sioux Falls	509	711	664
TENNESSEE			
Bristol	351	396	297
Chattanooga	269	288	193
Knoxville	264	287	212
Memphis	191	197	143
Nashville	270	280	176
TEXAS			
Abilene	141	147	103
Amarillo	303	348	277
Austin	98	98	30
Brownsville	18	18	0
Corpus Christi	31	31	0
Dallas	127	127	53
Del Rio (U)	57	57	
El Paso	127	131	70
Ft. Worth	144	144	58
Galveston (U)	49	49	0
Galveston	52	52	0
Houston (U)	71	71	0
Houston	71	71	7
Laredo	33	33	0
Lubbock	228	247	196
Midland	155	157	
TEXAS (Cont'd.)			
Port Arthur	83	83	20
San Angelo	138	138	72
San Antonio	71	71	25
Victoria	63	63	0
Waco	113	113	44
Wichita Falls	190	194	120
UTAH			
Milford	471	607	576
Salt Lake City	401	503	469
VERMONT			
Burlington	503	769	759
VIRGINIA			
Lynchburg	355	426	285
Norfolk	214	223	161
Richmond	317	367	243
Roanoke	349	419	283
WASHINGTON			
Olympia	438	716	815
Seattle (U)	336	435	557
Seattle-Tacoma	434	698	749
Spokane	612	786	758
Stampede Pass (R)	778	1772	1628
Tatoosh Island (R)	378	1083	1304
Walla Walla (U)	446	488	401
Yakima	522	675	603
WEST VIRGINIA			
Charleston	385	428	310
Elkins	554	715	574
Huntington (U)	354	384	245
Parkersburg (U)	389	440	328
WISCONSIN			
Green Bay	586	913	788
La Crosse	509	708	630
Madison (U)	502	692	596
Madison	535	750	653
Milwaukee	503	712	614
WYOMING			
Casper	570	856	845
Cheyenne	553	868	890
Lander	576	873	906
Sheridan	637	902	885
ALASKA			
Anchorage	823	1665	1939
Annette	528	1201	1397
Barrow	1414	3982	4126
Barter Island	1388	3756	
Bethel	884	2029	2327
Cold Bay	663	1973	
Cordova	686	1732	1983
Fairbanks	1102	2064	2220
Juneau	709	1593	1850
King Salmon	720	1712	
Kotzebue	1165	2611	2775
McGrath	1050	2097	2352
Nome	1022	2710	2745
St. Paul	757	2341	2513
Yakutat	658	1596	1979

Data from airport unless otherwise specified.
U indicates Urban, R indicates Rural, sites.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TEXAS Dickinson (near), Galveston County	1	9:20 a.m.			0	0			Funnel aloft	
OREGON Hermiston-Umatilla area, Umatilla County	1-2	Afternoon, 1st early morning 2d	12-15	*6-8			3	2	Rain	Heavy rains produced new 24-hour records of 3.36 inches at Hermiston and 3.13 at Umatilla --nearly one-half of annual total for these locations. A number of basements flooded in both towns and some erosion occurred on surrounding farmland, but overall damage not great. Storm moved eastward.
WASHINGTON Kennewick-Pasco area, Benton and Franklin Counties	1-2					2		1	Rain and electrical	Runoff from precipitation amounts ranging between 1 and 2 inches resulted in flooding of a few buildings in low areas. 2 persons injured by lightning.
ALABAMA Decatur, Morgan County	3	Afternoon						1	Electrical	Lightning hit powerline, knocking out electric power for large portion of southeastern Decatur; oil circuit breaker badly damaged so that power out for 45 minutes.
TENNESSEE Somerville, Fayette County	3	4:15 p.m.				1		1	Electrical	Man received painful burns on arms and legs when lightning struck his home. Small amount of property damage done.
NORTH CAROLINA Dare and Currituck Counties	5-6	Noon, 5th - 8 a.m., 6th					4		Wind and tides	Low, moving northward a few miles offshore, caused strong winds and high tides, both on ocean front and on mainland side of sounds. Winds not over 50 m.p.h., and did little direct damage. Tides rose sufficiently to cause overflow across low portions of banks, interrupting highway traffic, causing beach erosion, and disrupting telephone communication. Dredge operating in Oregon Inlet damaged. Water rose into some store buildings on mainland waterfront, damaging merchandise.
VIRGINIA Tidewater Counties and Eastern Shore	5-6				1				Wind, rain, and tides	Extratropical coastal storm with peak gusts of 60 to 70 m.p.h., moved northward along coast, with center passing just east of Virginia Capes; it was accompanied by heavy rains and gales extending westward throughout central Virginia. Greatest damage in coastal areas where heavy seas and high tides buffetted coastal installations, grounding vessels, disrupting transportation, etc. Wind damage relatively minor in comparison to flooding and heavy seas, but falling trees disrupted power and communications as far inland as Richmond. All types of traffic disrupted and weather caused numerous vehicular accidents. 1 life lost by drowning and numerous injuries reported. Minor flooding caused both from heavy rains and high tides. Damage estimate is unknown, but said to have exceeded several hundred thousands of dollars.
MARYLAND and DELAWARE	6	During day							Wind, rain, and high tides	Gale winds and heavy rains associated with "northeaster" which moved up coast, over Delmar Peninsula and then westward through Maryland, churned up Chesapeake Bay and adjacent ocean area and caused much-above-normal tides, rough seas, flooding of coastal roads, and considerable wind damage to property. Small craft in some yacht basins on Chesapeake Bay ripped from their moorings. Shipping halted on Chesapeake and Delaware Canal. Sailings of ships from Port of Baltimore cancelled or delayed. One 62-foot sailboat grounded near Indian River Inlet, Delaware. Tides on coast reported near record heights at some points. Power failures widespread in Maryland and Delaware as trees downed over powerlines. Telephone service likewise knocked out in places by falling trees and strong winds. In Baltimore City, major damage occurred to trees and utility lines. At Friendship International Airport, gust of wind reached 75 m.p.h., at 2:15 p.m.
ARIZONA Benson (25 miles north of), Cochise County	6	Evening					4	1	Flash flood	Flash flood waters destroyed mining equipment in arroyo.
NEW JERSEY Coastal area	6						5		Wind and tides	1 yacht, 1 yawl, and other small craft sank during coastal storm which moved northward along coast. Some minor flooding occurred at times of a.m., and p.m., high tides. Principal losses due to wind.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

OCTOBER 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
	6									Minor storms also reported st Sioux Center and Sioux Rapids, Iowa; at Estelline and near Isabel, S. Dak.; and near Abernathy, Tex.
PENNSYLVANIA Eastern half	6-7	4 p.m., 6th-4 p.m., 7th					4	3	Wind and electrical	Extratropical storm brought 50-m.p.h., winds to eastern Pennsylvania which did light but extensive damage to trees, powerlines, etc. Many boats tied up on Susquehanna River damaged by high winds, slamming them into piers. Lightning fired barn in Gettysburg area, resulting in $20,000 fire. High winds brought down many unpicked apples in York-Adams County area. Storm moved northward.
CONNECTICUT and RHODE ISLAND, entire area	6-7	Late p.m., 6th - early a.m., 7th				12	3	1	Rain, electrical and wind	Moderately heavy rains accompanied by some lightning as coastal storm affected area. 4 homes struck by lightning in East Hartford and southwest of Providence, with blown-out TV set and minor structural and fire damage resulting. Coastal road flooded in southwestern Connecticut and grounded freighter off Newport, R. I., battered rough seas as winds up to 35 m.p.h., caused tides 1 to 2 feet above normal. Traffic accidents blamed on slippery highways caused minor injuries to 12 persons. Benefits of precipitation to crops and critically low reservoirs and streams far exceeded storm damage. Storm moved east-northeastward.
MASSACHUSETTS	6-7				1	1	3	1	Wind and rain	Winds felled tree branches, breaking a few powerlines, during night in Plymouth County in Brockton area. Automobile accident at Chicopee, attributed to rain, caused death and injury.
OKLAHOMA Russell, Greer County	7	4:30 p.m.	6	*1					Hail, rain, and electrical	Hail size of golf balls caused up to 75 percent damage to cotton. Heavy rain and lightning accompanied storm. Storm moved northeastward.
TEXAS Sagerton (near), Haskell County	7	6:30 p.m. -midnight	25	*1		20	°4	C	Hail and wind	Hail fell in checkerboard pattern. TV antennas blown down and barns and roofs destroyed by wind. Hail damage to 50 percent of cotton crops. Damage mostly to cotton and feed. Truckload of Mexican cotton pickers bruised by hail as large as baseballs. Storm moved southward and eastward.
OKLAHOMA Altus, Jackson County	7	7 p.m.						3	Electrical and rain	Lightning struck 2 homes, causing considerable structural damage. Rains caused minor damage to open cotton.
TEXAS Seymour (west of), Baylor County	7	7:15 p.m.	Short	Narrow	0	0	3		Tornado	Destroyed garage and storage room, damaged home and several roofs and barns, uprooted trees and damaged others. Tornado moved southeastward.
TEXAS Baylor and Knox Counties	7	7:30-11:30 p.m.	15	*1		2	°4	C	Hail, wind, and rain	1/2 mile of railroad ballast damaged between Goree and Munday, considerable cotton and grain sorghum crops damaged in that area. Heavy rain and strong wind accompanied storm. 2 workmen injured by large hail. Storm moved northeastward.
OKLAHOMA Duncan, Stephens County	7	9:40 p.m.						1	Electrical	Lightning struck TV antenna at Duncan, resulting in damage to rotor, TV set, and wall paper in room. Additional lightning strikes noted between Duncan and Comanche.
TEXAS Hamlin and Plainview areas, Jones County	7	11 p.m.	20	*7				4	Hail	From about 5 miles east of Hamlin to south of Tuxedo, and again near Plainview, hail damaged cotton and feed crops 35 to 50 percent. Storm moved northeastward.
	7									Minor storm also reported near Throckmorton, Tex.
COLORADO Arkansas Valley	7-8	11 p.m., 7th-early a.m., 8th		*2			4		Severe thunderstorm and heavy rain	Heavy rain beginning shortly after 11 p.m., of 7th and lasting about 2 hours did considerable damage to Pueblo streets and homes. Rainfall heaviest east of city, area in which Pueblo Weather Bureau station located. 3.75 inches of rain fell in 2 hours, an amount exceeding all-time record total for entire month of October. Heavy rain shortly after midnight fell at points along Arkansas River. Unofficial reports in La Junta area of 1-1/2 inches to over 4 inches of rain in some localities which caused damage to crops, powerlines, roads, bridges, and other property.
FLORIDA Tamiami Airport, Dade County	8	12:30 p.m.			0	0	3		Tornado, funnels aloft, and waterspouts	Several additional funnel clouds and waterspouts also sighted in Dade County area during afternoon.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

OCTOBER 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TEXAS Lamesa (near), Dawson County	8	3:20 p.m.			1				Electrical	Lightning killed workman riding with others in back of truck, about 2 miles north of Punkin Center. Storm moved northeastward.
WASHINGTON Columbia Gorge	8								Wind	Strong wind in Columbia Gorge resulted in numerous power outages and some property damage by falling trees.
	8									Minor storms also reported at Baird and Big Lake, Tex.
TEXAS Pearsall, Frio County	9	7:30 a.m.	20	*20			4		Rain	Roof of retail store caved in because of heavy rain. 4 inches of rain reported between 8 and 9 a.m. Heavy erosion damage. Storm moved eastward.
NEW MEXICO Rincon Valley in vicinity of Hatch, Dona Ana County	9	4 p.m.	14	*2			1	5	Hail	Hailstones averaged 1/2 inch in diameter. Storm moved northeastward.
CALIFORNIA Entire State	9-11						4		Rain, wind, snow, hail, and electrical	Slow moving cold front advancing southeastward across California caused locally heavy rains and strong winds. Damage other than to crops minor although widespread. Damage to crops, total loss of some unharvested grapes and prunes in Sonoma and Napa Counties; severe loss to dry beans in Glenn and Sutter Counties, and to flax in San Mateo County; downgrading of walnuts and cotton; increased harvesting costs of all remaining crops due to wet, muddy fields. Coffer Dam washed out at Trinity River Project in Trinity County, street intersections were flooded in Marin and Santa Clara Counties; some freeway constructions were washed out at Palo Alto; wax paper factory at Burlingame flooded, causing heavy damage to paper stock. In Bakersfield, heavy rains flooded several intersections. In southern California, storm caused some flooding and numerous power failures. In San Bernardino, sudden deluge on 11th overtaxed storm drains and caused some damage to a few homes and 1 automobile. State Route 39 in San Gabriel Canyon blocked by rock and mud slide. Locally strong winds blew shingles from roof in La Habra and tipped over trash cans. Strong winds blew branches from trees in Whittier, and winds reached 40 m.p.h., at Daggett and Inyokern in desert region. Snow fell in mountains above 4,000 feet, and heavy thunder with hail occurred in Van Nuys area.
NEW MEXICO Rio Grande Valley from 15 miles north of Hatch to 10 miles south, Dona Ana County	11	4 p.m.					1	5	Hail	Spotted damage, with hailstones reported up to 1-1/2 inch in diameter in Tonuco area.
NEW MEXICO Las Cruces area, Dona Ana County	11	6:30 p.m.	15	*4			1	5	Hail and rain	Part of crop damage due to flooding of fields. Storm moved westward.
TEXAS El Paso and Hudspeth Counties	11		40					5	Hail and rain	Spotted but heavy hail between Fabens and Esperanza, accompanied by heavy rain, caused crop damage.
NEW MEXICO Silver City, Grant County	12	4 a.m.	8	50	0	0	5	1	Tornado	Demolished hanger and 6 airplanes at airport. Slight damage to farm buildings. Tornado moved east-northeastward.
NEW MEXICO Alamogordo Otero County	12	P.m.					5	1	Wind	Damage to planes and installations at airport, no evidence of tornado.
	12									Minor storms also reported in Tucson area, Ariz.; at Stanton, Iowa.
TEXAS Moran, Shackelford County	13	5 a.m.			0	0			Tornado (suspected)	
NEW MEXICO Luna County (northern portion)	13	3 p.m.					1	4	Hail and rain	About half of damage due to heavy rains. Storm moved northeastward.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
OKLAHOMA Gate area, Beaver County	13	5:20 p.m.			0	0			Tornado	Ground Observer Corps received report of tornado just north of Gate. Funnel observed from Buffalo, Harper County, silhouetted against bright band of evening sky. Although funnel seemed to reach ground, there were no reports of damage.
KANSAS Wichita County	13	6:30-7 p.m.	15	*3			3	2	Wind and hail	Wind and hail damage occurred from south of Leoti to northeastern corner of County. Some hailstones 1-1/2 inches in diameter and ground covered in some places to depths of 2 inches. Milo crops and roofs suffered greatest loss. A few fields damaged 30 to 40 percent. Property and crop damages given result of wind. Storm moved northeastward.
NEW MEXICO Chaves County	13	P.m.	30	*4			5	6	Hail and wind	Wind damaged several barns; hail average size of golf balls.
COLORADO Burlington, Kit Carson County	13	Evening							Hail	Hailstorm damaged vegetation, roofs, and vehicles. Storm not as severe as spring hailstorms, but hailstones to depth of 2 inches.
TEXAS Taylor, Williamson County	14	12:53 a.m.					4		Electrical and rain	Lightning caused fire which heavily damaged home. 2 rooms and contents destroyed. Heavy rain and lightning excessive.
TEXAS Victoria (10 miles southeast of), Victoria County	14	9:25 a.m.			0	0			Funnel aloft	
ARIZONA Picacho, Pinal County	14	All day					4		Flood	Flood waters raced through labor camp, flooding about 50 cabins and a dozen homes. Cotton fields flooded (see Phoenix storm of 31st).
TEXAS Providence City, Wharton County	14	12:15 p.m.			0	0			Funnel aloft	Observed moving northeastward.
TEXAS Waller and Brookshire (near), Waller County	14	3 p.m.			0	0	°4	C	Tornadoes and rain	3 separate tornadoes, accompanied by heavy rain, ripped drive-in theater screen, damaged home, demolished church, and uprooted trees and graveyard monuments. Crop damage to peanuts and rice. Severely damaged huge sheetmetal dairy barn, feed contents destroyed. Other buildings damaged between Waller and Hempstead, roofs torn off, brans destroyed, and feed ruined by rain. Storm moved northeastward.
TEXAS Dayton (9 miles north of), Liberty County	14	5:45 p.m.			0	3	4		Tornado	2 farm homes 1/4 mile apart destroyed with all contents. One hurled 150 feet against huge oak tree. Several barns and outbuildings destroyed, other homes damaged, trees uprooted, power- and phone lines downed.
TEXAS Lufkin, Angelina County	14	6:23 p.m.			0	0			Funnel aloft	Observed moving northward.
TEXAS Lolita, Jackson County	14						4		Electrical and rain	Lightning ignited 3 oil tanks, destroyed them and contents. Heavy rain accompanied storm.
	14									Minor storm also reported near Kirbyville, Tex.
TEXAS Bryan (near), Brazos County	15	2:25 p.m.			0	0			Funnel aloft	
LOUISIANA Leonville, Cypress Point, to Mix, St. Landry and Pointe Coupee Parishes	15	10-11 p.m.	45	100	1	29	4	2	Tornado	Tornado struck near Leonville passed through Cypress Grove Community, near Opelousas, thence through thinly settled areas to town of Mix in Pointe Coupee Parish; about 15 homes destroyed, many damaged and communications lines severed; all casualties were living in insubstantial homes. Tornado moved north-northeastward.
	15									Minor storms also reported at Clinton, La.; near Wimberley, Tex.
MISSISSIPPI Vicksburg (10 miles southeast to 10 miles northeast of), Warren County	15-16	11:45 p.m. -12:15 a.m.	20	50-100	0	0	4	2	Tornado	Developed about 10 miles southeast of Vicksburg and moved northward for 20 miles touching down here and there; roar heard as tornado passed over or nearby.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
	15-16									Minor storm also reported at Amite, La.
LOUISIANA West Baton Rouge and Livingston Parishes	16	12:45-2 a.m.	50		0	0	4	2	Tornado	Apparently tornado developed 5 miles west of Mississippi River bridge where several homes destroyed, then lifted over Baton Rouge and touched down at several places as it moved eastward to Walker, Livingston Parish, where property again damaged. This is an unusual direction of movement, especially considering others same night, but based on radar observations at Baton Rouge.
LOUISIANA Kentwood (1 mile north of), Tangipahoa Parish	16	1 a.m.	Short	50	0	0	3	2	Tornado	Tornado developed in severe thunderstorm, moved northeastward and touched ground briefly, destroying several buildings but leaving others nearby untouched.
LOUISIANA Gretna, Jefferson Parish	16	4 a.m.			0	0	3	1	Wind and tornado (suspected)	Affected only small area, but damaged TV antennas indicated circulation.
FLORIDA Pace, Santa Rosa County	16	8 a.m.			0	0			Wind and tornado (suspected)	Several houses unroofed and other residences damaged by high winds. Tornadic action suspected.
LOUISIANA West Baton Rouge Parish	16	4:30 p.m.			0	0			Funnels aloft	2 funnels aloft observed west-northwest of Baton Rouge.
TENNESSEE Ashland City, Cheatham County	16	8 p.m.						1	Electrical and rain	Lightning struck chimney of high school, causing considerable damage due to brick falling on roof and subsequent water damage.
	16									Minor storm also reported near Moss Point, Miss.
	17									Minor storms reported at Mobile, Ala.; and at Brownsville, Tex.
COLORADO Southwestern portion	18-19	P.m., 18th - a.m., 19th							Electrical, hail, rain, and snow	On the 18th and 19th, lightning struck trees and power- and communication lines over wide area from Durango to Montrose. Shed and 30 tons of hay struck by lightning and burned on Big Stick Mesa. Some hail fell at Durango. Up to 8 inches of snow fell in higher mountains of San Juan Basin.
NEW MEXICO Corrales (8 miles northwest of)	19	3:30 p.m.			0	0			Tornado	Over open country, on ground only brief time.
NEW MEXICO Rio Arriba, Santa Fe, and Sandoval Counties	19	P.m.							Rain	Streets and roads damaged. Some homes flooded. Mud and rocks from flooding arroyos blocked highways.
NEW MEXICO Cabezon (20 miles south of), Sandoval County	20	1:30 p.m.			0	0			Tornado	Over open country, on ground about 5 minutes.
FLORIDA Ft. Pierce, St. Lucie County	20				0	0			Waterspout	
CALIFORNIA Southern and coastal areas south of Santa Maria	20-21				0	0	4		Rain, waterspouts, hail, tornado, electrical, and snow	Low moving southward over eastern California and western Nevada caused widespread thunderstorms. In Santa Maria area, severe thunderstorm caused heavy rain, 1.13 inches in 2 hours, flooding many streets. Waterspout reported off Point Mugu. In Los Angeles area, near cloud bursts flooded San Fernando Valley intersections, 18 inches of hail piled up at intersection of Malabar and Indiana Streets in East Los Angeles, and baby "twister" reported hitting near Norwalk with minor damage. 2 waterspouts reported off coast near Oceanside. Lightning struck television antenna on roof of home in Montebello, slashing 6-foot hole in roof, and showering plaster on occupants. Lightning also struck powerplant in San Francisquito Canyon, and transformer in San Bernardino. Strong winds damaged an aircraft at Yucaipa. Snow up to 6 inches deep fell in mountains. At San Bernardino, heavy downpour flooded several street intersections and huge mud slide occurred near Riverside.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
UTAH Southern portion	20-22								Rain, snow, and hail	Heavy rains washed out numerous roads in southern Utah, caused flooding of homes in St. George on 21st and produced flooding on Buckskin and Paria Rivers. Up to 18 inches of snow in Mountains stranded many hunters, especially in Kanab-Cedar City-St. George area. Hail up to 1-3/4 inches in diameter on 21st at Mexican Hat caused damage to trailer houses, cars, and buildings in area. Heavy hail reported at Orderville from 10:30 to 11 a.m., on 21st.
TEXAS Cleveland (8 miles southeast of), Liberty County	22	6:30 a.m.	4	100	0	1	4		Tornado	Barn and outhouses destroyed; 6 houses damaged, 2 severely. Powerlines damaged. Woman hospitalized.
TEXAS Muldoon (near), Fayette County	22	8 a.m.			0	0			Tornado (suspected)	
SOUTH DAKOTA Tyndall, BonHomme County	22	7:30 p.m.				3	3		Fog	Automobile accident attributed to fog.
TEXAS Abilene (5 miles north of), Taylor County	22	7:30 p.m.			0	0			Funnel aloft, rain, and hail	Occurred during heavy rain and hailstorm.
TEXAS Lake Fort Phantom Hill, Jones County	22	7:50 p.m.			0	0			Tornado (suspected)	
TEXAS Gorman (near), Eastland County	22	9:10 p.m.			0	0			Funnel aloft	
WASHINGTON Entire State	22								Rain, snow, and wind	Rather low temperatures accompanied by unusually heavy snowfall for this early in the fall occurred in northern half of eastern Washington. Freezing rain produced sheet of ice on highways. Snow depths ranged from 1 to 4 inches on lower elevations and 10 to 15 inches on higher elevations. Minimum temperatures dropped to middle 20's. Wind and rain west of Cascades caused numerous power outages.
	22									Minor storms also reported at Carenco, La.; at Purcell, Okla.; and at Muldoon, Tex.
IDAHO Northern counties	22-23								Snow and wind	Near-blizzard conditions moved into extreme northern part of State on 22d, progressing only about as far south as 47th parallel with maximum temperatures in area on 23d ranging from 28° to 40°. While no major damage reported, snow, which reached depth of 16 inches at Mullen Pass and as much as 6 inches at lower-elevation valley stations, caused much delay in traffic, resulted in closing of many schools, and generally disrupted normal routine of communities in affected area. Winds, clocked at 32 to 38 m.p.h., at Coeur d'Alene Air Terminal, produced drifts which added to troubles at many points.
TEXAS Corsicana (west of), Navarro County	23	Midnight-early a.m.			0	0	3		Wind, rain, and tornado (suspected)	Struck on 3 farms, damaged outbuildings and equipment, knocked out powerlines. 0.70 inch of rain in a few minutes fell on 1 farm. Storm moved eastward.
TEXAS Beaumont area, Jefferson County	23	7:45 a.m.			0	0	3		Wind and tornado (suspected)	Damaged roofs and plate-glass windows; moved warehouse building out of line, damaged its doors. Storm moved eastward.
LOUISIANA Kolin to DeVille, Rapides Parish	23	8:15 a.m.	18	100	1	1	4	2	Tornado	Tornado moving north-northeastward destroyed or unroofed several homes, with widespread minor damage to buildings, powerlines, and trees.
TEXAS Orange (near), Orange County	23	9 a.m.			0	0	2		Wind, tornado (suspected), and rain	2 large mobile drilling platforms and 1 drilling barge torn loose from moorings; farmhouse damaged. Accompanying heavy rain with excessive wind for about 5 minutes. Storm moved eastward.

See footnotes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
KANSAS Paola (near), Miami County	23	11:15 a.m.							Electrical	Rural school house struck by lightning. Weatherboarding torn from sides, heating equipment damaged, and interior so badly smoked that painting necessary. Teacher and 10 children escaped uninjured, except for scratches and bruises.
LOUISIANA Napoleonville area, Assumption Parish	23	2:15 p.m.	10	100	0	0	4	2	Tornado	Tornado moving eastward hit first Elm Hall plantation then in Napoleonville and Unice Breaux; many homes unroofed, some destroyed with many small outbuildings destroyed.
FLORIDA Oriole Beach, Santa Rosa County	23	Evening							Wind, electrical, and rain	Winds estimated at 65 to 70 m.p.h., accompanying violent thunderstorm and heavy rain disrupted electrical service to numerous residences. Property damages light.
TEXAS Kirbyville (near), Jasper County	23				2	12			Rain	Bus driver and milk truck driver killed when their vehicles collided on rainswept highway. 12 others injured. Accident attributed to storm.
	23									Minor storm also reported in Bentonia area, Miss.
	24									Minor storm reported at Ogden Dunes, Ind.
SOUTH CAROLINA Mt. Pleasant, Charleston County	25	4:05 p.m.			0	0			Funnel aloft	
ARIZONA Yuma, Yuma County	27	All day					3		Rain	Heavy rain caused minor property damage, but considerable damage to cotton (see Phoenix storm of 31st).
SOUTH DAKOTA Hot Springs (southeast of), Fall River County	28	12:15 p.m.					4		Wind	Gusty winds caused girders to fall from bridge under construction across Cheyenne River.
CALIFORNIA Southeastern desert and Imperial Valley	28-29								Rain	Low pressure trough extending into southeastern California from Gulf of California caused heavy rains. Water up to 3 feet deep covered road at several places on Highway 80, causing many schools to close in Imperial Valley.
WASHINGTON Entire State	30	Early a.m.							Wind	Falling tree limbs caused some power outages and property damage in various localities of State.
ARIZONA Phoenix (Salt River Valley), Maricopa County	31	All day					3		Rain	Heavy rain caused minor property damage, but considerable damage to cotton. Rain damage to cotton for individual storms during month unknown, but Arizona Cotton Growers Association estimates total damage to State crop based on preliminary figures in excess of $6,000,000.
ARIZONA Leupp, Coconino County	31	3:25 p.m.			0	0			Funnel aloft	Funnel cloud moved east-northeastward over sparsely populated area. Cloud visible for 1 hour and tracked by radar.
CALIFORNIA Southern portion	31				0	0			Rain and funnel aloft	Locally heavy rains in parts of Los Angeles, San Bernardino, Riverside, Imperial, San Diego, and Orange Counties. During rainstorm, funnel aloft observed to west of March Air Force Base at 12:50 p.m., lasting until 12:57 p.m., moving northeastward.

DELAYED REPORTS

September 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Killed	Injured	Property (exclusive of crops)	Crops	Character of storm	Remarks
KANSAS Marion, Marion County	20						4		Electrical	Large barn at south edge of Marion struck by lightning. Loss included barn, 5000 bales of hay, 600 bushels of oats, and some farm implements.
KANSAS Great Bend, Barton County	23	Early a.m.							Electrical	Lightning during early morning thunderstorm struck woodworking shop, resulting in several hundred dollars damage to building and contents. Fire discovered at 2:28 a.m.

* Miles instead of yards.

° Includes crop damage.
C Crop damage.
† Storm damages are placed in categories varying from 1 to 9 as follows:

Category	Damage
1	Less than $50
2	$50 to $500
3	$500 to $5,000
4	$5,000 to $50,000
5	$50,000 to $500,000
6	$500,000 to $5,000,000
7	$5,000,000 to $50,000,000
8	$50,000,000 to $500,000,000
9	$500,000,000 to $5,000,000,000.

GENERAL SUMMARY OF RIVER AND FLOOD CONDITIONS

OCTOBER 1957

Major flooding occurred in Texas in the Guadalupe River below the confluence with the San Marcos River and in the Colorado River. Light to moderate overflows occurred on other Texas streams. Flooding elsewhere over the country was light and sparse.

ATLANTIC SLOPE DRAINAGE

Stream flow and ground water levels in the Merrimack River Basin in New Hampshire and Massachusetts continued very low during October, with low marks on some river gages at near record low. Many domestic wells in the area were dry.

The minor flooding on the lower Cape Fear River in North Carolina from the 2d through the 4th was due to heavy rain from September 28 through October 1. No damages were reported.

Intermittent light to heavy rains from September 28 to October 5 caused flooding on the Savannah River at Clyo, Ga., from the 10th to the 12th and on the Ogeechee River at Dover, Ga., from the 9th to the 13th. The rainfall during that period averaged approximately 5.25 inches in the Savannah Drainage and 6.25 inches in the Ogeechee Drainage. No damage was reported.

EAST GULF OF MEXICO DRAINAGE

The flooding on the Pearl River at Bogalusa, La., from September 30 to October 4 was due to rainfall, ranging from 2.50 to 4.50 inches over the Pearl Basin. Very little damage, if any, resulted from this flooding.

A flash flood occurred at Tuscaloosa, Ala., (Black Warrior Basin) in the early morning of the 3d, due to heavy rain during the 12-hour period ending at 6 a.m., central time. The rainfall at that point totaled 3.36 inches. Twelve persons were rescued from 5 houses that were flooded by water. Water 12 inches deep was reported in some of the houses. No fatalities nor injuries were reported. The unusual feature of this heavy rainfall and flash flood was that they occurred during the month of October, the driest month of the year. During the 71-year period, 1887-1957, only October 1932, with 7.00 inches in a 24-hour period, exceeded the 3.36 inches of October 3, 1957, at Tuscaloosa, Ala.

MISSISSIPPI SYSTEM

Red Basin.--Light to moderate flooding occurred on the Sulphur River from the 15th to the 25th, due to heavy rain from the 13th to the 16th. Precipitation during that period averaged 4.83 inches, ranging from 2.42 inches at Negley to 8.86 inches at Harleton, Tex. Flood damage was small since most of the area affected was grazing land.

WEST GULF OF MEXICO DRAINAGE

Light to moderate flooding occurred on the Sabine River from the 17th to the 30th, due to heavy rain from the 13th to the 16th. Precipitation averaged 7.09 inches during the 3-day period and ranged from 4.26 inches at Greenville to 12.30 inches at Henderson. Damage was confined to the area from near Tatum to above and beyond Mineola, Tex. Damage was light.

The flooding in the Brazos and Trinity River Basins in Texas was due to excessive rains (2 to 12 inches) from the 13th to the 16th. An additional 1 to 2 inches of rain fell on the 22d and 23d, with the heaviest amount near Cameron below Belton Dam. There were two crests on the Little River with the first crest 8.8 feet above flood stage on the 15th. Flooding along the Brazos River was minor.

There were two major floods in the Colorado River Basin in Texas during October. One was in the upper watershed above Ballinger and the other in the lower section below Smithville to the Gulf. Both were due to heavy rains measuring 7 to 13 inches in 24 hours. The crest of 28 feet at Ballinger on the early morning of the 14th caused extensive damage and about 500 persons had to be temporarily evacuated from their homes. There were no injuries or loss of life. The previous flood and highest stage of record at this point was 32 feet on August 6, 1906. Downstream there was no flooding at Smithville, but torrential rains below that point caused flood crests at Wharton and Columbus. There was extensive flooding of lowlands from Columbus to the Gulf, with loss of some crops. The peak at Wharton, Tex., of 30 feet exceeded the spring floods of 1957 and was the highest at Wharton since June 1941.

The heavy rains of the 13th to the 15th over the Lavaca and Navidad Basins in Texas caused flooding over the entire length of both rivers. The crest at Ganado was 10.8 feet above flood stage and on the Lavaca at Edna, Tex., was 5.3 feet above flood stage. This same storm caused major flooding along the Gaudalupe from Gonzales, Tex., to the mouth. The rains totaled 6 to nearly 10 inches in a 72-hour period. Three crests occurred at Gonzales from these rains, but they all merged into one crest at Cuero and below. No flooding was reached on the San Antonio River, although there was considerable flash flooding on the small tributaries especially in the City of San Antonio from the heavy rainfall (4 inches) on the 21st and 22d. Thirty-five thousand to 40,000 acres of grazing land was flooded. There was some damage to houses in San Antonio and Victoria, Tex. Some roads and bridges on the smaller tributaries were also damaged.

The flooding on the Frio and Nueces Rivers in Texas between the 10th and 17th was due to heavy rain on the 9th. Rainfall averaged in excess of 3 inches over much of the Frio watershed. The heaviest rainfall was an estimated 11 inches near Reagen Wells, Tex. Rainfall amounts in excess of 6 inches were reported in the Pearsall-Batesville, Tex., area and Briscoe Ranch. Water continued to flow over the dam at Lake Corpus Christi all month, causing some delay to the construction of Wesley Seale Dam and also to state highway construction near Calallen.

Minor flooding occurred along the Rio Grande at Albuquerque, N. Mex., on the 19th and 20th, due to heavy rains above Albuquerque. Stream flow was contained well within the levees and no damage resulted.

Locally heavy rains over the Devil's River watershed caused flash rises on the Devil's River on the 14th and 15th with slightly above bankfull stages at Baker's Crossing, Tex., on the 15th. Bankfull conditions occurred again on the 16th. No damage resulted.

PACIFIC SLOPE DRAINAGE

Light to locally moderate rainfall fell over the Sacramento Basin during the first 8 days of October and between the 8th and 10th and again on the 12th and 13th caused some overflow at Tisdale Weir, Calif., into Sutter Bypass.

FLOOD STAGE DATA

(All dates in October unless otherwise specified)

River and station	Flood stage	Above flood stages -dates		Crest*	
		From–	To–	Stage	Date
ATLANTIC SLOPE DRAINAGE	Ft.			Ft.	
Cape Fear: Elizabethtown, N. C.	20	2	4	24.3	3
Savannah: Clyo, Ga.	11	10	12	11.3	11
Ogeechee: Dover, Ga.	7	9	13	7.8	11
EAST GULF OF MEXICO DRAINAGE					
Pearl: Bogalusa, La.	15	Sept. 30	4	16.1	2
MISSISSIPPI SYSTEM Red Basin					
Sulphur:					
Hagansport, Tex.	38	15	19	41.0	16
Naples, Tex.	22	21	25	24.0	23
WEST GULF OF MEXICO DRAINAGE					
Sabine:					
Quitman, Tex.	16	17	18	16.4	18
Mineola, Tex.	14	17	25	17.5	20
Gladewater, Tex.	26	25	30	28 6	27
Trinity:					
Midway, Tex.	40	16	18	40.8	17
Liberty, Tex.	24	16	30	27.85	23
Little: Cameron, Tex.	30	14 22	18 23	38.8 32.1	15 23
Brazos:					
William Harris, Res., Tex.	39	18	22	40.05	21
Colorado:					
Columbus, Tex.	24	15	16	27.25	15
Wharton, Tex.	26	16	18	30.0	17
WEST GULF OF MEXICO DRAINAGE (Cont)	Ft.			Ft.	
Navidad: Ganado, Tex.	21	15	20	30.8	18
Lavaca: Edna, Tex.	21	16	18	26.3	17
Guadalupe:					
Gonzales, Tex.	20	17 24	18 24	25.5 23.8	18 24
Cuero, Tex.	23	16	20	27.6	17
Victoria, Tex.	21	16 26	22 27	29.65 22.2	19 27
Frio:					
Derby, Tex.	6	10	12	10.3	11
Calliham, Tex.	12	10 14	12 16	24.0 18.2	11 15
Tilden, Tex.	12	10	16	18.6	15
Nueces:					
Tilden Crossing, Tex.	11	12	17	13.4	15
Calallen, Tex.	7	-- 12	4 16	8.9 7.8	1 15
Rio Grande:					
Albuquerque, N. Mex.	6	19 20	19 20	6.5 6.6	19 20
PACIFIC COAST DRAINAGE					
Sacramento:					
Tisdale Weir, Calif.	45.5	15	15	46.9	15

* Provisional

RAWINSONDE DATA

Average monthly values

OCTOBER 1957

ALBANY, N. Y.
(1009 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	86	5.3	86	287	2.3
1,000	31	160	6.8	79	306	2.9
950	31	578	6.9	69	313	6.4
900	31	1,026	4.6	67	317	8.4
850	31	1,491	2.6	64	305	8.0
800	31	1,981	1.7	53	290	9.9
750	31	2,499	.0	45	286	10.9
700	31	3,051	- 2.6	44	274	12.0
650	31	3,631	- 5.5	39	269	13.2
600	31	4,261	- 8.8		261	15.0
550	31	4,922	-12.8		262	17.3
500	31	5,651	-17.5		264	19.8
450	31	6,426	-22.9		267	22.2
400	31	7,287	-29.5		267	24.1
350	31	8,227	-36.1		263	28.6
300	31	9,281	-43.6		258	32.8
250	31	10,487	-51.1		256	39.2
200	31	11,917	-56.5		257	40.2
175	31	12,762	-57.5		262	38.9
150	31	13,734	-58.5		259	35.0
125	31	14,878	-59.7		261	31.5
100	31	16,270	-60.4		260	26.6
80	29	17,666	-59.3		258	20.8
60	28	19,477	-58.2		262	15.9
50	26	20,626	-55.9		260	13.2
40	26	22,051	-54.5		262	13.8
30	24	23,904	-51.5		259	20.8
25	17	25,097	-50.0		266	21.6
20						
15						

ALBUQUERQUE, N. MEX
(839 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,619	9.7	71	88	1.9
1,000	31	136				
950	31	570				
900	31	1,031				
850	31	1,512				
800	31	2,017	9.4	63	204	3.7
750	31	2,546	6.0	65	220	7.2
700	31	3,113	2.5	64	235	8.5
650	31	3,704	- 1.3	61	246	11.7
600	31	4,343	- 5.3	55	251	11.7
550	31	5,015	- 9.2	45	260	13.6
500	30	5,755	-13.7	37	260	17.9
450	30	6,542	-18.8		262	19.6
400	30	7,418	-25.2		264	20.6
350	30	8,374	-32.5		274	20.8
300	30	9,442	-40.7		271	23.7
250	30	10,659	-49.5		262	34.4
200	29	12,093	-56.7		274	40.6
175	29	12,934	-59.4		273	41.6
150	28	13,897	-62.8		274	41.4
125	25	15,009	-65.3			
100	20	16,343	-65.6			
80	20	17,699	-64.7			
60	18	19,458	-62.0			
50	18	20,589	-60.6			
40	17	21,984	-58.4			
30	17	23,807	-54.7			
25	16	24,984	-53.3			
20	8	26,416	-50.7			
15						

AMARILLO, TEX
(894 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,095	9.1	81	197	4.5
1,000	31	153				
950	31	584				
900	31	1,038				
850	31	1,515	11.0	62	227	10.5
800	31	2,020	9.0	58	240	11.3
750	31	2,552	6.2	56	251	9.9
700	31	3,115	2.9	53	259	8.0
650	31	3,709	- .7	49	261	9.1
600	31	4,347	- 4.6	40	259	12.0
550	31	5,016	- 8.4		261	12.8
500	31	5,761	-13.0		262	16.3
450	31	6,547	-18.7		261	18.5
400	31	7,425	-25.0		268	22.3
350	31	8,382	-31.8		265	29.3
300	31	9,455	-39.9		266	31.5
250	31	10,677	-48.8		267	38.5
200	31	12,116	-56.8		268	51.9
175	31	12,956	-60.4		266	53.8
150	29	13,910	-63.0		274	49.7
125	25	15,035	-65.4		274	33.2
100	12	16,394	-68.1			
80						
60						
50						
40						
30						
25						
20						
15						

ANCHORAGE, ALASKA
(1006 MB)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	30	2.0	81	342	0.8
1,000	31	78			228	.8
950	31	498	4.2	55	88	2.3
900	31	934	2.6	54	128	5.4
850	31	1,395	.2	58	147	7.8
800	31	1,879	- 2.0	58	162	9.7
750	31	2,390	- 4.5	58	179	11.9
700	31	2,931	- 7.2	51	185	12.4
650	31	3,501	-10.4	49	191	13.6
600	31	4,118	-14.1	47	194	14.2
550	31	4,766	-18.4	45	196	16.1
500	31	5,478	-23.0	43	203	15.2
450	31	6,235	-28.4	43	203	20.2
400	31	7,076	-34.3	41	215	18.3
350	31	7,997	-41.0		221	17.9
300	31	9,028	-48.4		213	17.5
250	31	10,210	-54.8		207	16.1
200	31	11,632	-55.7		220	16.5
175	31	12,484	-55.4		218	17.7
150	31	13,469	-54.7		232	16.9
125	30	14,629	-53.5		235	15.7
100	29	16,067	-53.7		241	15.2
80	28	17,500	-53.4		246	14.4
60	25	19,339	-54.6		256	14.0
50	25	20,506	-54.9		258	14.0
40	24	21,922	-56.1		261	14.8
30	22	23,739	-57.0		264	13.8
25	14	24,890	-57.8			
20						
15						

ANNETTE, ALASKA
(1012 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	37	7.3	80	96	3.3
1,000	31	131	7.7	74	71	3.9
950	31	552	6.9	66	113	5.1
900	31	998	4.5	62	135	4.1
850	31	1,461	1.8	61	124	4.1
800	31	1,948	- .7	61	148	2.7
750	31	2,462	- 2.9	59	186	2.3
700	31	3,007	- 5.4	55	214	2.3
650	31	3,580	- 8.9	52	239	.8
600	31	4,201	-12.9	49	236	2.5
550	31	4,853	-17.1	47	305	6.0
500	31	5,569	-21.9	44	304	8.2
450	31	6,329	-26.9	43	308	10.1
400	31	7,178	-32.9	41	309	13.4
350	31	8,105	-39.5		298	14.6
300	31	9,144	-46.4		302	17.5
250	31	10,338	-52.3		315	8.4
200	30	11,769	-56.3		280	19.6
175	29	12,612	-56.9		285	15.2
150	29	13,590	-56.1		300	13.4
125	26	14,748	-55.8			
100	24	16,169	-55.6			
80	22	17,595	-56.0			
60	22	19,424	-56.7			
50	22	20,581	-57.3			
40	20	21,988	-57.4			
30	18	23,819	-57.6			
25	17	24,977	-57.8			
20	16	26,390	-58.0			
15	11	28,202	-57.7			

ATHENS, GA.
(991 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	246	10.3	90	42	4.5
1,000	30	169				
950	30	600	12.4	68	65	10.1
900	30	1,051	10.8	69	88	6.8
850	30	1,526	8.7	70	169	.8
800	30	2,026	6.2	67	264	5.1
750	30	2,553	4.5	54	279	8.0
700	30	3,114	1.9	49	280	8.7
650	30	3,705	- 1.1	41	282	11.3
600	30	4,345	- 4.5	38	282	16.5
550	30	5,021	- 8.1		283	18.8
500	30	5,761	-12.9		279	24.1
450	30	6,548	-18.2		276	27.6
400	30	7,427	-24.3	39	277	33.2
350	30	8,387	-31.3		276	34.2
300	30	9,461	-39.5		281	30.5
250	29	10,677	-48.3		278	39.2
200	29	12,122	-55.5		282	47.0
175	29	12,967	-59.0		284	37.1
150	28	13,918	-62.3		278	29.9
125	28	15,037	-65.0		278	30.5
100	27	16,392	-65.6		285	20.8
80	26	17,749	-63.8		277	10.3
60	26	19,531	-60.0		290	9.7
50	24	20,677	-57.6		311	5.4
40	23	22,097	-55.0		306	4.1
30	20	23,945	-51.8			
25	20	25,133	-49.7			
20	17	26,591	-48.0			
15	12	28,480	-45.9			

BARTER IS., ALASKA
(1011 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	15	- 6.0	86	266	5.2
1,000	31	102			266	5.1
950	31	509	- 4.7	73	271	8.9
900	31	930	- 5.8	73	269	11.3
850	31	1,377	- 7.7	70	266	11.3
800	31	1,847	- 9.2	64	256	12.2
750	31	2,344	-10.8	61	257	15.2
700	31	2,874	-13.1	59	258	19.8
650	31	3,430	-15.7	56	258	20.8
600	31	4,037	-19.1	52	258	26.0
550	31	4,669	-23.0	51	257	29.0
500	31	5,373	-27.5	50	256	33.0
450	30	6,116	-32.5	45	256	34.0
400	30	6,946	-38.0		256	37.5
350	30	7,854	-44.1		254	42.0
300	30	8,875	-50.0		254	44.7
250	30	10,057	-53.0		257	42.7
200	30	11,495	-53.1		258	36.7
175	29	12,363	-52.4		256	35.0
150	28	13,349	-51.5		258	29.1
125	28	14,533	-51.6		258	26.0
100	27	15,971	-52.1		260	25.5
80	27	17,412	-53.1		262	24.1
60	26	19,260	-54.4		265	24.7
50	25	20,427	-55.5		268	24.9
40	25	21,846	-56.8		276	26.2
30	23	23,656	-58.4		278	28.0
25	22	24,805	-59.1		283	29.0
20	21	26,204	-60.0		288	31.5
15	14	27,981	-61.7		285	30.1

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BETHEL, ALASKA
(1006 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	4	1.2	89	56	2.5
1,000	31	54			124	6
950	31	471	2.6	75	117	6.8
900	31	905	.3	74	145	3.9
850	31	1,362	- 1.7	71	152	1.9
800	31	1,843	- 4.0	67	177	4.3
750	31	2,349	- 6.5	60	185	6.2
700	31	2,888	- 8.9	52	199	5.2
650	31	3,455	-12.0	45	192	5.6
600	31	4,068	-15.4	43	183	5.8
550	31	4,714	-19.5	43	189	7.2
500	31	5,423	-24.0	42	199	9.5
450	31	6,175	-29.3	42	233	8.4
400	31	7,016	-35.6	43	226	10.5
350	31	7,932	-42.2		239	16.5
300	31	8,960	-49.0		236	11.9
250	31	10,142	-53.9		248	15.2
200	31	11,576	-53.2		237	18.1
175	31	12,438	-52.5		244	19.0
150	31	13,436	-51.9		240	18.7
125	29	14,609	-52.1		250	16.9
100	28	16,058	-51.4		251	18.7
80	28	17,506	-51.8		249	16.9
60	26	19,369	-52.7		259	15.9
50	25	20,538	-53.3		267	16.9
40	25	21,972	-53.9		274	18.1
30	22	23,811	-55.4		283	19.8
25	19	24,981	-56.7			
20	19	26,395	-56.7			
15	14	28,232	-57.1			

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BISMARCK, N DAK.
(960 MB)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	505	4.1	85	121	1.4
1,000	31	168				
950	31	589			158	.6
900	31	1,030	5.7	71	303	.8
850	31	1,497	4.2	69	261	1.9
800	31	1,990	3.2	61	264	3.3
750	31	2,508	1.1	58	283	4.5
700	31	3,064	- 1.3	51	272	5.2
650	31	3,649	- 4.2	44	263	8.2
600	31	4,280	- 7.9	39	269	9.7
550	31	4,942	-12.4	37	275	11.9
500	31	5,673	-17.6	38	265	12.6
450	31	6,445	-23.1	39	255	13.6
400	31	7,308	-29.6	40	258	16.7
350	31	8,246	-37.0		265	16.1
300	31	9,295	-45.1		263	17.9
250	31	10,490	-53.4		286	19.2
200	30	11,905	-59.8		287	23.7
175	30	12,737	-60.8		285	22.0
150	29	13,696	-60.1		282	22.0
125	28	14,827	-60.2		292	23.3
100	26	16,217	-59.8		292	20.0
80	24	17,600	-59.6		295	16.3
60	23	19,398	-59.3		296	14.8
50	23	20,541	-58.9		293	14.4
40	22	21,939	-58.2		297	14.6
30	19	23,768	-56.9		292	16.1
25	19	24,926	-55.9		276	21.2
20	19	26,351	-54.5			
15	16	28,204	-52.5			

BOISE, IDAHO
(916 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	868	6.2	75	155	5.6
1,000	30	143				
950	30	566				
900	30	1,015	8.8	62	156	5.4
850	30	1,488	7.7	55	178	3.7
800	30	1,986	4.7	55	199	5.1
750	30	2,508	1.3	58	213	7.4
700	30	3,061	- 2.3	58	226	9.5
650	30	3,643	- 5.8	55	229	11.5
600	30	4,270	- 9.3	51	237	13.6
550	30	4,931	-13.6	46	244	16.9
500	30	5,658	-18.2	44	247	20.2
450	30	6,429	-23.7	43	254	19.0
400	30	7,288	-29.8	43	253	18.1
350	30	8,227	-36.8		290	18.3
300	30	9,277	-44.2		278	20.8
250	30	10,481	-51.1		267	23.7
200	29	11,912	-57.0			
175	27	12,755	-57.3			
150	27	13,730	-57.7			
125	27	14,878	-58.9			
100	25	16,265	-59.7			
80	24	17,667	-59.4			
60	23	19,471	-59.0			
50	22	20,628	-58.0			
40	21	22,037	-57.1			
30	21	23,861	-56.3			
25	21	25,022	-55.6			
20	11	26,489	-53.6			
15						

BROWNSVILLE, TEX.
(1016 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	7	20.0	84	115	1.7
1,000	31	142	22.1	75	127	6.0
950	31	582	19.3	76	138	11.7
900	31	1,051	16.3	74	144	9.9
850	31	1,536	14.3	61	167	4.5
800	31	2,047	12.5	51	255	2.5
750	31	2,581	10.4	49	292	4.1
700	31	3,158	7.3	48	300	8.4
650	31	3,759	3.8	46	295	10.9
600	31	4,411	.0	41	285	12.8
550	31	5,096	- 3.8	32	281	14.8
500	31	5,850	- 8.2		276	17.7
450	31	6,654	-13.3		271	20.4
400	31	7,548	-19.5		268	25.8
350	31	8,526	-26.7		276	29.0
300	31	9,621	-34.9		276	38.7
250	31	10,868	-44.3		270	45.9
200	30	12,329	-55.0			
175	30	13,172	-60.6			
150	29	14,121	-66.7			
125	29	15,208	-72.6			
100	29	16,509	-75.0			
80	27	17,806	-71.6			
60	26	19,535	-64.2			
50	25	20,660	-60.3			
40	25	22,064	-56.6			
30	25	23,907	-52.1			
25	19	25,096	-49.2			
20	7	26,546	-45.9			
15						

3/

BUFFALO, N. Y.
(993 MB)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	182	7.2	83	258	2.7
1,000	31	167			318	.8
950	31	589	7.7	72	282	6.8
900	31	1,034	4.9	73	281	8.4
850	31	1,499	2.6	68	277	9.3
800	31	1,988	1.1	53	288	9.7
750	31	2,506	- .8	45	284	10.9
700	31	3,055	- 3.4	42	279	13.0
650	31	3,637	- 6.4	40	282	14.4
600	31	4,260	- 9.8	41	278	15.5
550	31	4,924	-13.6		273	17.7
500	31	5,646	-18.1		271	20.4
450	31	6,422	-23.6		269	21.4
400	31	7,277	-29.9	40	268	23.3
350	31	8,215	-36.8		269	27.6
300	31	9,265	-44.0		267	29.3
250	31	10,470	-51.3		264	34.0
200	30	11,898	-56.2		268	34.2
175	30	12,745	-57.2		266	33.2
150	30	13,717	-58.4		266	32.3
125	28	14,856	-59.1		267	27.2
100	26	16,268	-60.2		273	21.8
80	26	17,661	-59.5		269	17.5
60	26	19,466	-58.5		266	12.8
50	26	20,616	-57.2		262	11.1
40	25	22,032	-55.6		266	12.4
30	23	23,872	-53.6		266	15.7
25	23	25,050	-52.0		266	18.5
20	21	26,503	-50.0		267	23.5
15	20	18,393	-48.0		261	29.0

BURRWOOD, LA.
(1018 MB)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	3	19.4	89	24	8.0
1,000	30	154	18.9	80	23	8.5
950	30	588	16.1	73	29	6.2
900	30	1,051	13.4	68	18	2.3
850	29	1,531	11.6	54	251	2.1
800	29	2,041	10.2	42	290	4.9
750	29	2,569	8.1	38	269	4.9
700	29	3,139	5.5	30	277	7.0
650	29	3,737	2.5	30	279	11.1
600	29	4,384	- .5		278	15.0
550	29	5,067	- 4.8		272	17.3
500	29	5,817	- 9.8		270	21.6
450	29	6,616	-15.5		268	24.5
400	28	7,500	-21.9		272	31.9
350	28	8,469	-29.1		271	28.6
300	27	9,550	-37.4		270	37.3
250	27	10,787	-45.9		269	42.2
200	26	12,243	-55.0		281	42.9
175	24	13,081	-59.8		267	41.0
150	23	14,031	-65.0		265	40.4
125	22	15,133	-68.7		265	31.1
100	21	16,462	-70.3		269	21.6
80	20	17,794	-67.4		287	10.3
60	19	19,549	-62.5		82	1.2
50	19	20,683	-59.0		70	6.0
40	19	22,093	-56.1		70	5.6
30	19	23,937	-52.1		98	8.4
25	17	25,119	-49.8			
20	17	26,588	-47.0			
15	9	28,478	-44.0			

CAPE HATTERAS, N C.
(1018 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	4	15.5	85	357	6.6
1,000	31	151	15.6	75	5	8.4
950	31	582	12.9	73	11	6.4
900	31	1,038	10.4	69	345	3.7
850	31	1,513	8.5	60	305	5.1
800	31	2,013	6.4	54	295	5.6
750	31	2,537	4.4	47	286	7.2
700	31	3,100	1.8	43	267	10.3
650	31	3,689	- 1.5	41	264	13.0
600	31	4,329	- 4.7	40	256	16.3
550	31	5,000	- 8.7		256	17.9
500	31	5,742	-13.4	39	258	21.0
450	31	6,528	-18.7	37	254	23.7
400	31	7,405	-24.8	39	250	29.3
350	31	8,363	-31.8	38	252	32.3
300	31	9,437	-39.3		249	37.7
250	31	10,661	-48.1		253	39.4
200	29	12,109	-55.4		256	39.1
175	28	12,956	-58.9		265	38.3
150	28	13,917	-61.4		266	35.2
125	27	15,039	-63.9		260	26.6
100	26	16,397	-64.7		261	21.2
80	26	17,769	-62.3		259	13.4
60	24	19,566	-58.4		256	8.9
50	23	20,720	-56.0		256	6.0
40	22	22,147	-53.5		232	4.9
30	20	24,011	-50.0		250	4.1
25	20	25,209	-48.1		263	2.3
20	19	26,684	-45.6		242	3.7
15	14	28,608	-42.9		251	9.9

4/

CARIBOU, ME.
(995 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	191	4.4	90	267	2.9
1,000	31	146				
950	31	565	5.5	74	280	4.9
900	31	1,008	3.7	76	294	7.6
850	31	1,471	2.3	70	296	9.5
800	31	1,960	.5	64	287	11.5
750	31	2,477	- 1.7	59	281	12.6
700	31	3,024	- 4.3	55	278	15.9
650	31	3,600	- 7.0	52	278	18.3
600	31	4,227	-10.2	47	277	19.4
550	31	4,885	-14.4	46	275	21.8
500	31	5,609	-19.1	45	274	22.3
450	31	6,381	-24.7	43	272	27.0
400	31	7,234	-31.1	43	272	26.6
350	31	8,167	-38.1		269	30.1
300	31	9,212	-45.5		265	35.6
250	31	10,408	-52.4		267	39.2
200	30	11,835	-56.4		273	38.1
175	29	12,684	-56.6		268	35.0
150	29	13,660	-57.3		266	33.0
125	28	14,814	-58.1		261	31.9
100	27	16,220	-58.4		270	26.8
80	26	17,622	-58.2		270	23.9
60	25	19,440	-57.5		270	17.3
50	21	20,598	-56.6		265	15.9
40	20	22,013	-55.9		261	19.4
30	20	23,851	-54.2		266	23.9
25	20	25,025	-53.0		267	25.1
20	17	26,471	-51.1		269	33.2
15	16	28,350	-49.0		264	39.8

These average values for standard pressure surfaces were obtained by rawinsondes, dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

1/ 10 mb., 5 obs., 30,879 m., -56.1 C
2/ 10 mb., 8 obs., 30,908 m., -47.7 C
3/ 10 mb., 16 obs., 31,089 m., -45.6 C., 267 dir., 46.4 speed
7 mb., 7 obs., 33,461 m., -42.6°C.
4/ 10 mb., 10 obs., 31,029 m., -45.4°C.

RAWINSONDE DATA

Average monthly values

OCTOBER 1957

CHARLESTON, S. C. (1018 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	13	12.2	92	8	5.8
1,000	30	161	14.9	76	29	7.8
950	30	594	14.1	72	63	7.0
900	30	1,051	12.1	71	52	3.3
850	30	1,528	9.8	65	302	1.6
800	30	2,031	7.8	55	265	5.2
750	30	2,562	5.6	46	268	8.0
700	30	3,124	3.0	38	268	11.3
650	30	3,720	.2		269	13.0
600	30	4,359	- 3.0		264	16.3
550	30	5,034	- 7.1		260	20.4
500	30	5,781	-12.0		265	23.5
450	30	6,574	-17.5		261	28.2
400	30	7,453	-23.7		265	29.7
350	29	8,417	-30.5		265	35.8
300	29	9,495	-38.8		268	36.3
250	29	10,723	-47.6		272	39.4
200	29	12,170	-55.3		272	46.4
175	28	13,024	-58.8		276	45.9
150	27	13,983	-62.9		273	36.9
125	26	15,096	-66.4		270	33.4
100	26	16,443	-67.0		269	27.4
80	25	17,797	-64.2		273	15.3
60	22	19,575	-59.5		259	8.5
50	22	20,724	-57.0		259	8.9
40	20	22,142	-53.8		261	1.4
30	14	24,000	-50.5		199	5.1
25	8	25,218	-48.1			
20						
15						

COLD BAY, ALASKA (1000 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	27	5.7	88	172	2.1
1,000	30	25			1	1.9
950	30	439	4.6	79	113	6.2
900	30	883	1.7	79	126	7.0
850	30	1,342	- .6	73	132	5.4
800	30	1,825	- 2.6	63	131	6.2
750	30	2,334	- 4.9	59	149	7.6
700	30	2,875	- 7.6	51	171	6.6
650	30	3,447	-10.9	49	167	7.0
600	30	4,060	-14.6	49	161	4.3
550	30	4,709	-18.6	44	162	6.2
500	30	5,418	-23.3	41	163	6.4
450	30	6,173	-28.8	40	201	6.6
400	30	7,013	-35.1	40	186	9.9
350	30	7,931	-41.7		190	15.5
300	30	8,961	-47.9		205	15.0
250	30	10,153	-51.3		219	21.2
200	30	11,602	-51.3		211	15.2
175	30	12,471	-51.2		211	13.6
150	30	13,472	-51.3		219	13.8
125	30	14,656	-51.7		226	15.7
100	30	16,103	-51.9		221	16.9
80	30	17,550	-52.0		228	10.3
60	29	19,410	-52.5		244	8.5
50	29	20,587	-53.4		237	6.0
40	28	22,024	-54.4		255	5.4
30	24	23,877	-55.1		334	7.2
25	17	25,061	-55.7			
20						
15						

COLUMBIA, MO. (993 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	238	8.0	79	99	2.3
1,000	31	176				
950	31	602	10.2	64	167	3.1
900	31	1,052	8.6	60	253	2.1
850	31	1,524	7.2	54	299	3.3
800	31	2,021	5.3	53	301	5.6
750	31	2,545	3.3	47	294	8.0
700	31	3,104	.4	46	286	8.5
650	31	3,689	- 2.6	46	288	9.9
600	31	4,327	- 6.5	47	289	11.1
550	31	4,997	-10.4	43	297	12.6
500	31	5,731	-15.1	39	294	15.3
450	31	6,515	-20.8		289	18.1
400	31	7,381	-27.1		291	20.0
350	31	8,330	-33.9		285	23.9
300	31	9,394	-41.6		284	28.6
250	31	10,607	-50.3		285	32.8
200	31	12,037	-57.7		284	38.5
175	31	12,876	-59.8		278	40.8
150	31	13,835	-61.7		277	40.4
125	30	14,961	-62.4		283	33.8
100	29	16,337	-63.3		280	24.3
80	27	17,705	-61.7		279	18.3
60	26	19,496	-59.5		282	13.4
50	26	20,642	-57.8		286	10.9
40	26	22,059	-55.1		273	10.7
30	24	23,905	-51.7		270	11.7
25	21	25,111	-49.6		267	12.2
20	6	26,556	-47.1			
15						

1/ DAYTON, OHIO (986 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	297	6.5	83	14	1.2
1,000	31	178				
950	31	599	8.4	68	353	1.4
900	31	1,047	6.2	64	301	5.1
850	31	1,515	4.4	56	300	6.4
800	31	2,007	2.9	48	302	6.0
750	31	2,525	1.0	42	299	8.4
700	31	3,081	- 1.6	38	299	9.5
650	31	3,660	- 4.6		297	12.0
600	31	4,294	- 8.2	37	297	15.0
550	31	4,957	-12.2	38	294	15.9
500	31	5,688	-16.8		295	18.5
450	31	6,464	-22.1		291	19.2
400	31	7,329	-28.2		291	22.2
350	31	8,273	-35.0		288	24.1
300	31	9,332	-42.6		286	26.4
250	31	10,541	-50.4		279	30.7
200	31	11,976	-56.3		275	40.6
175	31	12,820	-58.3		276	40.6
150	28	13,796	-59.7		273	36.3
125	27	14,929	-61.1		273	30.3
100	25	16,313	-61.7		271	22.0
80	24	17,704	-60.9		273	15.2
60	24	19,502	-58.7		278	10.3
50	24	20,652	-56.8		274	9.3
40	24	22,075	-54.3		275	8.4
30	22	23,941	-50.8		278	11.3
25	21	25,128	-48.6		275	12.8
20	19	26,611	-46.1		276	13.4
15	15	28,566	-43.6		265	15.9

DENVER, COLO. (839 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,611	5.0	86	196	1.0
1,000	31	149				
950	31	578				
900	31	1,028				
850	31	1,500				
800	31	2,000	7.8	68	259	2.7
750	31	2,530	6.3	59	260	6.4
700	31	3,095	3.3	52	276	8.4
650	31	3,688	- .9	54	268	10.3
600	31	4,327	- 5.3	50	266	11.1
550	31	4,997	-10.0	46	269	12.2
500	31	5,733	-15.2	44	267	15.0
450	31	6,512	-20.9	43	256	17.7
400	31	7,381	-27.5	40	256	19.0
350	31	8,329	-34.4		263	21.8
300	31	9,391	-42.4		260	24.9
250	31	10,600	-51.4		262	30.5
200	31	12,025	-58.4		264	39.4
175	30	12,860	-59.8		266	45.3
150	29	13,823	-61.3		266	40.4
125	29	14,951	-62.3		271	31.7
100	29	16,327	-63.1		269	25.1
80	29	17,704	-62.4		273	17.1
60	27	19,493	-59.6		277	13.0
50	27	20,637	-58.6		274	10.5
40	27	22,047	-56.8		283	9.7
30	24	23,879	-55.0		275	11.9
25	24	25,050	-53.0		280	13.2
20	19	26,508	-50.9		281	16.7
15	14	28,392	-48.6		286	20.8

DODGE CITY, KANS. (927 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	792	8.9	84	141	3.5
1,000	31	159				
950	31	589				
900	31	1,039	10.4	72	168	7.6
850	31	1,515	9.9	63	192	9.7
800	31	2,018	8.3	57	225	8.0
750	31	2,549	5.7	57	236	6.0
700	31	3,110	2.4	57	266	8.5
650	31	3,702	- 1.3	56	267	9.7
600	31	4,339	- 5.3	54	260	11.5
550	31	5,012	- 9.6	46	263	13.0
500	31	5,748	-14.0	38	275	15.0
450	31	6,535	-19.4	35	276	20.4
400	31	7,406	-26.0	37	271	23.5
350	31	8,359	-33.3		266	25.3
300	31	9,424	-41.5		269	29.5
250	31	10,639	-49.9		267	39.8
200	30	12,065	-57.4		270	48.0
175	29	12,905	-59.3		275	51.9
150	29	13,865	-61.7		275	42.9
125	29	14,988	-63.9		275	38.7
100	29	16,351	-65.1		271	29.3
80	29	17,716	-63.6		272	18.8
60	29	19,496	-60.2		280	9.3
50	27	20,632	-58.4			
40	27	22,043	-56.2			
30	20	23,896	-52.9			
25	16	25,073	-50.6			
20						
15						

2/ EL PASO, TEX. (882 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,197	13.0	69	30	2.1
1,000	31	131				
950	31	567				
900	31	1,030				
850	31	1,513	14.0	59	134	2.5
800	31	2,022	11.1	61	184	5.2
750	31	2,555	8.1	63	229	8.5
700	31	3,126	4.6	61	237	12.0
650	31	3,723	1.0	54	235	14.6
600	31	4,367	- 2.6	43	236	18.5
550	31	5,045	- 6.6	35	244	20.4
500	31	5,791	-11.1		250	25.1
450	31	6,584	-16.8		253	28.0
400	31	7,468	-23.3		259	27.2
350	31	8,432	-30.3		259	34.8
300	31	9,510	-38.4		267	40.2
250	31	10,741	-47.1		265	43.5
200	30	12,190	-55.7		265	51.9
175	30	13,032	-60.0		268	57.9
150	30	13,984	-64.3		264	44.5
125	23	15,097	-69.1			
100	12	16,426	-70.1			
80	11	17,763	-68.3			
60	10	19,511	-63.6			
50	10	20,636	-61.1			
40	10	22,031	-58.7			
30	8	23,854	-54.3			
25	8	25,031	-51.5			
20	8	26,488	-49.3			
15	7	28,367	-46.4			

ELY, NEV. (808 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,908	0.7	74	179	7.6
1,000	31	159				
950	31	585				
900	31	1,033				
850	31	1,497				
800	31	1,990	4.1	69	179	6.6
750	31	2,518	4.2	61	180	6.8
700	31	3,075	.8	58	200	5.8
650	31	3,663	- 3.0	57	217	8.9
600	31	4,297	- 6.5	45	225	11.7
550	31	4,970	-10.4	38	236	13.0
500	31	5,701	-15.1	39	243	14.2
450	31	6,485	-20.6	39	248	11.3
400	31	7,352	-27.0	37	252	13.6
350	31	8,301	-34.2	38	239	12.4
300	31	9,363	-42.1		238	10.7
250	31	10,575	-50.7		238	15.9
200	30	12,003	-57.6		244	18.5
175	30	12,845	-57.9		253	22.5
150	29	13,817	-58.6		263	21.0
125	29	14,957	-60.7		270	23.3
100	28	16,340	-61.8		270	18.3
80	26	17,730	-60.8		250	14.2
60	26	19,525	-59.3			
50	26	20,669	-58.3			
40	26	22,078	-57.0			
30	21	23,902	-55.5			
25	11	25,039	-54.5			
20	7	26,461	-52.4			
15						

FAIRBANKS, ALASKA (996 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	135	- 3.0	89	337	1.6
1,000	31	104			302	1.0
950	31	513	.1	69	92	2.3
900	31	947	- .3	66	167	4.1
850	31	1,403	- 1.5	60	221	6.2
800	31	1,884	- 3.6	57	218	9.3
750	31	2,392	- 6.3	58	218	12.8
700	31	2,929	- 8.7	54	220	15.0
650	31	3,500	-11.9	52	225	17.1
600	31	4,109	-15.3	47	234	17.9
550	31	4,757	-19.3	49	236	21.0
500	31	5,463	-24.1	51	230	21.8
450	31	6,215	-29.5	52	236	19.4
400	31	7,054	-35.7	50	250	18.1
350	31	7,969	-42.6		256	18.5
300	31	8,994	-49.9		240	21.4
250	31	10,169	-56.1		258	17.1
200	31	11,582	-56.9		244	11.7
175	30	12,425	-56.0		248	18.5
150	30	13,408	-55.0			
125	29	14,573	-53.5			
100	29	16,009	-53.5			
80	28	17,448	-53.9			
60	28	19,293	-55.1			
50	28	20,455	-56.2			
40	27	21,871	-56.9			
30	23	23,689	-58.2			
25	19	24,838	-58.5			
20	18	26,242	-59.3			
15	11	28,098	-59.3			

FLINT, MICH. (993 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	234	3.8	89	297	1.7
1,000	31	177				
950	31	596	7.1	68	316	5.6
900	31	1,042	4.8	62	324	6.0
850	31	1,508	3.5	53	319	7.2
800	31	1,998	2.2	44	317	8.4
750	31	2,515	.3	43	319	10.1
700	31	3,069	- 2.4	38	306	11.1
650	31	3,649	- 5.7		302	13.0
600	31	4,278	- 9.3		300	14.6
550	31	4,939	-13.2		303	15.7
500	31	5,667	-17.8		302	19.0
450	31	6,437	-23.4		298	20.6
400	31	7,299	-29.5	35	294	25.1
350	31	8,239	-36.4		291	25.8
300	31	9,293	-43.5		291	29.1
250	30	10,494	-51.1		280	33.2
200	29	11,926	-56.9		278	40.8
175	29	12,769	-58.2		280	35.8
150	26	13,735	-58.5		275	30.5
125	25	14,883	-59.6		277	27.0
100	24	16,276	-60.0		273	23.3
80	24	17,673	-59.1		275	18.5
60	24	19,481	-57.9		271	13.6
50	23	20,635	-56.7		270	13.0
40	23	22,057	-54.8		268	15.7
30	21	23,910	-52.1		269	20.6
25	18	25,097	-51.1		261	21.2
20	13	26,532	-49.7		258	34.4
15	9	28,468	-46.5			

FORT WORTH, TEX. (998 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	180	13.2	83	75	1.0
1,000	31	164			24	3.9
950	31	599	14.3	70	159	4.5
900	31	1,054	12.6	66	202	3.9
850	31	1,534	11.3	57	259	3.7
800	31	2,039	9.3	51	277	5.2
750	31	2,567	6.9	49	286	7.2
700	31	3,137	3.7	48	287	9.3
650	31	3,732	- .1	50	285	10.7
600	31	4,372	- 3.6	42	272	14.0
550	31	5,050	- 7.4	38	276	15.3
500	31	5,792	-12.1		275	19.8
450	31	6,583	-17.5		277	21.8
400	31	7,464	-23.5		276	27.0
350	31	8,426	-30.7		274	32.1
300	31	9,502	-38.7		274	40.2
250	31	10,731	-47.4		274	49.0
200	31	12,177	-55.7		276	54.4
175	30	13,020	-59.9		275	58.3
150	29	13,970	-63.6		276	52.5
125	26	15,075	-66.9		277	41.8
100	20	16,423	-68.0		286	25.8
80	17	17,768	-65.4		284	15.3
60	16	19,528	-62.1		294	5.2
50	16	20,663	-59.6		317	3.1
40	15	22,066	-56.9		347	2.1
30	15	23,901	-54.1		42	2.7
25	14	25,071	-51.9		27	4.7
20	12	26,517	-49.8		306	1.4
15	10	28,390	-47.0			

GLASGOW, MONT. (937 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	696	2.0	83	93	4.1
1,000	31	162				
950	31	580				
900	31	1,019	5.5	72	146	3.9
850	31	1,487	4.9	61	195	2.7
800	31	1,981	4.3	58	242	3.9
750	31	2,502	1.7	54	248	6.2
700	31	3,057	- 1.5	50	250	7.8
650	31	3,638	- 5.3	48	258	9.1
600	31	4,267	- 9.1	43	254	11.3
550	31	4,929	-13.5	39	251	13.4
500	31	5,654	-18.5	37	253	15.7
450	31	6,422	-24.3	38	249	17.9
400	31	7,280	-30.8	41	255	19.4
350	31	8,214	-37.8		264	20.0
300	31	9,259	-45.6		270	24.9
250	31	10,452	-53.3		258	27.8
200	31	11,868	-58.9		274	24.1
175	30	12,707	-58.8		273	23.1
150	29	13,679	-58.0		292	23.1
125	29	14,826	-58.8		293	21.2
100	29	16,227	-58.9		289	16.9
80	27	17,634	-59.1		297	14.2
60	24	19,438	-58.8			
50	23	20,579	-58.5			
40	21	21,987	-58.1			
30	20	23,797	-58.0			
25	15	24,958	-57.5			
20	6	26,347	-56.5			
15						

GRAND JUNCTION, COLO. (852 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,474	8.7	67	115	7.0
1,000	31	131				
950	31	557				
900	31	1,016				
850	31	1,497	8.3	64	112	7.8
800	31	2,002	9.4	57	155	6.4
750	31	2,530	6.3	58	209	7.0
700	31	3,097	2.4	59	236	9.1
650	31	3,687	- 1.8	60	236	11.5
600	31	4,323	- 6.1	57	232	13.8
550	31	4,992	-10.7	50	237	17.3
500	31	5,726	-15.1	42	240	16.7
450	31	6,507	-20.7	40	255	15.5
400	30	7,376	-27.2	38	261	16.7
350	30	8,325	-34.2		263	17.9
300	30	9,385	-42.6		256	17.1
250	30	10,592	-51.8		267	13.2
200	30	12,012	-58.9		270	20.2
175	30	12,848	-60.0		274	25.3
150	30	13,808	-61.4		268	27.6
125	30	14,933	-63.4		272	26.0
100	30	16,302	-63.5		272	23.1
80	29	17,675	-62.8			
60	29	19,459	-60.3			
50	28	20,602	-59.2			
40	27	22,006	-57.9			
30	21	23,838	-55.6			
25	11	24,973	-54.2			
20	6	26,374	-52.4			
15						

GREAT FALLS, MONT. (889 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,123	2.3	82	262	4.3
1,000	31	160				
950	31	583				
900	31	1,025				
850	31	1,488	3.9	68	253	6.8
800	31	1,979	2.1	67	251	6.0
750	31	2,497	.3	66	244	8.0
700	31	3,050	- 2.7	63	239	9.1
650	31	3,631	- 5.8	61	242	13.0
600	31	4,257	- 9.8	58	236	13.2
550	31	4,916	-14.2	54	236	15.3
500	31	5,640	-19.1	50	240	17.1
450	31	6,407	-24.7	48	243	20.2
400	31	7,264	-31.3	47	242	22.0
350	31	8,196	-38.4		241	24.7
300	31	9,239	-45.7		239	28.8
250	31	10,435	-52.5		246	31.1
200	31	11,860	-57.2		255	27.0
175	30	12,693	-57.4		262	25.1
150	30	13,667	-57.5		265	24.3
125	28	14,819	-58.1		269	20.4
100	25	16,217	-58.2		266	13.8
80	23	17,614	-59.2		281	13.2
60	23	19,413	-59.3		282	12.0
50	22	20,552	-59.1		279	11.1
40	22	21,950	-58.9		293	9.7
30	21	23,767	-58.2		296	13.4
25	15	24,916	-58.1		288	19.2
20	10	26,326	-57.9			
15						

GREEN BAY, WIS. (996 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	210	3.7	90	299	2.7
1,000	31	177			333	2.1
950	31	597	6.8	67	305	4.7
900	31	1,041	4.7	63	305	5.2
850	31	1,506	3.0	55	305	5.1
800	31	1,997	1.9	44	298	7.0
750	31	2,515	.0	38	294	9.3
700	31	3,066	- 2.7	37	291	12.4
650	31	3,646	- 5.6	34	296	12.6
600	31	4,275	- 9.3	34	295	13.8
550	31	4,936	-13.4		286	15.5
500	31	5,662	-18.1		285	14.6
450	31	6,435	-23.6		285	18.3
400	31	7,292	-29.9		284	21.2
350	30	8,230	-36.8		295	22.3
300	30	9,280	-44.7		296	22.9
250	30	10,477	-52.8		293	23.1
200	30	11,896	-58.6		290	28.2
175	29	12,743	-60.0		292	25.1
150	29	13,706	-59.8		287	22.9
125	29	14,845	-60.2		281	17.1
100	29	16,236	-60.3		276	17.3
80	29	17,628	-59.8		267	13.8
60	29	19,433	-58.1		270	12.0
50	29	20,584	-57.1		276	13.6
40	29	22,002	-55.4		287	14.8
30	26	23,847	-53.4		284	11.9
25	15	25,033	-51.5			
20						
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These average values for standard pressure surfaces were obtained by rawinsondes, dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

1/ 10 mb., 9 obs., 31,299 m., -40.4 C

2/ 10 mb., 6 obs., 31,105 m., -41.9 C

RAWINSONDE DATA

Average monthly values

GREENSBORO, N. C. (989 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	273	7.9	91	19	2.5
1,000--	31	181				
950----	31	608	10.6	67	23	4.9
900----	31	1,057	8.7	63	15	4.5
850----	31	1,529	6.9	60	318	4.5
800----	31	2,026	5.6	52	290	7.6
750----	31	2,553	3.7	47	279	9.3
700----	31	3,111	1.3	44	279	10.1
650----	31	3,699	- 1.9	39	279	11.1
600----	31	4,337	- 5.5		266	12.8
550----	31	5,007	- 9.5	41	270	15.9
500----	31	5,746	-13.9	40	262	20.4
450----	31	6,532	-19.3	42	264	24.1
400----	31	7,405	-25.1	40	264	27.2
350----	31	8,361	-32.2	37	260	29.0
300----	31	9,432	-40.0		260	33.2
250----	31	10,656	-48.2		262	38.1
200----	31	12,101	-55.3		269	38.1
175----	31	12,949	-57.6		273	34.8
150----	31	13,916	-60.4		272	32.6
125----	31	15,045	-62.6		273	22.3
100----	29	16,415	-63.4		288	18.1
80-----	28	17,792	-61.5		299	11.5
60-----	28	19,589	-58.6		319	7.0
50-----	28	20,740	-56.8		302	4.7
40-----	27	22,164	-54.2		273	4.7
30-----	21	24,024	-51.8		281	7.2
25-----	12	25,233	-50.0			
20-----	6	26,688	-48.4			
15-----						

HILO, T. H. (1014 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	11	21.9	89	241	4.5
1,000--	31	134	23.2	80	225	2.9
950----	31	581	20.7	81	123	3.9
900----	31	1,048	17.7	83	107	4.7
850----	31	1,535	14.7	84	96	5.1
800----	31	2,048	13.1	68	104	5.1
750----	31	2,591	12.2	42	95	2.5
700----	31	3,165	9.5	33	121	2.5
650----	31	3,776	6.1	32	105	3.5
600----	31	4,428	2.5		90	3.3
550----	31	5,119	- 1.4		85	3.3
500----	31	5,879	- 6.2		64	2.3
450----	31	6,691	-11.8		348	1.2
400----	31	7,587	-18.5		292	4.7
350----	31	8,569	-25.6		285	8.7
300----	31	9,668	-33.9		278	14.4
250----	31	10,922	-43.2		280	19.4
200----	30	12,386	-54.4		275	21.6
175----	30	13,230	-60.5		277	20.4
150----	30	14,176	-67.0		273	19.4
125----	30	15,259	-73.3		281	17.3
100----	30	16,552	-76.9		291	7.4
80-----	30	17,840	-74.1		348	1.7
60-----	30	19,555	-65.7		92	10.9
50-----	30	20,672	-62.1		87	12.8
40-----	30	22,063	-58.4		93	16.1
30-----	28	23,888	-54.7		95	17.1
25-----	21	25,062	-52.8		86	20.0
20-----	8	26,508	-49.7			
15-----						

INTERNAT. FALLS, MINN. (977 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	360	3.7	80	197	1.4
1,000--	31	171				
950----	31	591	6.0	73	230	5.4
900----	31	1,031	4.2	72	255	8.7
850----	31	1,494	2.5	65	269	8.4
800----	31	1,984	1.3	57	278	8.5
750----	31	2,498	- .8	52	278	10.1
700----	31	3,051	- 3.2	50	289	11.9
650----	31	3,628	- 6.3	46	288	12.8
600----	31	4,257	- 9.7	40	288	14.0
550----	31	4,917	-14.0	39	290	14.6
500----	31	5,641	-18.9	35	294	15.3
450----	31	6,410	-24.7		298	16.9
400----	31	7,264	-31.3		296	19.2
350----	31	8,198	-38.0		292	22.3
300----	31	9,243	-45.6		292	25.6
250----	31	10,438	-53.2		289	30.5
200----	31	11,854	-59.3		286	32.1
175----	28	12,705	-59.9		284	30.1
150----	25	13,677	-59.7		281	30.9
125----	22	14,818	-59.4		278	25.6
100----	20	16,216	-59.3		279	22.0
80-----	18	17,629	-58.7		284	17.5
60-----	17	19,450	-58.1		282	14.4
50-----	17	20,599	-58.0		294	14.0
40-----	16	22,020	-56.7		302	12.0
30-----	16	23,850	-55.2		289	15.7
25-----	16	25,017	-54.2		284	16.9
20-----	13	26,433	-53.1		282	22.3
15-----	[illegible]	28,312	-50.4			

1/ JACKSON, MISS. (1008 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	101	11.8	91	99	1.4
1,000--	31	166	12.9	83	89	2.5
950----	31	602	13.1	71	86	4.1
900----	31	1,053	11.4	61	32	1.6
850----	31	1,530	9.8	53	321	3.1
800----	31	2,032	8.1	44	312	5.6
750----	31	2,563	5.8	46	308	7.2
700----	31	3,125	2.9	44	301	9.5
650----	31	3,720	- .4	40	297	12.0
600----	31	4,358	- 4.0	35	292	15.0
550----	31	5,039	- 7.6		291	19.0
500----	31	5,777	-12.0		280	21.2
450----	31	6,571	-17.5		282	26.4
400----	31	7,449	-23.8		282	29.0
350----	31	8,411	-30.7		282	28.0
300----	31	9,488	-38.7		279	33.0
250----	31	10,718	-47.0		276	41.6
200----	31	12,170	-55.1		282	50.1
175----	31	13,014	-59.3		282	50.7
150----	31	13,971	-63.5		281	45.7
125----	31	15,081	-66.9		282	37.7
100----	29	16,428	-68.3		280	23.3
80-----	26	17,785	-65.1		288	12.4
60-----	26	19,557	-60.9		318	4.1
50-----	26	20,698	-58.2		304	2.5
40-----	25	22,118	-54.5		35	3.5
30-----	23	23,974	-50.7		94	3.5
25-----	21	25,163	-48.5		67	2.9
20-----	21	26,640	-45.9		77	4.3
15-----	17	28,573	-42.5		316	.8

JACKSONVILLE, FLA. (1018 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	6	15.7	93	342	4.7
1,000--	31	158	17.6	80	15	5.8
950----	31	591	16.1	79	52	6.2
900----	31	1,055	13.4	77	65	2.5
850----	31	1,536	11.2	[illegible]	267	1.4
800----	31	2,041	9.5	53	257	3.9
750----	31	2,571	7.3	46	264	5.8
700----	31	3,141	4.6	41	258	8.9
650----	30	3,735	1.4	39	264	11.7
600----	30	4,381	- 1.8	36	268	16.3
550----	30	5,061	- 5.6		268	20.0
500----	30	5,811	-10.6		267	23.1
450----	30	6,607	-16.2		267	27.2
400----	30	7,491	-22.6		269	31.7
350----	30	8,457	-29.9		269	34.0
300----	30	9,538	-37.9		272	38.7
250----	30	10,771	-46.7		270	44.7
200----	30	12,222	-55.7		275	48.4
175----	30	13,065	-60.1		276	48.2
150----	29	14,017	-64.1		272	43.9
125----	29	15,123	-67.7		270	39.1
100----	29	16,461	-69.2		269	25.8
80-----	28	17,803	-66.1		270	16.1
60-----	26	19,574	-61.7		285	5.4
50-----	25	20,718	-59.4		54	1.7
40-----	25	22,124	-56.8		95	3.3
30-----	24	23,965	-52.4		85	6.4
25-----	23	25,149	-50.1		92	5.6
20-----	17	26,614	-47.5		91	4.7
15-----	7	28,534	-45.5			

2/ KING SALMON, ALASKA (1005 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	15	3.8	88	76	3.1
1,000--	31	58			82	2.5
950----	31	478	4.1	77	112	5.2
900----	31	915	2.0	73	157	8.2
850----	31	1,376	.1	73	162	8.9
800----	31	1,860	- 2.2	73	167	10.9
750----	31	2,369	- 4.4	64	177	12.2
700----	31	2,913	- 7.0	60	184	13.4
650----	31	3,485	-10.5	51	182	13.4
600----	31	4,101	-14.0	46	179	14.8
550----	31	4,753	-18.2	43	183	15.2
500----	31	5,463	-23.0	42	184	16.1
450----	31	6,222	-28.2	47	184	18.1
400----	31	7,065	-34.2	45	187	19.0
350----	31	7,987	-40.9		186	24.3
300----	31	9,020	-47.9		192	25.8
250----	31	10,207	-53.3		197	30.1
200----	31	11,639	-53.7		210	28.0
175----	31	12,499	-53.2		217	24.9
150----	30	13,493	-52.9		226	19.0
125----	30	14,671	-52.4		227	17.7
100----	29	16,124	-52.1		233	15.5
80-----	29	17,568	-52.4		236	15.0
60-----	29	19,428	-53.0		250	12.2
50-----	29	20,603	-53.6		250	11.1
40-----	29	22,036	-54.4		269	10.5
30-----	28	23,877	-54.9		282	11.5
25-----	28	25,043	-55.6		292	12.4
20-----	28	26,465	-55.6		297	13.6
15-----	26	28,313	-55.2		301	16.5

KOTZEBUE, ALASKA (1011 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	5	- 2.8	87	102	2.9
1,000--	30	89	- 2.0	83	128	3.7
950----	30	492	- 3.0	75	154	6.2
900----	30	924	- 5.2	76	172	6.4
850----	30	1,372	- 6.7	73	200	4.7
800----	30	1,845	- 8.3	65	212	7.4
750----	30	2,343	-10.6	60	216	9.9
700----	30	2,873	-13.2	54	215	12.4
650----	30	3,432	-15.7	48	228	14.4
600----	30	4,036	-19.0	44	241	17.5
550----	30	4,672	-22.7	41	241	20.2
500----	30	5,374	-27.2	43	246	20.6
450----	30	6,117	-32.1	46	234	24.3
400----	30	6,950	-37.7		257	26.2
350----	29	7,847	-44.3		257	30.3
300----	29	8,866	-50.8		240	31.1
250----	29	10,041	-54.8		238	26.2
200----	29	11,472	-52.9		244	25.1
175----	28	12,343	-51.6		234	31.1
150----	27	13,349	-51.5			
125----	26	14,536	-51.4			
100----	26	15,985	-51.6			
80-----	26	17,432	-52.1			
60-----	26	19,290	-53.5			
50-----	25	20,454	-54.0			
40-----	25	21,882	-55.2			
30-----	24	23,716	-56.7			
25-----	16	24,872	-56.8			
20-----						
15-----						

LAKE CHARLES, LA. (1018 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	5	15.2	90	38	2.1
1,000--	31	158	16.5	80	56	5.4
950----	31	593	15.4	72	83	6.4
900----	31	1,053	12.8	70	88	1.4
850----	31	1,532	11.2	58	332	2.5
800----	31	2,037	9.6	48	314	4.5
750----	31	2,568	7.6	38	310	7.4
700----	31	3,136	4.7	35	310	10.3
650----	31	3,730	1.6		296	13.6
600----	31	4,378	- 1.9		302	17.1
550----	31	5,055	- 5.8		295	18.5
500----	31	5,805	-10.8		291	21.0
450----	31	6,601	-16.4		288	24.9
400----	31	7,484	-22.7		285	27.2
350----	31	8,450	-29.6		288	34.4
300----	31	9,532	-37.6		286	42.0
250----	31	10,767	-46.3		285	50.9
200----	31	12,220	-55.2		282	51.7
175----	31	13,063	-60.2		279	53.8
150----	29	14,016	-64.5		277	43.5
125----	24	15,114	-68.5		276	32.8
100----	18	16,451	-69.5		283	18.3
80-----	13	17,786	-66.4			
60-----	12	19,563	-60.8			
50-----	12	20,705	-58.1			
40-----	12	22,123	-54.0			
30-----	11	23,988	-49.1			
25-----	8	25,199	-47.5			
20-----	5	26,737	-45.7			
15-----						

LANDER, WYO. (829 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	1,696	3.9	75	237	2.5
1,000--	31	145				
950----	31	568				
900----	31	1,019				
850----	31	1,493				
800----	31	1,990	5.9	63	262	2.1
750----	31	2,514	3.5	58	256	4.9
700----	31	3,074	.7	54	244	7.8
650----	31	3,656	- 3.4	54	242	10.5
600----	31	4,294	- 7.7	51	245	13.2
550----	31	4,956	-12.4	48	243	15.7
500----	31	5,687	-17.4	43	242	17.7
450----	31	6,457	-22.9	40	249	17.3
400----	31	7,322	-29.3	38	253	16.5
350----	31	8,262	-36.5		256	18.5
300----	31	9,313	-44.1		260	22.3
250----	31	10,512	-52.7		262	23.5
200----	30	11,929	-60.0		262	24.1
175----	30	12,761	-60.9		268	22.3
150----	30	13,718	-61.3		275	22.5
125----	29	14,849	-62.2		274	18.3
100----	29	16,227	-62.2		280	14.6
80-----	29	17,607	-61.8		282	13.6
60-----	28	19,391	-60.7		282	11.3
50-----	27	20,531	-59.8		271	12.6
40-----	26	21,934	-58.3		280	12.0
30-----	23	23,767	-56.9		272	18.3
25-----	14	24,924	-56.5			
20-----						
15-----						

LAS VEGAS, NEV. (937 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	660	13.9	54	223	4.1
1,000--	31	102				
950----	31	539				
900----	31	999	15.7	42	177	.6
850----	31	1,482	12.8	46	142	1.4
800----	31	1,988	9.2	51	171	3.5
750----	31	2,518	5.7	55	179	6.0
700----	31	3,081	2.3	55	194	8.4
650----	31	3,674	- 1.5	50	205	10.3
600----	31	4,310	- 5.1	47	223	10.9
550----	31	4,982	- 9.5	44	237	14.0
500----	31	5,719	-14.5	42	240	16.3
450----	31	6,502	-20.2	37	244	17.3
400----	31	7,372	-26.6	38	240	21.0
350----	31	8,323	-33.6		239	24.1
300----	31	9,389	-41.1		248	26.2
250----	31	10,606	-49.5		252	31.3
200----	30	12,042	-56.2		255	36.1
175----	30	12,888	-57.9		256	38.1
150----	30	13,854	-60.3		257	37.1
125----	27	14,990	-62.5		257	31.7
100----	25	16,363	-64.7		260	21.6
80-----	25	17,730	-62.9		268	15.2
60-----	22	19,509	-60.8		276	8.4
50-----	22	20,647	-59.7		278	5.8
40-----	22	22,048	-57.9		288	5.4
30-----	18	23,875	-55.5		261	7.2
25-----	14	25,027	-53.7		273	10.3
20-----						
15-----						

LITTLE ROCK, ARK. (1011 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	79	11.5	86	351	3.1
1,000--	31	170	12.6	78	8	3.5
950----	31	608	12.3	67	69	2.9
900----	31	1,054	10.2	64	83	2.9
850----	31	1,529	8.6	58	4	1.7
800----	31	2,029	7.4	48	326	5.4
750----	31	2,561	5.2	44	332	7.2
700----	31	3,120	2.0	47	321	6.2
650----	31	3,716	- 1.2	43	316	8.0
600----	31	4,349	- 5.1	42	314	10.5
550----	31	5,026	- 9.0	34	299	13.6
500----	31	5,762	-13.5	30	301	16.1
450----	31	6,550	-19.1		295	21.6
400----	31	7,423	-25.2		297	26 4
350----	31	8,380	-32.0		293	29.0
300----	30	9,449	-40.0		288	35.4
250----	30	10,672	-48.6		288	44.1
200----	30	12,116	-55.7		282	43.7
175----	30	12,960	-59.1		280	51.5
150----	30	13,920	-62.4		279	40.6
125----	27	15,043	-64.9			
100----	26	16,398	-66.6			
80-----	25	17,758	-64.5			
60-----	24	19,534	-60.6			
50-----	22	20,675	-58.4			
40-----	22	22,091	-55.2			
30-----	18	23,947	-51.8			
25-----	11	25,125	-50.2			
20-----						

McGRATH, ALASKA (998 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	103	- 1.6	89	357	0.6
1,000--	31	90			182	2.3
950----	31	500	.2	76	96	2.5
900----	31	935	.3	68	157	4.7
850----	31	1,392	- 1.3	62	179	6.6
800----	31	1,874	- 3.5	62	188	8.9
750----	31	2,378	- 6.0	61	199	10.7
700----	31	2,919	- 8.8	59	201	13.8
650----	31	3,485	-11.9	54	208	14.4
600----	31	4,100	-15.0	51	205	15.7
550----	31	4,745	-19.2	49	208	17.9
500----	31	5,455	-23.8	48	218	17.1
450----	31	6,210	-29.0	46	225	17.7
400----	31	7,049	-35.2	46	223	16.9
350----	31	7,967	-41.9		223	13.8
300----	31	8,995	-48.9		228	13.2
250----	31	10,176	-54.6		238	17.3
200----	30	11,601	-55.2		249	21.8
175----	29	12,441	-53.6		260	19.0
150----	27	13,441	-52.6		263	20.4
125----	26	14,611	-52.0		252	20.0
100----	24	16,046	-52.0		235	19.8
80-----	20	17,493	-52.2		242	22.5
60-----	18	19,351	-53.4		254	25.1
50-----	15	20,515	-54.4			
40-----	8	21,979	-55.8			
30-----						
25-----						
20-----						

MEDFORD, OREG. (969 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	401	6.8	92	193	0.6
1,000--	31	139				
950----	31	565	8.3	82	198	1.6
900----	31	1,009	7.9	75	168	5.2
850----	31	1,481	6.1	69	162	6.2
800----	31	1,976	3.6	60	194	5.4
750----	31	2,496	1.0	53	234	7.4
700----	31	3,051	- 1.8	47	260	8.7
650----	31	3,633	- 4.9	45	269	11.5
600----	31	4,264	- 8.9	43	275	11.7
550----	31	4,929	-13.0	43	276	14.2
500----	31	5,654	-17.9	47	284	16.3
450----	31	6,428	-23.6	45	278	18.8
400----	31	7,286	-29.7	45	264	22.3
350----	31	8,225	-36.2		267	25.5
300----	31	9,279	-43.2		277	24.3
250----	31	10,487	-50.7		284	26.0
200----	31	11,920	-56.6		288	21.4
175----	31	12,764	-57.8		280	20.6
150----	31	13,735	-58.4		291	22.5
125----	31	14,880	-59.4		277	15.9
100----	31	16,272	-60.5		289	16.3
80-----	31	17,664	-59.9		289	9.1
60-----	31	19,465	-59.1		292	9.3
50-----	31	20,610	-58.6		306	5.6
40-----	30	22,018	-57.7		293	7.6
30-----	29	23,841	-56.3		269	10.1
25-----	25	25,006	-55.5			
20-----	10	26,444	-54.7			

MIAMI, FLA. (1015 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	4	21.8	87	40	3.3
1,000--	31	134	22.6	79	43	5.8
950----	31	579	20.4	76	52	6.0
900----	31	1,046	17.5	79	[illegible]	4.3
850----	31	1,533	14.6	78	140	2.1
800----	31	2,044	11 9	70	202	2.7
750----	31	2,584	9.8	56	241	3.9
700----	31	3,155	6.9	51	247	6.0
650----	31	3,758	4.1	45	249	8.0
600----	31	4,409	.4	43	254	9.5
550----	31	5,095	- 3.9	37	271	11.5
500----	31	5,849	- 8.5	37	274	14.0
450----	31	6,650	-14.1	38	270	17.7
400----	31	7,542	-20.7	37	274	19.8
350----	31	8,515	-28.0		278	24.5
300----	31	9,604	-36.1		276	29.1
250----	31	10,845	-45.6		280	33.4
200----	31	12,297	-56.5		289	33.0
175----	31	13,133	-62.0		282	33.0
150----	30	14,070	-67.5		280	36.3
125----	27	15,157	-71.3		279	28.8
100----	27	16,467	-73.3		277	15.2
80-----	26	17,781	-69.3		321	4.7
60-----	26	19,526	-62.7		67	4.1
50-----	26	20,657	-60.2		85	10.1
40-----	26	22,057	-57.1		92	13.6
30-----	21	23,899	-52.7		74	14.2
25-----	16	25,086	-50.5		75	16.5
20-----	6	26,529	-48.2			

MIDLAND, TEX. (919 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	871	12.1	82	109	2.7
1,000--	31	151				
950----	31	584				
900----	31	1,043	13.7	69	146	4.5
850----	31	1,525	12.9	62	196	8.5
800----	31	2,033	10.7	58	232	6.8
750----	31	2,565	8.0	52	247	8.4
700----	31	3,135	4.6	55	250	9.9
650----	31	3,731	.8	53	260	13.6
600----	31	4,375	- 3.0	44	264	17.1
550----	31	5,053	- 6.7	37	260	20.0
500----	31	5,798	-11.0	33	262	21.2
450----	31	6,593	-16.4		265	26.0
400----	31	7,476	-22.8	32	266	29.1
350----	31	8,442	-29.9		272	32.8
300----	31	9,523	-37.9		272	42.7
250----	30	10,756	-46.7		269	49.2
200----	30	12,207	-55.3		272	61.8
175----	30	13,051	-59.5		283	52.8
150----	30	14,006	-64.0		272	51.3
125----	30	15,114	-67.3			
100----	28	16,454	-69.0			
80-----	28	17,798	-66.4			
60-----	28	19,562	-61.8			
50-----	28	20,699	-59.4			
40-----	26	22,110	-56.6			
30-----	25	23,951	-53.1			
25-----	21	25,138	-51.3			
20-----	6	26,624	-49.0			

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

1/ 10 mb., 5 obs., 31,304 m., -39.1°C.

2/ 10 mb., 20 obs., 30,904 m., -55.2°C., 302 dir., 23.3 speed
7 mb., 17 obs., 33,178 m., -54.9°C., 303 dir., 26.4 speed
5 mb., 6 obs., 35,333 m., -54.5°C.

RAWINSONDE DATA

Average monthly values

OCTOBER 1957

MONTGOMERY, ALA (1013 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	61	11.8	89	32	2.1
1,000--	31	165	12.8	83	61	3.9
950----	31	597	13.2	73	76	6.2
900----	31	1,052	11.7	67	87	1.4
850----	31	1,529	9.7	61	277	2.3
800----	31	2,031	8.2	47	277	3.7
750----	31	2,559	5.9	40	285	5.8
700----	31	3,126	3.4	36	285	7.4
650----	31	3,722	.3	35	280	10.9
600----	31	4,362	- 3.4	33	283	14.6
550----	31	5,041	- 7.1		277	19.0
500----	31	5,784	-11.6		274	23.3
450----	31	6,580	-17.0		272	28.8
400----	31	7,460	-23.5		269	31.3
350----	30	8,421	-30.4		273	33.8
300----	30	9,500	-38.3		269	40.8
250----	30	10,730	-47.0		271	46.8
200----	30	12,180	-55.2		271	55.4
175----	30	13,024	-59.7		279	56.9
150----	30	13,980	-63.0		276	47.4
125----	29	15,100	-67.0		276	40.2
100----	25	16,437	-67.6		274	26.2
80-----	24	17,791	-65.4		276	14.2
60-----	24	19,560	-61.1		276	5.4
50-----	24	20,701	-58.4		287	1.4
40-----	23	22,118	-55.2			.0
30-----	22	23,968	-51.4		78	1.7
25-----	18	25,162	-49.3		313	1.7
20-----	11	26,638	-46.6			
15-----						

NANTUCKET, MASS. (1017 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	14	11.1	84	11	3.3
1,000--	31	155	11.4	79	351	3.7
950----	31	580	9.3	71	324	3.9
900----	31	1,030	7.1	64	304	3.9
850----	31	1,498	5.3	57	286	6.2
800----	31	1,992	3.8	45	285	8.9
750----	31	2,513	1.9	40	276	10.5
700----	31	3,070	- .9	39	269	12.6
650----	31	3,654	- 4.3	36	268	15.2
600----	31	4,285	- 7.6	34	263	17.3
550----	31	4,951	-11.6		265	17.1
500----	31	5,683	-16.3		255	19.8
450----	31	6,461	-21.6	37	254	24.5
400----	31	7,328	-27.6		261	25.6
350----	31	8,275	-34.4		273	29.3
300----	31	9,336	-42.2		272	27.6
250----	31	10,547	-50.6		260	25.3
200----	31	11,980	-56.8		258	33.0
175----	31	12,822	-58.5			
150----	31	13,788	-60.0			
125----	31	14,923	-61.6			
100----	31	16,305	-61.8			
80-----	31	17,692	-60.4			
60-----	31	19,492	-58.6			
50-----	31	20,641	-57.3			
40-----	31	22,057	-56.2			
30-----	28	23,898	-53.7			
25-----	27	25,072	-51.9			
20-----	11	26,535	-50.7			
15-----						

1/ **NASHVILLE, TENN.** (1000 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	177	9.5	91	318	1.0
1,000--	31	175				.0
950----	31	603	10.6	73	119	1.9
900----	31	1,054	8.6	69	173	.6
850----	31	1,525	7.0	59	348	3.7
800----	31	2,021	5.3	47	340	3.9
750----	31	2,545	3.5	38	327	5.4
700----	31	3,104	.9	40	309	8.0
650----	31	3,692	- 2.3	38	306	10.1
600----	31	4,327	- 6.2	38	300	13.2
550----	30	4,996	-10.3	38	293	16.7
500----	30	5,731	-15.1	36	290	18.8
450----	30	6,511	-20.7	35	290	21.2
400----	30	7,381	-26.6		290	25.8
350----	30	8,332	-33.4		277	28.6
300----	30	9,399	-40.7		271	33.2
250----	29	10,612	-49.0		265	38.3
200----	29	12,052	-56.0		269	38.9
175----	29	12,897	-58.5		266	38.9
150----	29	13,860	-61.2		259	27.2
125----	29	14,985	-63.7		272	28.8
100----	28	16,346	-64.3		281	16.5
80-----	27	17,716	-62.6		294	11.1
60-----	27	19,507	-59.4			
50-----	27	20,655	-57.2			
40-----	27	22,074	-55.1			
30-----	26	23,930	-51.7			
25-----	26	25,118	-49.9			
20-----	23	26,580	-48.0			
15-----	20	28,491	-45.0			

N. Y. INT. AP, IDLEWILD (1019 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	5	9.9	77	316	4.7
1,000--	31	164	10.0	67	321	5.8
950----	31	591	7.9	64	344	6.6
900----	31	1,034	6.0	60	330	5.8
850----	31	1,501	4.3	54	302	6.8
800----	31	1,993	2.8	47	287	8.0
750----	31	2,516	1.2	41	276	11.5
700----	31	3,067	- 1.5	43	269	12.6
650----	31	3,653	- 4.4	37	268	16.1
600----	31	4,281	- 7.9	35	265	17.1
550----	31	4,949	-12.0		261	17.7
500----	31	5,675	-16.6	35	265	20.2
450----	31	6,451	-22.0		261	22.7
400----	31	7,315	-28.3		261	25.8
350----	31	8,260	-34.9		259	28.8
300----	31	9,321	-41.9		256	34.8
250----	31	10,535	-49.8		254	40.4
200----	31	11,971	-56.1		259	46.0
175----	31	12,816	-57.8		261	43.5
150----	31	13,786	-59.3		262	40.6
125----	31	14,923	-61.1		264	33.4
100----	31	16,307	-61.7		264	27.4
80-----	31	17,693	-60.4		261	21.6
60-----	30	19,494	-58.0		260	14.6
50-----	30	20,648	-56.2		258	13.2
40-----	30	22,075	-53.8		252	11.1
30-----	23	23,949	-51.0		262	13.2
25-----	17	25,148	-49.1		271	11.1
20-----						
15-----						

2/ **NOME, ALASKA** (1009 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	7	- 0.3	88	43	3.3
1,000--	31	77			33	2.5
950----	31	485	- 1.1	75	68	3.3
900----	31	918	- 3.2	74	118	1.4
850----	31	1,370	- 4.6	69	223	1.2
800----	31	1,846	- 6.6	65	231	4.5
750----	31	2,341	- 9.3	61	231	5.2
700----	31	2,880	-11.4	53	254	4.9
650----	31	3,436	-14.4	51	239	5.4
600----	31	4,048	-17.7	51	247	9.3
550----	31	4,683	-21.5	47	240	13.4
500----	31	5,391	-26.0	49	238	16.9
450----	31	6,137	-31.1	52	253	17.5
400----	31	6,973	-36.9	56	252	18.1
350----	31	7,884	-43.1		265	18.8
300----	31	8,908	-49.3		244	23.5
250----	30	10,097	-54.1		249	28.6
200----	30	11,528	-53.0		247	26.4
175----	30	12,393	-51.4		254	21.0
150----	29	13,386	-50.9		230	25.1
125----	28	14,561	-51.0		248	27.4
100----	28	16,014	-51.1		247	24.5
80-----	28	17,466	-51.4		250	24.3
60-----	27	19,336	-52.5		247	25.5
50-----	27	20,513	-52.9		245	23.3
40-----	27	21,950	-53.8		259	23.9
30-----	23	23,802	-55.1			
25-----	23	24,96[illegible]	-56.0			
20-----	22	26,378	-56.5			
15-----	15	28,206	-57.7			

NORFOLK, VA. (1019 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	9	12.1	82	349	5.6
1,000--	31	166	13.0	73	356	6.6
950----	31	595	10.7	69	359	7.8
900----	31	1,045	8.5	66	352	5.8
850----	31	1,517	7.5	53	316	6.6
800----	31	2,015	5.3	54	289	7.6
750----	31	2,540	3.1	47	274	9.7
700----	31	3,097	.7	39	269	12.2
650----	31	3,689	- 2.1		268	15.2
600----	31	4,322	- 5.8		264	17.5
550----	31	4,995	- 9.9		266	18.7
500----	31	5,728	-14.7	35	265	21.2
450----	31	6,514	-20.2	35	261	25.1
400----	31	7,381	-26.4	39	261	30.7
350----	31	8,333	-33.1		258	35.4
300----	31	9,401	-40.5		254	41.4
250----	31	10,623	-48.6		253	45.3
200----	29	12,057	-55.3		259	46.6
175----	28	12,907	-58.5		265	44.3
150----	26	13,859	-60.2		266	38.7
125----	25	14,990	-62.7		264	32.1
100----	25	16,361	-63.3		263	24.7
80-----	21	17,748	-61.7		263	18.1
60-----	17	19,536	-59.1		265	11.5
50-----	16	20,682	-57.2		261	9.1
40-----	16	22,102	-54.7		256	7.2
30-----	14	23,941	-51.7		247	6.6
25-----	11	25,131	-49.5			
20-----	10	26,600	-47.6			
15-----						

NORTH PLATTE, NEB. (920 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	848	6.4	90	108	3.1
1,000--	31	153				
950----	31	577				
900----	31	1,025	7.8	82	136	5.2
850----	31	1,497	7.6	71	195	8.2
800----	31	1,996	7.0	65	227	8.2
750----	31	2,521	4.3	62	244	7.2
700----	31	3,084	1.2	58	255	8.5
650----	31	3,674	- 2.3	55	261	9.5
600----	31	4,309	- 6.4	49	268	10.7
550----	31	4,976	-10.9	44	266	12.0
500----	31	5,711	-15.4	35	273	12.4
450----	31	6,487	-21.3	34	272	13.6
400----	31	7,357	-27.7		268	16.9
350----	31	8,303	-34.8		265	19.4
300----	31	9,362	-42.6		269	23.9
250----	31	10,571	-50.9		266	29.1
200----	31	11,998	-58.4		265	34.2
175----	31	12,834	-60.3		268	30.9
150----	30	13,794	-61.0		268	27.0
125----	30	14,925	-62.0		270	25.1
100----	30	16,305	-62.3		267	20.4
80-----	29	17,689	-61.5		272	15.0
60-----	26	19,478	-59.3		284	13.4
50-----	26	20,623	-58.3		278	10.1
40-----	22	22,033	-56.6		282	13.6
30-----	11	23,888	-53.9			
25-----						
20-----						
15-----						

OAKLAND, CALIF. (1014 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	6	13.5	82	120	1.7
1,000--	31	120	14.0	79	143	1.9
950----	31	549	13.0	72	237	1.7
900----	31	1,007	11.1	66	257	3.3
850----	31	1,483	8.7	64	251	5.1
800----	31	1,983	5.8	57	252	6.4
750----	31	2,504	3.4	52	258	7.6
700----	31	3,067	.5	42	261	8.9
650----	30	3,651	- 2.5	37	289	10.3
600----	30	4,291	- 6.2	35	290	12.8
550----	30	4,959	-10.3	35	292	16.1
500----	30	5,695	-15.1	35	288	20.6
450----	30	6,470	-20.8		293	23.7
400----	30	7,345	-26.9	37	295	28.4
350----	30	8,297	-33.8		299	33.6
300----	30	9,360	-41.7		303	37.5
250----	30	10,575	-50.1		301	37.5
200----	30	12,008	-56.9		293	39.8
175----	29	12,848	-58.8		289	38.3
150----	29	13,812	-60.2		279	34.8
125----	26	14,938	-62.1		280	29.9
100----	22	16,315	-62.5		280	24.7
80-----	22	17,694	-61.4		276	17.1
60-----	21	19,485	-59.5		280	11.5
50-----	20	20,625	-58.4		290	6.6
40-----	19	22,027	-57.4		292	5.6
30-----	17	23,864	-54.6		275	4.9
25-----	17	25,036	-52.4		260	7.2
20-----	15	26,488	-50.1		268	11.1
15-----	12	28,370	-47.5		273	17.1

OKLAHOMA CITY, OKLA. (973 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	392	10.3	89	152	3.5
1,000--	31	163				
950----	31	592	12.3	70	169	7.0
900----	31	1,046	11.6	62	205	6.4
850----	31	1,523	10.1	55	255	4.1
800----	31	2,025	8.2	53	264	5.1
750----	31	2,556	5.7	50	272	5.4
700----	31	3,117	2.2	51	272	9.1
650----	31	3,708	- 1.5	48	274	9.9
600----	31	4,345	- 5.3	48	278	12.2
550----	31	5,019	- 8.8	35	279	15.0
500----	31	5,756	-13.5	35	274	17.3
450----	31	6,544	-19.0		275	20.4
400----	31	7,416	-25.4		284	25.1
350----	31	8,373	-31.9		289	31.3
300----	31	9,446	-39.2		292	33.4
250----	31	10,672	-47.6		285	38.3
200----	31	12,120	-55.3		282	46.0
175----	30	12,967	-58.3		282	48.2
150----	27	13,938	-61.0		275	41.6
125----	23	15,069	-63.6		287	25.8
100----	18	16,435	-64.7		281	19.6
80-----	13	17,808	-62.6			
60-----	12	19,613	-57.7			
50-----	12	20,769	-56.1			
40-----	12	22,196	-54.0			
30-----	12	24,054	-51.0			
25-----	12	25,245	-49.5			
20-----	11	26,725	-47.5			
15-----	9	28,632	-44.9			

3/ **OMAHA, NEBR.** (973 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	403	6.6	85	102	3.3
1,000--	31	173				
950----	31	596	8.5	71	156	3.9
900----	31	1,044	7.4	68	213	5.8
850----	31	1,513	5.7	65	261	5.1
800----	31	2,009	4.5	55	266	6.6
750----	31	2,534	2.3	50	270	7.2
700----	31	3,089	- .4	52	271	8.7
650----	31	3,674	- 3.6	47	279	10.3
600----	31	4,307	- 7.4	47	280	12.6
550----	31	4,975	-11.3	43	278	14.6
500----	31	5,707	-15.8	39	272	16.3
450----	31	6,485	-21.4		265	19.4
400----	31	7,353	-28.0		271	22.7
350----	31	8,298	-35.1		268	25.6
300----	31	9,356	-42.8		270	27.4
250----	31	10,564	-51.4		271	31.1
200----	31	11,988	-58.5		275	38.1
175----	30	12,823	-60.1		276	37.9
150----	30	13,782	-61.3		276	34.6
125----	29	14,913	-61.7		276	29.1
100----	25	16,284	-62.7		279	24.1
80-----	25	17,664	-61.2		281	16.9
60-----	25	19,459	-59.2		281	13.0
50-----	25	20,605	-58.2		281	12.8
40-----	25	22,016	-56.0		277	13.6
30-----	24	23,861	-53.0		276	17.7
25-----	24	25,041	-51.4		271	20.0
20-----	23	26,503	-49.5		264	25.1
15-----	22	28,398	-46.8		262	33.8

PEORIA, ILL. (998 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	201	6.0	84	13	2.1
1,000--	31	181			7	1.9
950----	31	606	8.7	66	118	2.3
900----	31	1,052	6.4	62	307	1.0
850----	31	1,519	5.1	52	308	2.7
800----	31	2,013	3.8	41	320	4.5
750----	31	2,538	2.1	36	304	6.2
700----	31	3,091	- .6	34	310	8.2
650----	31	3,677	- 3.6	35	300	8.9
600----	31	4,309	- 7.0	35	294	12.4
550----	31	4,979	-11.0		299	15.7
500----	31	5,710	-15.8		299	19.0
450----	31	6,489	-21.2		299	21.2
400----	31	7,354	-27.6		292	21.4
350----	31	8,301	-34.7		289	23.3
300----	31	9,360	-42.8		288	29.0
250----	31	10,567	-51.2		286	33.4
200----	31	11,993	-57.9		282	39.2
175----	31	12,832	-59.4		281	40.4
150----	31	13,795	-60.8		276	37.1
125----	30	14,929	-61.5		277	32.6
100----	30	16,309	-62.1		280	26.0
80-----	29	17,692	-61.0		278	16.9
60-----	28	19,484	-59.2		278	12.8
50-----	27	20,630	-57.9		274	10.3
40-----	26	22,040	-56.0		284	10.7
30-----	24	23,885	-53.3		279	16.1
25-----	23	25,063	-51.4		280	20.0
20-----	22	26,520	-49.5		266	22.7
15-----	15	28,397	-47.4		263	35.0

PITTSBURGH, PA (979 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	353	6.1	83	83	0.6
1,000--	31	182				
950----	31	603	8.1	67	261	1.2
900----	31	1,049	5.9	63	294	3.9
850----	31	1,516	3.9	59	301	6.0
800----	31	2,008	2.4	50	293	7.8
750----	31	2,528	.6	43	286	8.7
700----	31	3,080	- 2.0	41	281	11.1
650----	31	3,665	- 5.2	41	278	15.0
600----	31	4,291	- 8.8	39	279	16.9
550----	31	4,954	-12.7		281	16.9
500----	31	5,682	-17.4		280	18.5
450----	31	6,455	-22.8		275	21.6
400----	31	7,318	-29.3		266	23.9
350----	31	8,259	-36.1		267	26.6
300----	31	9,312	-43.7		260	31.1
250----	31	10,517	-51.3		262	36.9
200----	30	11,939	-56.9		260	42.2
175----	28	12,772	-58.1		258	41.8
150----	27	13,735	-59.5		263	39.6
125----	22	14,867	-60.9		262	35.0
100----	17	16,233	-60.2		259	30.1
80-----	17	17,625	-60.0		259	23.7
60-----	16	19,432	-58.2		249	18.1
50-----	14	20,579	-57.4		247	17.5
40-----	13	21,999	-55.1		262	15.3
30-----	6	23,883	-53.5			
25-----						
20-----						
15-----						

4/ **PORTLAND, ME.** (1017 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	20	6.6	85	301	3.5
1,000--	31	159	9.2	70	316	4.1
950----	31	580	8.0	64	308	3.5
900----	31	1,029	6.2	62	309	4.1
850----	31	1,496	4.2	63	280	4.5
800----	31	1,987	2.0	59	267	7.0
750----	31	2,505	.2	51	261	10.5
700----	31	3,057	- 2.1	47	258	12.0
650----	31	3,637	- 5.1	45	258	14.4
600----	31	4,268	- 8.7	42	257	16.7
550----	31	4,929	-13.0	39	254	19.2
500----	31	5,658	-17.4	39	251	20.0
450----	31	6,431	-22.7		254	22.2
400----	31	7,293	-29.0		252	26.2
350----	31	8,235	-35.8		252	31.9
300----	31	9,291	-43.2		250	37.5
250----	31	10,497	-51.2		254	42.9
200----	31	11,929	-56.0		254	46.8
175----	31	12,777	-57.0		253	39.8
150----	31	13,751	-58.0		251	39.4
125----	31	14,896	-59.5		252	35.2
100----	31	16,292	-59.4		254	26.8
80-----	31	17,692	-58.5		253	20.2
60-----	31	19,506	-57.4		251	15.0
50-----	31	20,663	-55.8		256	16.5
40-----	30	22,094	-54.1		259	15.3
30-----	30	23,948	-52.1		257	17.5
25-----	30	25,134	-50.4		257	19.6
20-----	26	26,597	-48.5		258	25.3
15-----	20	28,505	-45.7		257	29.5

RAPID CITY, S. DAK. (906 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	966	5.5	78	49	1.7
1,000--	31	154				
950----	31	576				
900----	31	1,023			351	2.1
850----	31	1,492	6.0	71	263	2.5
800----	31	1,989	4.7	65	253	4.5
750----	31	2,511	3.1	60	261	5.8
700----	31	3,071	.1	57	257	7.4
650----	31	3,654	- 3.5	59	254	10.9
600----	31	4,290	- 7.7	54	252	12.6
550----	30	4,949	-12.5	53	261	12.6
500----	30	5,678	-17.5	49	261	15.3
450----	30	6,453	-23.2	41	261	15.2
400----	30	7,312	-29.2	36	264	18.3
350----	30	8,252	-36.5		265	19.4
300----	30	9,302	-44.4		263	23.5
250----	30	10,500	-53.1		267	25.6
200----	30	11,913	-59.7		263	31.7
175----	29	12,742	-60.8		263	32.1
150----	27	13,706	-60.3		265	28.6
125----	24	14,853	-61.0		273	28.0
100----	18	16,217	-61.1		275	21.4
80-----	13	17,585	-61.0		282	19.8
60-----	10	19,352	-60.6		289	13.0
50-----	7	20,475	-60.1			
40-----	6	21,872	-58.5			
30-----	6	23,690	-56.2			
25-----						
20-----						
15-----						

5/ **ST. CLOUD, MINN.** (983 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	316	4.6	88	64	0.6
1,000--	31	174				
950----	31	598	7.0	74	184	2.9
900----	31	1,039	5.4	71	217	6.2
850----	31	1,505	3.9	61	238	5.2
800----	31	1,997	2.7	56	246	5.2
750----	31	2,521	.3	58	259	4.9
700----	31	3,069	- 1.9	51	270	6.2
650----	31	3,657	- 5.0	44	284	6.2
600----	31	4,281	- 8.6	41	286	8.2
550----	31	4,948	-12.8	37	281	10.7
500----	31	5,672	-17.3		287	11.1
450----	30	6,444	-22.9		295	9.1
400----	30	7,303	-29.5		289	8.9
350----	30	8,242	-36.6		283	13.2
300----	30	9,293	-44.4		275	14.6
250----	29	10,485	-52.7		277	16.9
200----	29	11,903	-58.8		279	21.0
175----	28	12,743	-59.3		280	22.3
150----	28	13,709	-59.4		278	25.3
125----	27	14,843	-60.0		291	20.2
100----	26	16,227	-60.4		286	18.7
80-----	25	17,615	-59.4		293	16.3
60-----	26	19,418	-58.8		290	13.6
50-----	25	20,564	-58.4		295	13.0
40-----	24	21,962	-57.5		289	13.2
30-----	22	23,784	-55.5		271	19.4
25-----	20	24,962	-54.2		271	23.9
20-----	20	26,398	-52.5		272	33.4
15-----	19	28,270	-50.6		273	39.1

These average values for standard pressure surfaces were obtained by rawinsondes, dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

1/ 10 mb., 6 obs., 31,212 m., -43.6°C.
2/ 10 mb., 6 obs., 30,719 m., -59.9°C.
3/ 10 mb., 9 obs., 31,151 m., -42.6°C.
4/ 10 mb., 7 obs., 31,187 m., -42.1°C.
5/ 10 mb., 11 obs., 30,947 m., -48.2°C.

RAWINSONDE DATA

Average monthly values

SALEM, OREG. (1008 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	61	8.8	93	185	3.1
1,000--	31	127			183	1.7
950----	31	552	9.9	76	201	4.1
900----	31	1,003	8.1	70	213	5.6
850----	31	1,473	5.5	68	228	6.4
800----	31	1,966	2.5	68	230	6.6
750----	31	2,483	- .3	66	249	8.4
700----	31	3,036	- 2.9	54	258	8.7
650----	30	3,613	- 6.1	52	259	10.3
600----	30	4,242	- 9.9	46	261	12.2
550----	30	4,900	-14.1	41	272	12.6
500----	30	5,626	-18.8	41	277	15.3
450----	30	6,393	-24.6	43	280	20.4
400----	30	7,250	-30.9	42	274	23.3
350----	30	8,184	-37.9		273	23.9
300----	30	9,231	-44.8		270	28.6
250----	30	10,434	-50.9		277	34.0
200----	30	11,869	-55.9		279	30.1
175----	30	12,717	-56.9		279	29.0
150----	30	13,691	-57.7		277	27.2
125----	30	14,840	-58.8		282	20.8
100----	30	16,239	-59.2		277	17.1
80-----	28	17,628	-59.4		277	12.0
60-----	28	19,433	-58.9		289	8.7
50-----	25	20,580	-59.0		293	8.7
40-----	21	21,991	-58.3		282	7.0
30-----	16	23,812	-56.8		273	12.0
25-----	12	24,982	-56.0		277	14.8
20-----	8	26,403	-55.0			
15-----	6	28,235	-54.0			

SALT LAKE CITY, UTAH (871 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,288	7.2	72	150	5.8
1,000--	31	139				
950----	31	563				
900----	31	1,018				
850----	31	1,494	9.8	57	157	7.6
800----	31	1,997	7.7	53	180	8.7
750----	31	2,529	4.3	52	197	8.0
700----	31	3,085	.4	55	226	8.9
650----	31	3,671	- 3.7	56	229	12.4
600----	31	4,304	- 7.9	53	237	13.8
550----	31	4,973	-11.4	40	237	16.7
500----	31	5,702	-16.1	36	239	18.1
450----	31	6,483	-21.5		242	21.0
400----	31	7,347	-27.6	36	244	21.4
350----	31	8,294	-34.5		245	24.5
300----	31	9,353	-42.5		246	23.7
250----	31	10,561	-51.4		247	29.0
200----	30	11,977	-58.3		252	31.3
175----	29	12,817	-58.1		259	31.9
150----	29	13,787	-59.1		258	28.0
125----	29	14,927	-60.5		262	25.5
100----	29	16,312	-61.3		267	21.0
80-----	28	17,698	-60.3		274	15.3
60-----	28	19,495	-59.4		280	12.2
50-----	27	20,641	-58.2		287	10.3
40-----	26	22,053	-57.1		281	9.1
30-----	21	23,906	-55.3		284	10.1
25-----	16	25,048	-54.3		274	13.4
20-----	10	26,454	-53.2			
15-----						

SAN ANTONIO, TEX. (990 MB)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	243	15.4	84	4	3.1
1,000--	31	156				
950----	31	596	16.2	74	111	4.9
900----	31	1,052	14.3	68	160	6.4
850----	31	1,534	12.8	61	188	4.7
800----	31	2,042	11.0	51	228	3.9
750----	31	2,582	8.4	52	265	4.9
700----	31	3,146	5.3	52	288	8.0
650----	31	3,745	1.9	49	275	10.7
600----	31	4,389	- 1.7	45	279	14.4
550----	31	5,076	- 5.6	36	282	18.3
500----	31	5,819	- 9.9	30	275	23.1
450----	31	6,621	-15.6	32	276	25.8
400----	31	7,502	-21.6	34	270	32.3
350----	31	8,472	-28.7	35	277	37.9
300----	31	9,558	-36.8		276	44.1
250----	31	10,797	-45.6		273	50.1
200----	30	12,254	-55.0		278	58.9
175----	29	13,101	-59.8		279	58.1
150----	29	14,053	-65.0		277	55.0
125----	27	15,152	-69.7			
100----	24	16,467	-72.6			
80-----	23	17,790	-68.9			
60-----	23	19,533	-63.6			
50-----	22	20,666	-60.1			
40-----	20	22,072	-56.9			
30-----	20	23,910	-53.4			
25-----	19	25,088	-50.9			
20-----						
15-----						

1/ SAN DIEGO, CALIF. (998 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	124	13.9	91	91	0.8
1,000--	31	108			29	3.1
950----	31	544	15.3	71	211	2.7
900----	31	1,002	13.4	62	219	2.7
850----	31	1,482	11.3	58	235	3.5
800----	31	1,987	9.1	52	235	5.4
750----	31	2,513	6.1	48	248	6.4
700----	31	3,082	3.6	36	256	8.2
650----	31	3,672	.4		262	10.7
600----	31	4,318	- 3.5		263	13.0
550----	31	4,990	- 8.1		266	16.3
500----	31	5,734	-13.4		263	20.2
450----	31	6,518	-19.1		265	22.2
400----	31	7,394	-25.7		264	25.3
350----	31	8,350	-32.2		262	29.5
300----	31	9,421	-40.3		260	29.5
250----	31	10,642	-48.6		260	38.1
200----	31	12,088	-54.8		260	42.9
175----	31	12,937	-57.5		257	41.8
150----	31	13,905	-60.8		260	38.5
125----	31	15,029	-64.4		260	35.8
100----	31	16,385	-66.5		263	28.2
80-----	31	17,742	-63.9		266	16.9
60-----	31	19,516	-61.1		247	5.2
50-----	31	20,653	-59.5		211	2.3
40-----	31	22,056	-57.4		99	1.2
30-----	30	23,891	-54.4		144	1.7
25-----	27	25,058	-52.4		251	1.9
20-----	20	26,481	-50.2		259	7.6
15-----	17	28,364	-47.8		264	14.2

2/ SAN JUAN, P. R. (1013 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	6	24.7	88	151	4.5
1,000--	31	121	24.9	80	128	6.2
950----	31	571	22.4	78	96	11.1
900----	31	1,041	19.6	75	92	10.3
850----	31	1,532	16.6	72	84	8.5
800----	31	2,047	14.0	69	90	6.2
750----	31	2,583	11.4	60	101	4.1
700----	31	3,165	8.6	46	118	1.2
650----	31	3,770	4.9	46	232	2.7
600----	31	4,423	1.0	38	245	1.0
550----	31	5,109	- 3.0	36	203	1.4
500----	31	5,867	- 7.6	31	238	2.1
450----	31	6,670	-13.0	32	260	4.9
400----	31	7,568	-19.4	31	279	5.8
350----	31	8,547	-26.3		286	6.4
300----	31	9,643	-34.6		283	7.2
250----	31	10,892	-44.5		294	8.9
200----	31	12,349	-55.8		301	15.0
175----	30	13,187	-61.7		291	16.9
150----	30	14,129	-67.3		295	16.7
125----	28	15,213	-72.2		286	15.7
100----	27	16,517	-73.9		303	9.5
80-----	27	17,826	-71.1		350	1.9
60-----	27	19,553	-65.3		68	8.0
50-----	27	20,672	-61.7		79	11.1
40-----	26	22,068	-57.3		91	18.1
30-----	24	23,910	-52.9		94	20.6
25-----	21	25,084	-51.1		91	24.3
20-----	21	26,545	-48.3		93	29.1
15-----	19	28,462	-43.5		96	33.6

SANTA MARIA, CALIF. (1005 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	74	12.2	85		.0
1,000--	31	119	13.2	81	351	.8
950----	31	554	14.8	65	41	5.1
900----	31	1,011	13.1	60	33	4.5
850----	31	1,489	10.2	61	5	3.9
800----	31	1,992	7.7	52	317	5.2
750----	31	2,519	5.3	44	294	7.6
700----	31	3,083	2.1	40	293	7.6
650----	31	3,675	- .7	33	287	12.6
600----	31	4,314	- 4.5	33	287	16.1
550----	31	4,989	- 8.9	33	282	15.9
500----	31	5,726	-13.9	33	285	17.3
450----	31	6,510	-19.8	34	290	18.7
400----	31	7,382	-25.9		292	21.2
350----	31	8,336	-33.3		295	20.4
300----	31	9,401	-41.5		292	21.8
250----	31	10,616	-49.7		289	25.6
200----	31	12,053	-56.1		290	23.9
175----	31	12,900	-57.8		276	21.4
150----	31	13,867	-60.4		270	27.8
125----	31	14,997	-62.6		267	23.3
100----	31	16,367	-64.1		268	18.8
80-----	31	17,740	-62.2		273	8.5
60-----	31	19,530	-59.7		293	8.2
50-----	28	20,675	-58.2		301	3.3
40-----	26	22,089	-56.4		250	3.9
30-----	18	23,908	-54.8			
25-----	10	25,084	-53.2			
20-----						
15-----						

3/ SANTA MONICA, CALIF. (1009 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	38	16.0	79	34	3.3
1,000--	31	119	16.3	77	43	2.9
950----	31	551	15.3	69	72	2.3
900----	31	1,013	13.3	63	87	2.7
850----	31	1,492	11.0	59	38	.8
800----	31	1,996	8.4	53	263	3.7
750----	31	2,522	5.5	52	254	4.7
700----	31	3,089	2.7	41	273	6.8
650----	31	3,680	- .4	38	270	8.0
600----	30	4,321	- 4.5		275	12.0
550----	30	4,993	- 8.8		274	15.9
500----	30	5,734	-14.0		278	15.5
450----	30	6,517	-19.7		278	19.0
400----	30	7,392	-26.2		277	20.4
350----	30	8,345	-33.1		279	24.1
300----	30	9,412	-41.0		276	26.2
250----	30	10,629	-49.1		272	31.1
200----	30	12,073	-55.4		270	33.8
175----	28	12,909	-57.7		267	35.0
150----	28	13,876	-60.3		265	32.4
125----	27	15,005	-63.4		263	30.7
100----	25	16,374	-64.9		270	25.5
80-----	23	17,735	-63.0		268	15.9
60-----	23	19,517	-60.4		268	8.4
50-----	23	20,658	-58.8		268	5.4
40-----	23	22,065	-57.2		302	2.9
30-----	22	23,906	-54.1		249	5.1
25-----	22	25,081	-52.3		252	5.8
20-----	22	26,535	-49.4		255	12.0
15-----	21	28,431	-46.9		257	14.4

4/ S. STE. MARIE, MICH. (995 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	221	4.2	89	13	1.2
1,000--	31	178			76	2.5
950----	31	601	5.8	73	309	3.1
900----	31	1,040	3.8	68	296	5.2
850----	31	1,503	2.1	64	292	8.0
800----	31	1,991	.6	56	302	10.5
750----	31	2,506	- 1.4	48	303	11.9
700----	31	3,056	- 3.5	47	314	13.4
650----	31	3,636	- 6.2	45	316	14.0
600----	31	4,261	- 9.9	43	313	14.6
550----	31	4,923	-14.2	38	315	16.3
500----	31	5,644	-19.1	36	311	17.7
450----	31	6,415	-24.5	36	307	18.5
400----	31	7,270	-30.7		306	20.8
350----	31	8,205	-37.5		306	22.2
300----	31	9,252	-44.9		307	24.1
250----	31	10,451	-52.5		301	27.4
200----	31	11,875	-57.2		293	33.0
175----	30	12,715	-57.1		293	30.9
150----	29	13,689	-56.9		290	27.6
125----	28	14,841	-57.8		281	23.5
100----	27	16,241	-58.4		282	21.8
80-----	27	17,648	-57.9		280	17.3
60-----	26	19,471	-57.6		279	16.1
50-----	26	20,625	-57.0		272	17.9
40-----	24	22,034	-55.8		264	16.7
30-----	23	23,879	-54.3		263	18.7
25-----	23	25,050	-53.2		266	22.9
20-----	23	26,492	-52.1		264	27.4
15-----	22	28,371	-49.5		264	36.3

SEATTLE, WASH. (1001 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	125	8.5	89	109	3.9
1,000--	31	129			104	4.3
950----	31	555	9.4	73	176	4.9
900----	31	1,003	7.5	68	209	3.7
850----	31	1,472	4.9	69	203	5.4
800----	31	1,964	1.8	70	220	6.2
750----	31	2,480	- 1.1	64	228	8.5
700----	31	3,031	- 4.1	58	232	8.7
650----	31	3,608	- 7.9	56	237	9.1
600----	31	4,229	-11.7	50	249	9.9
550----	31	4,886	-15.9	46	256	11.1
500----	31	5,603	-20.6	39	261	13.4
450----	31	6,370	-26.0	38	263	19.2
400----	31	7,218	-31.7	41	266	19.6
350----	31	8,149	-38.5		271	21.2
300----	31	9,193	-45.3		272	21.4
250----	31	10,392	-51.5		273	24.7
200----	31	11,827	-55.5		285	24.7
175----	30	12,674	-55.7		285	22.5
150----	30	13,654	-56.2		282	21.6
125----	30	14,810	-57.2		283	19.4
100----	30	16,220	-58.0		284	14.8
80-----	29	17,624	-58.2		283	11.1
60-----	27	19,438	-58.0		284	9.5
50-----	25	20,583	-58.2		291	8.5
40-----	23	21,984	-58.0		293	9.3
30-----	22	23,788	-57.9		290	9.7
25-----	21	24,935	-57.3		286	12.6
20-----	18	26,359	-56.1		288	14.6
15-----	13	28,163	-55.6			

5/ SHREVEPORT, LA (1010 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	76	12.8	87	27	2.1
1,000--	31	161	13.8	78	49	2.7
950----	31	595	13.4	64	85	2.5
900----	31	1,049	11.1	65	336	1.0
850----	31	1,525	9.6	55	301	2.3
800----	31	2,027	7.9	48	291	4.3
750----	31	2,556	5.6	42	297	5.6
700----	31	3,120	2.9	37	298	8.5
650----	31	3,712	- .5	33	302	9.9
600----	31	4,354	- 3.8		300	13.8
550----	30	5,027	- 7.8		295	17.5
500----	30	5,771	-12.6		294	20.6
450----	30	6,561	-18.1		291	25.6
400----	30	7,439	-24.3		285	29.5
350----	30	8,399	-31.0		287	32.8
300----	30	9,475	-38.9		288	37.7
250----	30	10,702	-47.7		283	49.2
200----	30	12,148	-55.8		282	55.8
175----	29	12,993	-59.9		280	57.5
150----	29	13,946	-64.0		281	52.7
125----	26	15,049	-67.3		284	43.3
100----	22	16,390	-69.0		282	24.1
80-----	19	17,739	-65.9		284	15.7
60-----	19	19,508	-61.0		311	4.5
50-----	18	20,649	-58.9		134	6
40-----	18	22,061	-55.5		76	2.9
30-----	18	23,915	-51.4		56	2.9
25-----	17	25,107	-49.3		101	3.7
20-----	17	26,581	-46.1		77	1.2
15-----	15	28,509	-42.5		304	2.1

SPOKANE, WASH. (932 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	722	4.7	89	97	2.7
1,000--	31	144				
950----	31	567				
900----	31	1,008	6.0	75	103	4.1
850----	31	1,476	4.9	69	185	4.5
800----	31	1,969	2.5	65	222	6.4
750----	31	2,487	- .5	64	226	9.1
700----	31	3,038	- 3.8	63	223	10.7
650----	31	3,615	- 7.4	62	226	10.9
600----	31	4,239	-11.3	57	230	12.0
550----	30	4,892	-15.9	52	228	13.0
500----	30	5,611	-20.8	51	227	13.4
450----	30	6,371	-26.4	49	236	14.4
400----	30	7,223	-32.5	46	239	16.1
350----	30	8,150	-39.5		247	16.7
300----	30	9,191	-46.0		250	18.7
250----	30	10,389	-51.2		260	21.4
200----	30	11,825	-55.6		263	21.2
175----	30	12,675	-55.9		260	21.6
150----	30	13,656	-56.2		264	19.4
125----	30	14,813	-57.0		265	17.3
100----	27	16,233	-57.7		271	14.2
80-----	25	17,639	-58.1		271	11.5
60-----	22	19,456	-57.8		280	12.0
50-----	22	20,606	-57.8		275	9.7
40-----	21	22,009	-57.4		279	13.0
30-----	18	23,838	-56.6		273	17.3
25-----	16	25,011	-56.1		274	18.1
20-----	10	26,429	-55.9			
15-----						

6/ SWAN ISLAND, W I. (1011 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	29	10	26.5	83	41	6.6
1,000--	29	106	25.9	84	46	7.2
950----	29	551	22.7	86	62	7.6
900----	29	1,029	19.7	83	66	6.6
850----	29	1,520	16.9	75	76	6.0
800----	29	2,036	14.0	75	99	4.1
750----	29	2,576	11.4	74	118	3.7
700----	29	3,155	8.7	65	134	3.5
650----	29	3,763	5.3	61	140	3.7
600----	29	4,417	2.1	50	113	2.3
550----	29	5,108	- 1.2	37	48	2.3
500----	29	5,870	- 6.0	38	25	3.7
450----	29	6,679	-11.2	34	29	4.9
400----	29	7,582	-17.3		4	8.0
350----	29	8,569	-24.8		359	11.3
300----	29	9,673	-32.5		336	13.4
250----	29	10,930	-43.0		327	11.9
200----	29	12,396	-54.9		309	15.5
175----	29	13,236	-61.5		307	16.5
150----	29	14,177	-68.2		304	17.3
125----	28	15,255	-74.1		306	15.2
100----	27	16,548	-77.2		320	8.0
80-----	27	17,840	-72.7		334	3.1
60-----	26	19,558	-65.6		71	8.2
50-----	25	20,675	-62.1		86	10.1
40-----	25	22,067	-58.3		94	12.2
30-----	22	23,895	-54.4		89	21.4
25-----	21	25,066	-52.4		98	20.4
20-----	19	26,518	-48.8		91	22.3
15-----	18	28,420	-44.8		84	33.8

TAMPA, FLA (1016 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	8	17.9	86	34	5.2
1,000--	31	146	19.0	80	46	8.4
950----	31	588	17.9	74	65	7.4
900----	31	1,048	15.1	71	74	2.5
850----	31	1,531	12.2	70	233	2.1
800----	31	2,037	10.1	54	239	4.9
750----	31	2,573	8.2	46	246	7.0
700----	31	3,140	5.9	36	260	8.5
650----	31	3,742	3.0		264	11.7
600----	31	4,388	- .2		264	14.6
550----	31	5,071	- 4.3		265	17.3
500----	31	5,824	- 9.6		269	20.2
450----	31	6,622	-15.4		273	22.3
400----	31	7,509	-21.7		276	27.4
350----	31	8,479	-28.8		277	29.1
300----	31	9,565	-36.8		279	32.3
250----	31	10,803	-45.9		278	38.5
200----	31	12,257	-55.5		282	41.4
175----	31	13,099	-60.5		289	38.5
150----	31	14,049	-65.2		280	35.4
125----	31	15,149	-69.3		281	30.7
100----	31	16,478	-70.0		279	18.1
80-----	31	17,814	-67.2		318	6.6
60-----	31	19,575	-61.6		53	5.1
50-----	31	20,711	-59.0		80	7.2
40-----	31	22,120	-56.2		78	11.1
30-----	31	23,967	-51.9		83	13.4
25-----	29	25,154	-49.4		91	13.0
20-----	23	26,640	-46.7		92	10.5
15-----	10	28,556	-44.2			

TATOOSH IS., WASH. (1011 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	31	11.1	81	94	11.1
1,000--	31	120	10.9	75	96	9.9
950----	31	544	9.3	67	94	7.8
900----	31	995	6.9	68	129	6.2
850----	31	1,463	3.9	72	186	3.5
800----	31	1,954	1.1	68	210	4.9
750----	31	2,468	- 1.6	64	236	5.8
700----	31	3,019	- 4.7	60	244	6.2
650----	31	3,590	- 8.1	55	248	7.6
600----	31	4,217	-11.6	48	249	10.7
550----	31	4,870	-15.9	47	254	12.6
500----	31	5,592	-20.7	44	279	11.3
450----	31	6,354	-25.9	44	271	17.7
400----	31	7,209	-31.6	42	250	19.0
350----	31	8,140	-38.5		252	18.3
300----	31	9,184	-45.5		256	23.7
250----	31	10,384	-51.3		264	23.3
200----	31	11,820	-55.2		279	23.5
175----	31	12,670	-56.1		281	19.0
150----	30	13,651	-56.5		279	18.1
125----	30	14,808	-56.6		267	16.7
100----	29	16,219	-57.8		278	11.7
80-----	29	17,626	-58.0		295	8.2
60-----	26	19,427	-58.5		287	6.0
50-----	25	20,570	-58.7		301	6.4
40-----	24	21,974	-58.5		329	6.0
30-----	20	23,792	-58.1		291	4.3
25-----	13	24,938	-57.7			
20-----						
15-----						

TOPEKA, KANS. (989 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	269	8.2	86	57	1.6
1,000--	31	175				
950----	31	603	10.1	69	153	4.1
900----	31	1,050	8.8	65	214	3.9
850----	31	1,523	7.3	63	256	4.3
800----	31	2,021	5.9	56	274	6.4
750----	31	2,546	3.7	53	268	7.6
700----	31	3,105	.8	54	272	9.3
650----	31	3,690	- 2.6	52	268	8.9
600----	31	4,328	- 6.3	49	273	10.3
550----	31	4,991	-10.4	48	269	13.6
500----	31	5,731	-14.9	42	274	15.2
450----	31	6,508	-20.6	41	276	18.1
400----	31	7,381	-26.9	39	281	21.2
350----	31	8,330	-34.0		282	23.9
300----	31	9,392	-42.0		283	26.8
250----	31	10,603	-50.4		280	35.6
200----	30	12,037	-57.7		278	42.2
175----	29	12,872	-60.1		280	42.7
150----	26	13,834	-61.8		279	40.2
125----	24	14,957	-62.8		280	31.1
100----	16	16,349	-64.2		283	24.1
80-----	11	17,754	-63.5		285	11.9
60-----	9	19,535	-60.0			
50-----	9	20,678	-58.2			
40-----	7	22,076	-56.0			
30-----	5	23,950	-52.8			
25-----	5	25,133	-50.1			
20-----						
15-----						

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

1/ 10 mb., 10 obs., 31,047 m., -46.1°C.
2/ 10 mb., 8 obs., 31,229 m., -39.0°C.
3/ 10 mb., 11 obs., 31,156 m., -44.5°C.
4/ 10 mb., 12 obs., 31,007 m., -47.0°C.
5/ 10 mb., 11 obs., 31,308 m., -37.9°C.
6/ 10 mb., 13 obs., 31,170 m., -40.1°C.

RAWINSONDE DATA

Average monthly values

OCTOBER 1957

Standard pressure surface (mb.)	TUCSON, ARIZ. (924 MB.)						1/ WASHINGTON, D. C. (1010 MB.)						WINNEMUCCA, NEV. (869 MB.)						2/ YAKUTAT, ALASKA (1012 MB.)						YUMA, ARIZ. (999 MB.)					
					Wind						Wind						Wind						Wind						Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	781	15.5	67	141	4.9	31	88	8.5	84	321	1.9	31	1,310	2.1	86	102	1.9	31	12	4.2	92	79	4.7	31	105	18.3	58		0.0
1,000--	31	104					31	174	9.5	73	333	3.1	31	154					31	111			80	5.2	31	90	17.4		28	1.2
950----	31	543					31	596	8.7	64	344	4.7	31	575					31	535	6.3	66	130	7.4	31	535	19.5	52	360	2.1
900----	31	1,007	17.5	54	147	7.8	31	1,046	6.4	62	318	5.1	31	1,021					31	975	3.9	67	147	6.6	31	996	16.6	53	226	1.7
850----	31	1,494	14.8	53	163	7.0	31	1,514	5.6	50	287	6.8	31	1,487	6.4	65	99	2.7	31	1,438	1.7	63	145	6.6	31	1,480	13.4	55	203	3.5
800----	31	2,004	11.4	55	183	8.4	31	2,009	3.6	42	275	8.5	31	1,984	5.3	59	198	1.9	31	1,925	- .5	62	162	5.8	31	1,988	10.0	55	203	6.0
750----	31	2,539	7.8	56	194	11.7	31	2,530	1.4	40	272	9.1	31	2,505	2.0	61	243	6.4	31	2,443	- 3.1	60	180	5.6	31	2,525	6.9	54	210	7.6
700----	31	3,107	4.2	51	202	15.7	31	3,084	- 1.0		266	11.9	31	3,063	- 1.2	55	239	9.9	31	2,983	- 6.3	56	204	4.7	31	3,085	3.7	46	226	8.5
650----	31	3,704	.9	44	208	16.3	31	3,668	- 4.0	38	261	15.2	31	3,647	- 4.5	48	235	13.0	31	3,560	- 9.8	52	209	6.0	31	3,684	.0	34	227	11.5
600----	31	4,347	- 3.0	35	224	17.5	31	4,300	- 7.5	38	258	19.0	31	4,278	- 7.7	40	233	14.6	31	4,173	-13.5	45	214	6.8	31	4,321	- 3.3		240	13.6
550----	31	5,024	- 7.2		233	19.2	31	4,966	-11.5	38	258	20.8	31	4,944	-12.0	41	239	13.2	31	4,825	-17.6	44	218	5.8	31	5,002	- 8.0		247	15.2
500----	31	5,769	-11.7		241	21.6	31	5,698	-16.4	40	257	23.5	31	5,674	-16.7	45	250	15.0	31	5,537	-22.6	42	234	5.2	31	5,736	-13.3		248	18.3
450----	31	6,562	-17.2		243	24.5	31	6,473	-21.9	38	251	23.1	31	6,448	-22.2	47	249	15.7	31	6,293	-28.0	41	241	5.2	30	6,533	-19.3		250	20.6
400----	31	7,442	-23.8		246	29.5	31	7,339	-28.2	39	251	25.6	31	7,313	-28.6	41	246	17.7	31	7,140	-34.2	39	243	10.1	30	7,392	-25.9		253	27.2
350----	31	8,404	-30.8		253	34.4	31	8,284	-34.8		253	29.0	31	8,257	-35.5	38	258	19.0	31	8,061	-40.9		236	14.2	30	8,344	-33.0		250	33.8
300----	31	9,480	-39.0		254	40.2	31	9,344	-42.1		256	31.3	31	9,312	-43.1		263	19.8	31	9,095	-47.8		253	17.7	30	9,410	-40.6		252	35.6
250----	31	10,708	-47.7		251	48.4	31	10,557	-49.8		254	37.9	30	10,522	-51.1		265	23.5	30	10,286	-52.6		263	16.5	29	10,626	-48.7		257	40.2
200----	31	12,158	-54.9		252	57.1	30	11,990	-55.6		267	42.4	30	11,952	-57.0		276	22.2	30	11,717	-55.3		264	15.5	26	12,071	-55.1		252	42.7
175----	31	13,005	-58.6		255	55.4	30	12,836	-57.8		266	40.4	30	12,796	-57.4		271	23.7	29	12,572	-55.9		256	16.5	22	12,904	-57.8		255	40.8
150----	31	13,964	-62.7		254	52.8	30	13,804	-60.0		271	36.9	30	13,769	-58.3		270	25.5	29	13,555	-55.3		246	12.8	16	13,871	-61.9		240	34.0
125----	29	15,084	-66.1		260	39.8	30	14,937	-62.0		272	31.1	30	14,912	-60.0		269	22.2	29	14,721	-54.8		239	11.3	14	14,986	-64.2		257	34.4
100----	29	16,429	-67.9		261	26.6	30	16,314	-62.6		267	21.4	30	16,303	-60.6		271	19.4	28	16,152	-54.5		241	12.4	10	16,332	-65.5			
80-----	29	17,779	-65.4		261	13.8	30	17,694	-61.3		270	14.6	30	17,692	-60.4		265	13.0	26	17,578	-54.5		252	12.6	8	17,690	-64.2			
60-----	27	19,545	-61.7		266	3.7	30	19,492	-58.7		263	10.9	30	19,491	-58.9		275	11.1	25	19,424	-55.2		272	12.6	8	19,464	-60.8			
50-----	26	20,679	-59.8		154	2.5	30	20,642	-56.7		261	10.3	30	20,636	-58.2		277	11.1	25	20,588	-55.7		278	9.9	8	20,599	-60.0			
40-----	26	22,081	-57.5		46	.8	30	22,066	-54.1		259	9.1	30	22,044	-57.0		276	9.5	23	22,012	-56.1		310	12.8	8	22,001	-57.3			
30-----	24	23,916	-54.6		75	3.3	27	23,934	-51.1		267	10.1	29	23,866	-55.8		273	9.5	20	23,840	-56.8		303	10.7	7	23,859	-53.3			
25-----	22	25,085	-53.1		76	4.1	27	25,126	-48.8		267	11.3	28	25,032	-54.7		272	12.6	20	24,994	-57.5				7	25,134	-51.2			
20-----	17	26,557	-50.7		75	4.1	25	26,598	-46.5		258	11.5	13	26,482	-53.2				18	26,393	-58.0				7	26,496	-48.9			
15-----	11	28,429	-48.5				24	28,523	-43.4		261	17.9							15	28,202	-58.6									

1/ 10 mb., 13 obs., 31,276 m., -40.0°C.
2/ 10 mb., 9 obs., 30,768 m., -57.8°C.

Note: All observations scheduled at 1200, G.C.T. "Number of observations" refers to those of dynamic height only. Temperature, humidity or wind data may be missing for one or more pressure surfaces of some observations. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Relative humidity data are not published for standard pressure surfaces having less than 16 actual observations.

Relative humidity data beginning with October 1, 1948, were computed and expressed in these tables on the basis of vapor-pressure over water. Upper air values of relative humidity at levels with temperatures less than 0°C, have formerly been computed and expressed on the basis of the vapor-pressure over ice. All relative humidity observations are obtained by electric hygrometer and have been adjusted to compensate for the value occurring below the operating range of the humidity element

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

SOLAR RADIATION DATA

Solar radiation intensities, tabulated in langleys per minute on a surface normal to the direction of the sun.

OCTOBER 1957

Date	Sun's zenith distance								
	A. M.				*	P. M.			
	78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°
	MADISON, WIS.								
	Air mass								
	4.84	3.87	2.90	1.94	*	1.94	2.90	3.87	4.84
Oct.									
1-----	S0.93	S1.02	S1.13	S1.31	Cu	----	----	----	----
2-----	M.84	M.97	M1.11	S1.24	S1.30	S1.05	M0.60	M0.50	M0.41
3-----	----	----	----	S1.22			Ci		----
4-----	----	S1.03	S1.14	S1.29	S1.35	S1.22	S1.08	S1.00	S.88
5-----	M.79	M.89	S1.07		Sc	S1.18	S1.05	S.92	S.79
10----	S.96	S1.06	S1.18	S1.28	Cu	----	----	----	----
12----	----	----	----	M1.14	M1.22	M1.13	M.89	M.71	M.59
13----	M.69	M.84	M.96	M1.16	M1.24	M1.10	Ci		----
18----	S1.02	S1.12		Cu		----	----	----	----
19----	S1.01	S1.10	S1.22	S1.36	S1.43	K1.36	K1.16	K1.04	Ci
20----	S.98	S1.08	S1.20	Ci	S1.40		Ci		----
25----		Clouds		S1.34		Clouds		----	----
27----	S.87	S.98	S1.13	Clouds	S1.35	S1.29	S1.15	S1.03	S.91
28----	S1.02	S1.12	S1.25	S1.39		Clouds		----	----
31----	M.88	Clouds		----	----	----	----	----	----
Averages	.91	1.02	1.14	1.27	1.33	1.19	.99	.87	.72
	TUCSON, ARIZONA								
	Air mass								
	4.56	3.65	2.74	1.83	*	1.83	2.74	3.65	4.56
Oct.									
1------	----	----	----	1.25	1.40	1.20	----	----	----
19-----	0.96	1.06	1.18	1.33	1.43	1.31	1.14	1.03	0.95
24-----	.96	1.07	1.16	1.29	1.44	1.30	1.15	.96	.84
Averages	.96	1.06	1.17	1.29	1.42	1.27	1.15	.99	.90

Date	Sun's zenith distance								
	A. M.				*	P. M.			
	78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°
	BLUE HILL, MASS.								
	Air mass								
	4.89	3.92	2.94	1.96	*	1.96	2.94	3.92	4.89
Oct.									
1-----	1.06	1.14	1.23	1.34	----	----	----	----	----
2-----	.96	1.05	1.16	1.26	----	----	----	----	----
3-----	.96	1.07	1.18	1.31	1.39	1.22	1.05	0.90	0.80
4-----	.89	.97	----	1.23	----	1.16	1.03	.86	.77
5-----	.80	.93	1.06	1.24	1.39	1.33	1.20	1.13	1.08
11----	----	----	----	1.33	1.39	1.32	1.17	1.05	----
12----	.91	1.06	1.19	1.35	1.43	1.34	1.21	1.07	.99
13----	.93	1.03	1.14	----	1.38	1.29	1.15	.98	.88
14----	.71	.84	.98	1.12	----	----	----	.71	.62
15----	----	.73	.87	1.10	1.23	1.15	1.00	.88	.79
16----	.74	.87	1.01	K1.18	K1.16	----	----	----	----
21----	1.05	1.12	1.22	K1.25	K1.27	1.30	1.16	1.03	.91
25----	----	----	----	----	1.27	1.26	1.14	1.04	.91
28----	----	----	----	----	1.33	1.26	----	.94	.82
29----	.91	.99	1.10	1.25	----	----	----	----	----
Averages	.90	.98	1.10	1.25	1.32	1.26	1.12	.96	.86
	WASHINGTON, D. C. (WBCO)								
	Air mass								
	5.00	4.00	3.00	2.00	*	2.00	3.00	4.00	5.00
Oct.									
3-----	----	----	----	----	----	1.23	1.06	0.94	0.83
4-----	----	0.76	0.88	----	----	----	----	----	----
11----	0.71	----	----	----	----	----	1.02	----	0.71
12----	.79	.92	1.03	----	----	----	----	.86	.76
13----	.83	.92	1.05	----	----	----	----	----	----
14----	----	MK.76	MK.87	----	----	----	----	----	----
20----	MK.65	MK.82	.99	1.20	1.32	1.23	1.08	.94	.91
Averages	.75	.84	.96	1.20	1.32	1.23	1.05	.91	.80

K	Smoke
MK	Moderate smoke
M	Moderate haze - indeterminable
S	Slight haze - indeterminable
*	Values corresponding to true solar noon

Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station listed above appears in the February 1957 issue, Vol. 8, No. 2, page 63, of this publication.

SOLAR RADIATION DATA

OCTOBER 1957

Daily totals and average daily totals by weeks of solar and sky radiation, plus the radiation reflected from the ground, as received on a vertical surface facing south at Blue Hill, Mass. during the month

								Avg								Avg								Avg
Date------------	1	2	3	4	5	6	7		8	9	10	11	12	13	14		15	16	17	18	19	20	21	
Langleys--------	400	381	528	519	549	249	47	382	61	90	392	565	565	542	471	384	534	436	334	130	25	105	566	304
Date------------	22	23	24	25	26	27	28		29	30	31	1	2	3	4									
Langleys--------	253	262	30	472	36	38	360	207	489	99	282	9	39	22	50	141								

Daily totals and average daily totals by weeks of diffuse (sky) radiation as received on a horizontal surface at Blue Hill, Mass. during the month

								Avg								Avg								Avg
Date------------	1	2	3	4	5	6	7		8	9	10	11	12	13	14		15	16	17	18	19	20	21	
Langleys--------	118	104	58	90	54	192	81	100	106	77	99	52	49	68	93	78	68	92	124	144	52	86	51	88
Date------------	22	23	24	25	26	27	28		29	30	31	1	2	3	4									
Langleys--------	158	119	65	87	92	80	73	96	78	123	114	20	72	42	79	75								

Note: Langley is the unit used to denote one gram calorie per square centimeter.

NET RADIATION

Net radiation in langleys per day (midnight to midnight) at Raleigh, N. C., during the month

OCTOBER 1957

Date.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langleys. . .	*14	143	100	157	94	167	186	203	184	165	87	60	163	151	136	156	*37	*116	128	133	139	144	176	*-8	90	*56	63	116	88	13	*-17	119

* Estimated values owing to occurrence of rain during period. While rain is falling, radiation is assumed to be zero.

The measurement is made with a Beckman and Whitley net exchange radiometer over a plot of Bermuda grass. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the North Carolina State College at Raleigh. The instrument with which they were measured has not been checked by the Weather Bureau.

SOLAR RADIATION DATA

Daily totals and weekly averages of solar radiation (direct and diffuse) received on a horizontal surface, tabulated in langleys.

OCTOBER 1957

1957	Albuquerque, N. Mex.	Annette, Alaska	Apalachicola, Fla.	Astoria, Oreg.	Atlanta, Ga.	Barrow, Alaska	Bethel, Alaska	Bismarck, N. Dak.	Blue Hill, Mass.	Boise, Idaho	Boston, Mass.	Brownsville, Tex.	Canton Island Pacific Area	Cape Hatteras, N. C.	Caribou, Me.	Charleston, S. C.	Cleveland, Ohio	Columbia, Mo.	Corvallis, Oreg.	Dodge City, Kans.	E. Lansing, Mich	Edmonton, Alberta	El Paso, Tex.	Ely, Nev.	Fairbanks, Alaska	Ft. Worth, Tex.	Fresno, Calif.	Gainesville, Fla.	Glasgow, Mont.	Grand Junction, Colo.	Grand Lake, Colo.	Great Falls, Mont	Greensboro, N. C.	Griffin, Ga.	Indianapolis, Ind	Inyokern, Calif.	Ithaca, N. Y.	Lake Charles, La.	Las Vegas, Nev.	Lexington, Ky.
Oct. 1-----	556	267	231	299	127	90	59	422	385	227	345	545	685	221	163	282	391	455	231	513	469	243	587	408	82	473	464	14	378	366	278	330	88	113	433	615	298	250	521	481
Oct. 2-----	561	373	291	241	110	87	---	385	334	128	330	539	658	275	378	71	469	430	174	518	427	28	600	474	93	461	449	13	364	364	317	303	295	127	472	597	342	399	498	536
Oct. 3-----	521	356	450	306	231	50	---	344	438	285	438	545	676	180	152	208	453	391	318	466	454	145	526	107	98	444	474	308	267	321	271	37	313	188	---	625	474	506	512	276
Oct. 4-----	375	349	476	204	98	95	31	142	417	324	363	525	635	273	247	169	448	445	136	485	452	116	492	472	---	444	471	372	179	283	231	242	381	75	---	613	332	500	517	348
Oct. 5-----	236	353	233	258	372	42	66	176	431	115	425	534	304	46	371	227	343	459	262	454	308	225	122	491	162	435	466	110	414	399	352	158	193	325	400	626	260	472	519	418
Oct. 6-----	459	355	569	186	435	59	94	89	262	314	336	523	606	161	355	495	279	439	84	239	356	282	611	493	126	315	464	349	297	368	330	111	307	383	394	590	261	508	533	492
Oct. 7-----	506	348	555	175	503	49	65	34	105	301	58	400	405	461	327	483	191	353	321	125	420	159	582	498	70	328	432	455	183	466	318	54	371	437	459	558	295	504	499	486
Average------	459	343	401	238	268	67	63	227	339	242	328	516	567	231	284	276	368	425	218	400	412	171	503	421	105	414	460	232	297	367	300	177	278	235	432	604	323	449	514	434
Oct. 8-----	(521)	364	540	79	489	33	29	118	110	217	58	---	689	534	359	482	298	369	120	130	385	243	561	445	144	307	391	448	100	411	308	136	439	433	426	510	78	479	469	498
Oct. 9-----	339	360	525	183	414	---	125	272	105	326	100	283	670	518	101	481	375	195	164	171	221	314	499	447	---	241	416	355	177	387	308	257	428	402	259	551	412	452	479	490
Oct. 10-----	512	228	519	---	452	47	151	201	361	323	306	287	648	489	171	434	310	---	169	141	308	309	479	385	41	97	(244)	426	361	433	326	359	375	405	432	469	167	441	426	121
Oct. 11-----	407	94	436	360	364	59	98	88	408	225	404	328	662	503	314	397	100	195	336	253	168	281	421	229	54	382	142	337	318	128	212	347	152	340	401	220	141	465	257	524
Oct. 12-----	76	112	495	23	155	48	198	69	410	278	409	390	682	484	370	423	251	120	43	283	414	233	277	351	113	389	163	294	296	337	131	269	254	120	420	537	410	---	371	509
Oct. 13-----	193	212	514	244	454	65	91	185	374	129	377	322	583	529	104	455	390	341	212	36	394	218	518	122	79	10	138	264	327	35	287	314	431	410	408	363	416	452	329	452
Oct. 14-----	339	134	344	235	484	34	57	88	324	330	321	358	621	(531)	263	457	361	82	222	256	308	236	381	334	85	40	277	133	234	209	49	263	424	429	279	516	380	227	375	406
Average------	(341)	215	482	187	402	48	107	146	299	261	282	328	651	(513)	240	447	298	217	181	182	314	262	448	330	86	209	(253)	322	259	277	232	278	358	363	375	452	286	419	387	429
Oct. 15-----	478	148	223	309	247	42	48	125	352	307	346	390	660	489	---	423	355	121	373	355	142	202	473	297	55	115	333	337	314	306	107	190	379	203	156	478	395	77	425	371
Oct. 16-----	429	75	283	179	---	28	121	329	309	342	309	313	629	476	296	282	173	273	287	(396)	46	233	508	319	104	373	382	328	330	288	67	306	299	155	27	524	333	307	463	130
Oct. 17-----	451	161	376	329	---	33	123	329	279	350	275	286	664	326	253	154	37	432	358	341	126	237	482	411	94	422	364	124	272	318	83	150	104	255	125	456	66	475	448	70
Oct. 18-----	302	179	461	322	---	40	151	250	170	363	141	474	---	324	33	245	39	421	334	126	121	242	234	280	62	438	349	324	179	172	129	199	204	442	188	478	19	495	393	214
Oct. 19-----	268	179	537	319	470	47	113	155	63	311	48	244	---	338	36	429	165	336	345	201	360	241	261	244	35	427	367	---	107	286	116	28	411	438	367	509	83	510	404	279
Oct. 20-----	309	179	526	329	457	58	104	124	122	323	107	232	662	502	190	469	378	391	347	120	380	214	224	138	104	385	259	409	253	184	201	116	418	442	355	295	283	408	365	449
Oct. 21-----	247	303	511	240	347	40	10	155	349	310	325	169	642	497	330	388	333	142	282	79	267	64	90	168	---	166	366	321	87	222	193	147	348	360	212	353	370	327	365	274
Average------	355	175	417	290	380	41	96	210	235	329	221	301	651	422	190	341	211	302	332	(231)	206	205	325	265	76	332	346	307	220	254	128	162	309	328	204	442	221	371	409	255
Oct 22-----	254	316	359	224	226	15	66	26	223	121	219	360	585	459	240	387	175	52	32	199	62	67	428	272	53	80	359	300	26	233	86	137	352	227	150	---	270	152	436	301
Oct. 23-----	425	300	451	84	288	20	139	85	231	48	236	400	668	451	83	317	23	261	97	292	35	166	488	247	89	407	192	227	183	323	85	214	267	319	44	---	160	300	387	42
Oct. 24-----	450	105	443	59	242	51	78	146	73	297	66	486	551	184	23	183	31	238	75	111	70	148	495	394	78	98	368	180	146	252	35	215	154	296	40	478	103	402	427	53
Oct. 25-----	391	58	282	127	358	18	(129)	213	299	156	290	450	671	63	140	178	61	69	170	92	227	221	432	330	74	100	301	230	117	382	255	129	184	288	189	398	43	102	395	176
Oct. 26-----	427	33	441	204	40	18	62	329	95	103	115	426	686	86	137	181	44	198	198	379	165	195	257	310	112	443	340	294	308	380	271	211	185	77	203	186	262	161	129	94
Oct. 27-----	283	97	487	229	421	16	36	307	88	294	98	397	643	283	74	367	132	382	232	432	140	205	316	177	77	441	322	417	222	95	185	69	195	382	240	470	156	485	410	249
Oct. 28-----	---	25	489	205	447	10	49	98	237	305	260	373	639	473	169	437	333	378	252	398	335	191	---	327	51	418	347	425	228	253	53	237	377	425	367	278	253	480	96	(441)
Average------	372	133	422	162	289	21	(80)	172	178	189	183	413	635	286	124	293	114	225	151	272	148	170	402	294	76	284	318	296	176	274	139	173	245	288	176	362	178	297	326	(194)
Oct. 29-----	332	39	478	274	440	14	49	225	283	258	276	199	681	471	243	428	296	236	229	243	194	110	163	384	30	221	338	392	207	347	219	159	355	422	148	453	250	456	410	350
Oct. 30-----	426	152	169	232	184	18	35	260	143	244	131	424	596	191	114	107	76	331	228	387	64	119	414	356	(24)	385	300	178	135	338	240	219	117	214	156	235	115	196	260	62
Oct. 31-----	232	244	239	255	361	12	15	154	210	207	205	433	642	121	44	171	286	333	284	309	105	138	298	254	36	331	333	242	248	158	150	160	175	352	135	309	303	299	66	122
Nov. 1-----	313	32	428	269	405	---	60	79	23	312	9	372	595	239	70	386	295	190	---	381	252	182	466	363	44	125	323	373	105	149	50	64	185	393	323	441	289	377	310	406
Nov. 2-----	279	71	420	269	413	10	30	---	74	289	20	---	575	179	85	386	226	110	307	303	174	162	413	140	37	162	82	320	74	99	217	75	318	395	105	385	44	201	323	269
Nov. 3-----	174	90	422	255	311	7	64	134	46	107	29	217	533	(331)	24	385	62	84	310	56	164	98	133	195	33	78	324	331	251	181	239	216	300	378	36	400	41	190	376	65
Nov. 4-----	249	86	420	260	366	8	32	132	107	233	51	363	542	373	46	360	53	80	---	42	73	164	287	250	23	28	(288)	351	256	94	213	288	256	366	---	368	42	177	334	221
Average------	286	102	368	259	354	12	41	164	126	236	103	335	595	(272)	89	318	185	195	271	246	147	139	310	277	(33)	190	(284)	312	182	195	190	169	244	360	150	370	155	271	297	214

Note.--Langley is the unit used to denote one gram calorie per square centimeter.
Values in parentheses are interpolated.

SOLAR RADIATION DATA

Daily totals and weekly averages of solar radiation (direct and diffuse) received on a horizontal surface, tabulated in langleys.- Continued

OCTOBER 1957

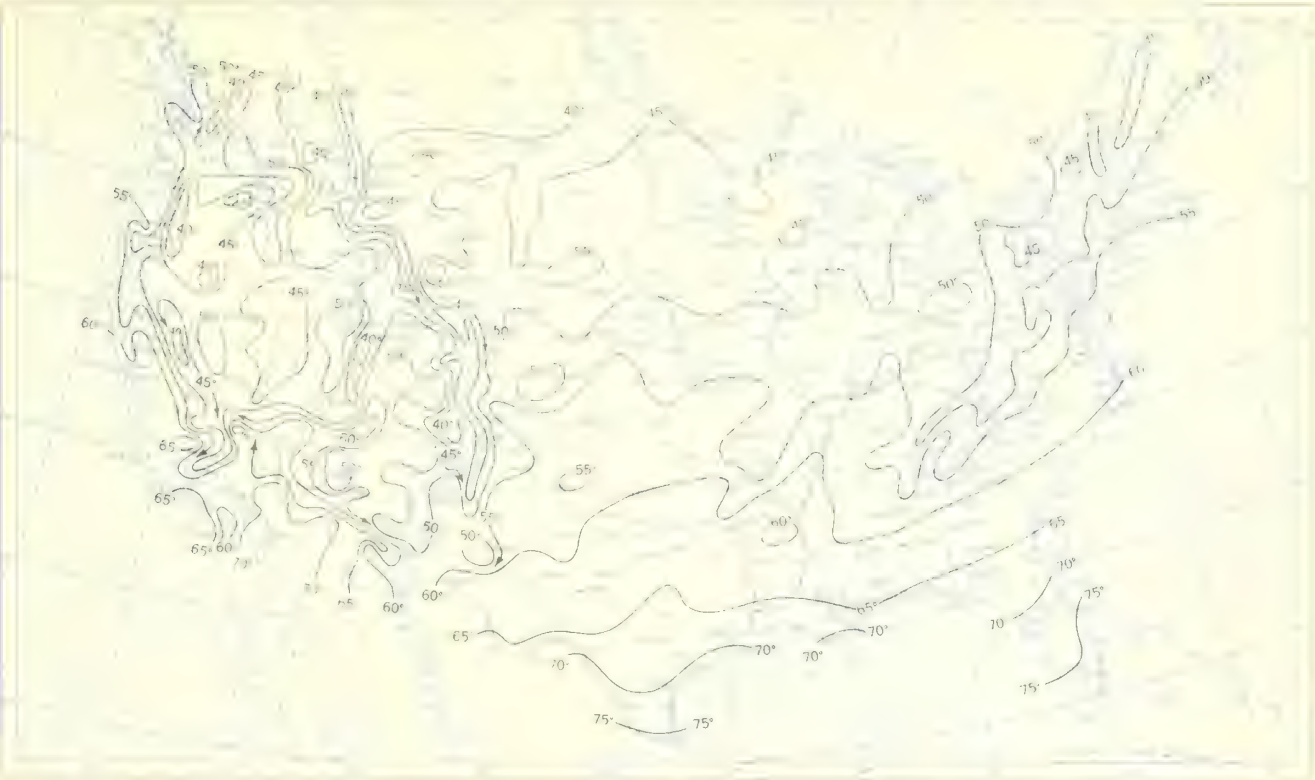
1957	Little Rock, Ark.	Los Angeles, Calif.	Los Angeles, Calif. (urban)	Madison, Wis.	Matanuska, Alaska	Medford, Oreg.	Miami, Fla.	Midland, Tex.	Moosonee, Ontario	Nashville, Tenn.	Newport, R. I.	New York, N. Y.	North Omaha, Nebr.	Oak Ridge, Tenn.	Oklahoma City,Okla.	Ottawa, Ontario	Phoenix, Ariz.	Portland, Me.
Oct. 1------	435	---	513	441	259	181	---	555	239	294	362	235	462	234	496	290	528	359
Oct. 2------	321	---	469	425	---	101	537	555	287	457	409	449	457	256	491	338	457	361
Oct. 3------	424	---	369	421	242	154	138	432	277	360	448	469	427	82	453	420	520	427
Oct. 4------	423	483	490	409	216	148	497	517	337	137	326	372	429	57	469	128	383	131
Oct. 5------	461	490	493	404	---	196	373	454	322	363	431	428	301	457	456	393	474	410
Oct. 6------	458	458	457	338	236	150	384	375	321	399	251	87	344	272	342	302	370	326
Oct. 7------	446	449	475	323	---	355	353	487	307	479	122	60	85	448	224	215	517	94
Average-------	424	470	466	395	238	184	380	482	298	356	336	300	358	258	419	298	464	301
Oct. 8------	403	419	439	197	214	146	275	426	104	480	117	116	87	404	99	321	504	69
Oct. 9------	229	455	436	209	---	193	473	248	71	456	221	390	---	464	73	282	485	126
Oct. 10------	339	371	366	337	44	161	284	364	172	---	352	355	---	327	300	196	465	138
Oct. 11------	439	401	262	249	39	387	367	467	302	258	426	406	---	171	406	259	277	397
Oct. 12------	446	311	210	340	---	92	504	114	219	475	419	387	50	188	366	337	(431)	402
Oct. 13------	297	101	97	333	---	174	462	464	239	411	397	373	311	414	42	261	299	369
Oct. 14------	100	437	270	173	---	353	513	457	133	411	377	238	50	389	83	253	159	303
Average-------	322	357	297	263	---	215	411	363	177	415	330	324	125	337	195	273	(374)	258
Oct. 15------	44	241	170	48	48	340	411	445	260	216	363	368	171	348	220	324	460	338
Oct. 16------	208	432	379	148	69	331	492	375	61	66	338	225	262	172	284	277	364	311
Oct. 17------	424	382	404	145	140	295	370	281	39	187	284	148	404	157	443	133	393	260
Oct. 18------	456	192	107	303	111	312	408	330	146	311	148	120	390	346	407	45	452	94
Oct. 19------	420	286	172	343	150	309	357	120	248	383	125	213	309	464	391	65	(422)	28
Oct. 20------	443	331	266	324	28	310	450	46	272	461	204	346	197	456	305	234	(447	159
Oct. 21------	173	376	387	113	---	319	448	---	211	298	378	276	70	274	90	288	(338)	366
Average-------	310	320	269	203	91	317	419	266	177	275	263	242	258	317	306	195	(411)	222
Oct. 22------	34	358	332	33	28	283	420	283	33	161	301	283	27	349	42	239	(441)	235
Oct. 23------	356	416	409	8	123	150	432	476	198	44	208	186	(40)	193	191	27	---	129
Oct. 24------	71	407	414	125	---	136	374	480	172	38	91	42	92	151	48	24	(432)	40
Oct. 25------	85	327	348	195	118	100	225	94	142	138	161	336	381	128	83	106	---	331
Oct. 26------	344	186	183	177	92	228	439	405	244	161	144	252	59	51	437	147	---	159
Oct. 27------	420	370	360	322	102	134	212	442	240	229	91	226	359	132	440	88	---	263
Oct. 28------	403	295	268	309	40	180	456	---	58	378	239	350	313	421	402	214	---	310
Average-------	245	337	330	167	84	173	365	363	155	164	177	239	(182)	204	235	121	---	210
Oct. 29------	309	342	380	58	24	273	377	---	123	345	291	323	301	335	295	77	---	263
Oct. 30------	353	135	138	83	50	211	310	---	39	94	206	167	315	85	384	73	---	---
Oct. 31------	367	184	170	267	32	264	479	---	99	300	222	59	210	154	301	172	---	---
Nov. 1------	281	278	262	243	97	266	417	---	70	378	45	37	21	385	250	263	---	30
Nov. 2------	205	205	147	59	23	318	470	---	54	143	78	70	40	254	265	81	---	30
Nov. 3------	365	228	261	65	25	307	448	---	79	113	58	176	64	121	222	49	---	19
Nov. 4------	123	253	296	65	---	287	460	---	26	131	93	193	60	133	41	55	---	40
Average-------	286	232	236	120	42	275	423	---	70	215	142	146	145	210	251	110	---	76

1957	Raleigh, N. C.	Rapid City, S. Dak.	Resolute, N.W.T.	Riverside, Calif.	St. Cloud, Minn.	San Antonio, Tex.	Santa Maria, Calif.	S. Ste. Marie,Mich.	Sayville, N. Y.	Schenectady, N. Y.	Seattle-Tacoma,Wash.	Shreveport, La	Spokane, Wash.	State College, Pa.	Stillwater, Okla.	Swan Island, W. I.	Tampa, Fla.	Toronto, Ontario	Tucson, Ariz.	Wake Island Pacific Area	Washington, D. C. (Silver Hill Obs.)	Winnipeg, Manitoba
Oct. 1------	72	454	54	550	411	549	518	372	294	180	61	427	168	342	478	---	120	394	553	717	150	353
Oct. 2------	241	402	104	520	404	534	538	393	511	291	233	393	113	484	439	391	74	390	500	---	456	357
Oct. 3------	222	432	67	399	399	450	494	380	537	410	296	499	205	489	441	245	380	437	477	726	442	358
Oct. 4------	299	195	56	501	407	477	539	373	382	210	344	490	200	483	445	---	524	405	312	---	385	347
Oct. 5------	168	401	45	506	394	509	535	346	481	395	167	439	69	285	436	---	405	235	267	690	222	37
Oct. 6------	301	241	71	533	145	432	533	360	153	340	345	517	171	78	358	389	429	264	406	708	18	55
Oct. 7------	435	51	38	510	104	310	481	352	73	110	133	507	133	159	186	617	543	386	517	662	243	91
Average-------	24[illegible]	311	62	503	324	466	520	368	347	277	225	468	151	331	398	410	354	359	433	701	274	228
Oct. 8------	485	137	36	491	94	386	494	229	234	100	170	478	293	98	---	636	523	345	513	683	198	167
Oct. 9------	443	151	40	502	340	64	482	93	458	338	243	223	267	417	---	615	514	299	472	547	422	128
Oct. 10------	398	386	60	439	168	408	258	234	437	221	---	456	326	311	376	444	529	248	484	589	352	305
Oct. 11------	266	93	51	289	122	494	363	187	491	330	295	447	311	344	387	613	484	198	307	630	443	325
Oct. 12------	216	236	36	448	231	212	338	323	485	359	124	509	88	433	318	362	445	225	433	630	441	134
Oct. 13------	456	199	61	128	194	182	107	276	463	241	65	381	122	434	---	464	487	310	426	605	434	76
Oct. 14------	460	146	39	343	127	190	428	304	378	188	238	69	173	410	50	668	305	345	104	652	419	291
Average-------	389	193	46	377	182	277	353	235	421	254	1[illegible]9	366	226	350	283	543	470	281	391	619	387	204
Oct. 15------	417	160	38	221	34	121	433	(234)	424	310	301	159	204	402	141	585	317	248	464	672	398	46
Oct. 16------	362	(275)	21	442	152	498	453	20	391	258	158	340	310	340	243	626	481	234	383	627	354	281
Oct. 17------	91	392	20	455	323	385	442	83	289	300	246	455	188	53	---	642	408	30	450	476	101	293
Oct. 18------	208	381	23	110	327	418	169	217	144	66	199	491	270	60	421	596	465	82	408	625	74	300
Oct. 19------	379	39	(31)	282	313	468	394	310	171	93	306	497	280	165	388	554	494	283	484	681	195	282
Oct. 20------	438	48	25	182	64	212	227	289	378	271	330	458	313	411	337	562	491	343	443	574	402	249
Oct. 21------	389	216	20	333	127	46	365	80	420	314	232	282	139	379	---	579	480	225	431	586	379	131
Average-------	326	(216)	(25)	289	191	307	35[illegible]	(176)	317	230	253	383	243	259	306	592	448	206	437	606	272	226
Oct. 22------	391	45	8	398	43	240	---	13	388	192	48	25	54	315	---	576	434	179	423	581	356	114
Oct. 23------	394	347	19	452	61	494	315	27	242	149	36	458	97	176	---	483	428	29	395	463	324	79
Oct. 24------	99	86	4	448	117	484	441	238	64	59	147	148	242	137	69	571	120	78	465	573	42	262
Oct. 25------	195	357	5	409	47	193	301	95	392	285	104	166	71	199	---	511	390	345	438	512	340	145
Oct. 26------	155	376	10	194	375	412	409	90	217	118	270	310	35	198	387	224	272	181	363	566	271	266
Oct. 27------	206	363	8	424	320	496	397	199	81	89	192	481	60	201	---	251	331	191	273	519	289	249
Oct. 28------	404	186	4	126	278	456	390	256	328	267	125	470	105	218	381	97	505	275	137	479	320	155
Average-------	263	251	8	350	177	3[illegible]7	375	131	245	166	132	294	95	206	---	3[illegible]8	354	183	356	528	277	181
Oct. 29------	394	324	3	359	227	251	368	90	359	209	65	340	123	294	270	448	475	249	353	537	330	(140)
Oct. 30------	178	295	(4)	129	116	387	293	59	258	73	284	424	250	87	389	70	296	36	354	572	152	189
Oct. 31------	84	217	2	122	92	416	367	137	280	189	195	424	234	321	---	659	460	252	177	---	165	205
Nov. 1------	71	42	1	284	67	258	221	162	40	75	225	260	249	278	---	532	470	198	429	535	52	75
Nov. 2------	167	91	2	130	24	250	107	131	67	125	282	(242)	261	69	281	602	421	184	385	533	68	(95)
Nov. 3------	298	62	1	179	65	154	376	113	190	25	246	139	257	80	---	612	393	113	433	574	229	138
Nov. 4------	307	96	---	270	197	172	403	77	156	93	230	119	238	43	---	636	452	43	260	559	286	92
Average-------	214	161	(2)	210	112	270	305	110	193	113	218	(278)	230	167	---	509	424	154	342	552	183	(133)

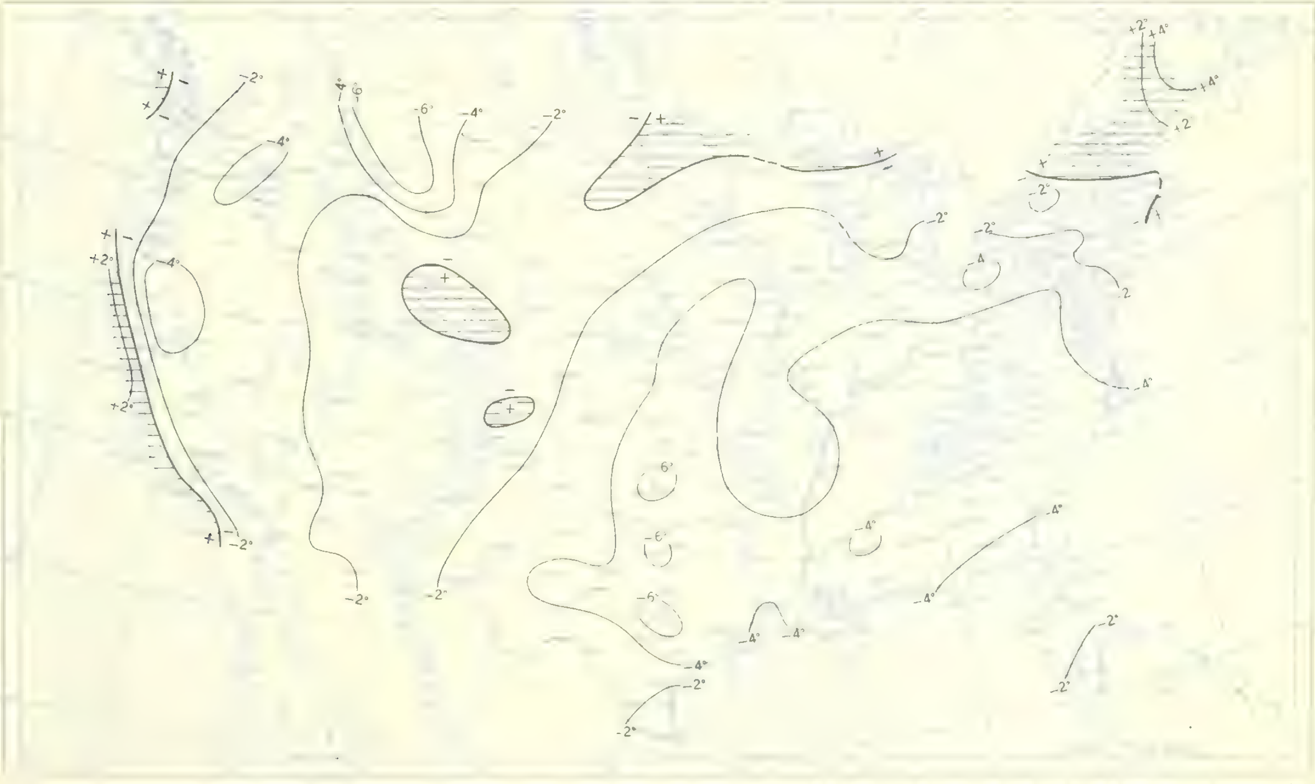
Note.--Langley is the unit used to denote one gram calorie per square centimeter.
Values in parentheses are interpolated.

USCOMM-WB-Asheville - 1/8/58 - 1850

Chart I. A. Average Temperature (° F.) at Surface, October 1957.

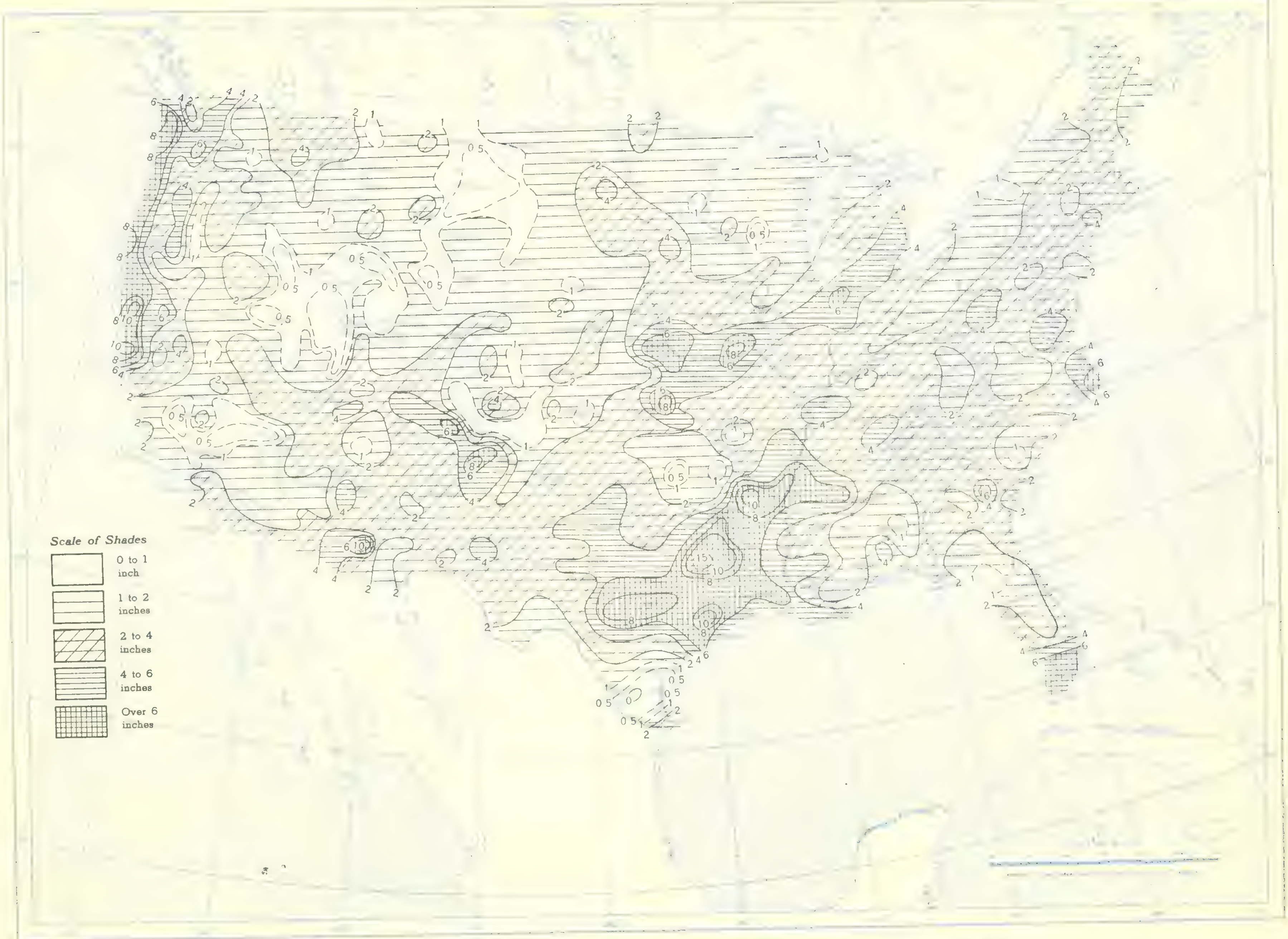


B. Departure of Average Temperature from Normal (° F.), October 1957.



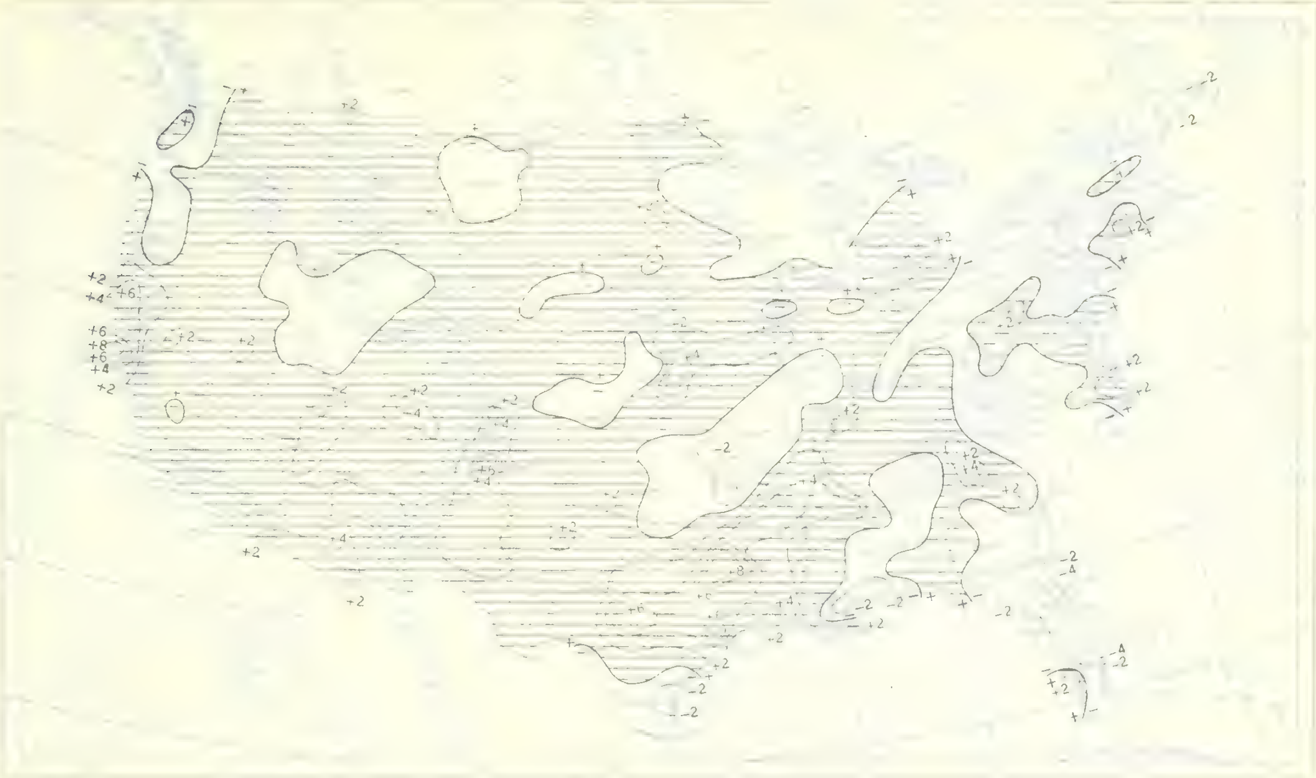
A. Based on reports from over 900 Weather Bureau and cooperative stations. The monthly average is half the sum of the monthly average maximum and monthly average minimum, which are the average of the daily maxima and daily minima, respectively.
B. Departures from normal are based on the 30-yr. normals (1921-50) for Weather Bureau stations and on means of 25 years or more (mostly 1931-55) for cooperative stations.

Chart II. Total Precipitation (Inches), October 1957.

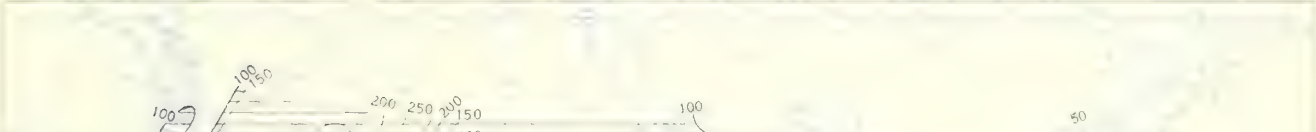


Based on daily precipitation records at about 800 Weather Bureau and cooperative stations.

Chart III. A. Departure of Precipitation from Normal (Inches), October 1957.

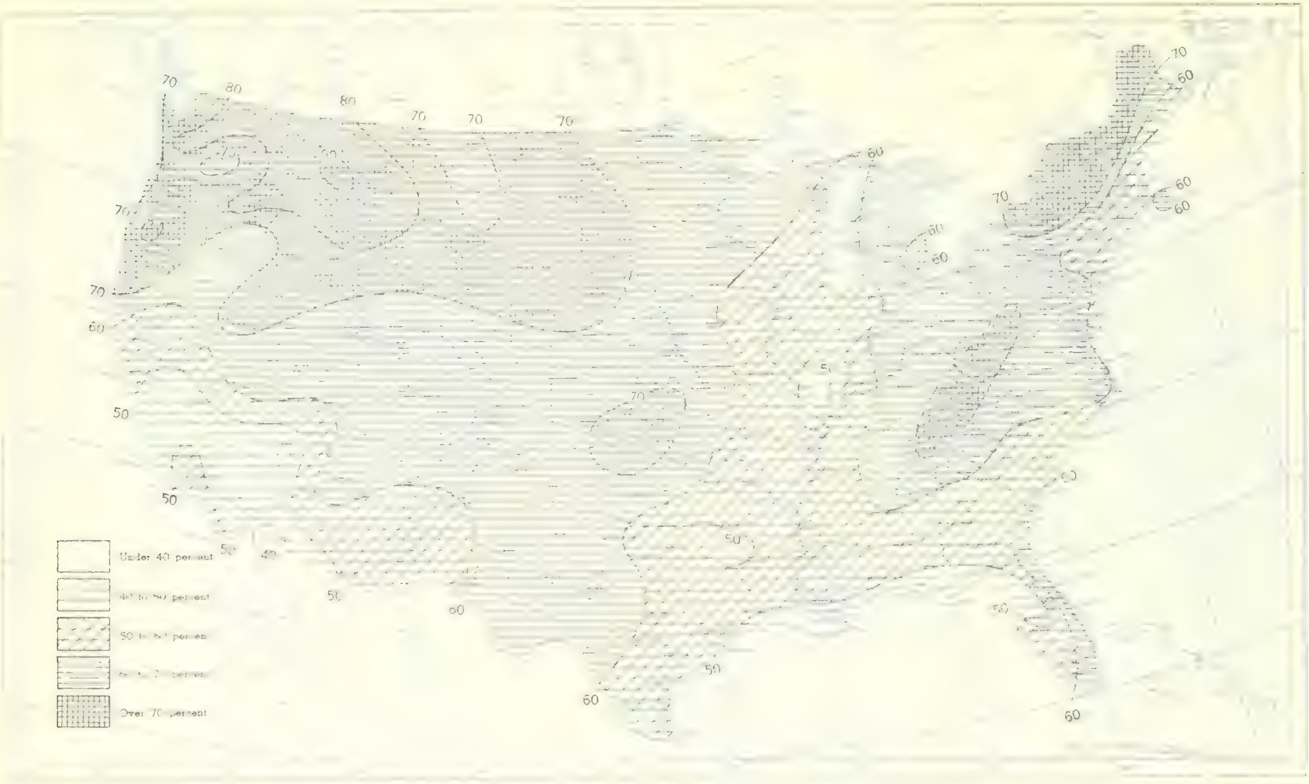


B. Percentage of Normal Precipitation, October 1957.

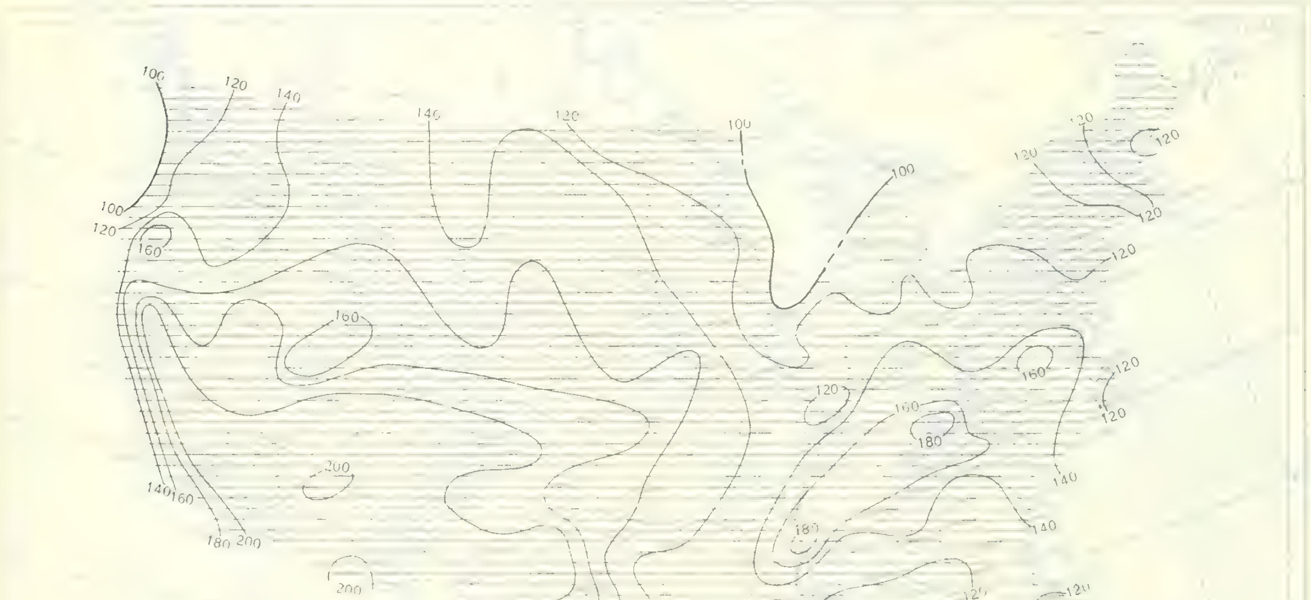


Normal monthly precipitation amounts are computed from the records for 1921-50 for Weather Bureau stations and from records of 25 years or more (mostly 1931-55) for cooperative stations.

Chart VI. A. Percentage of Sky Cover Between Sunrise and Sunset, October 1957.

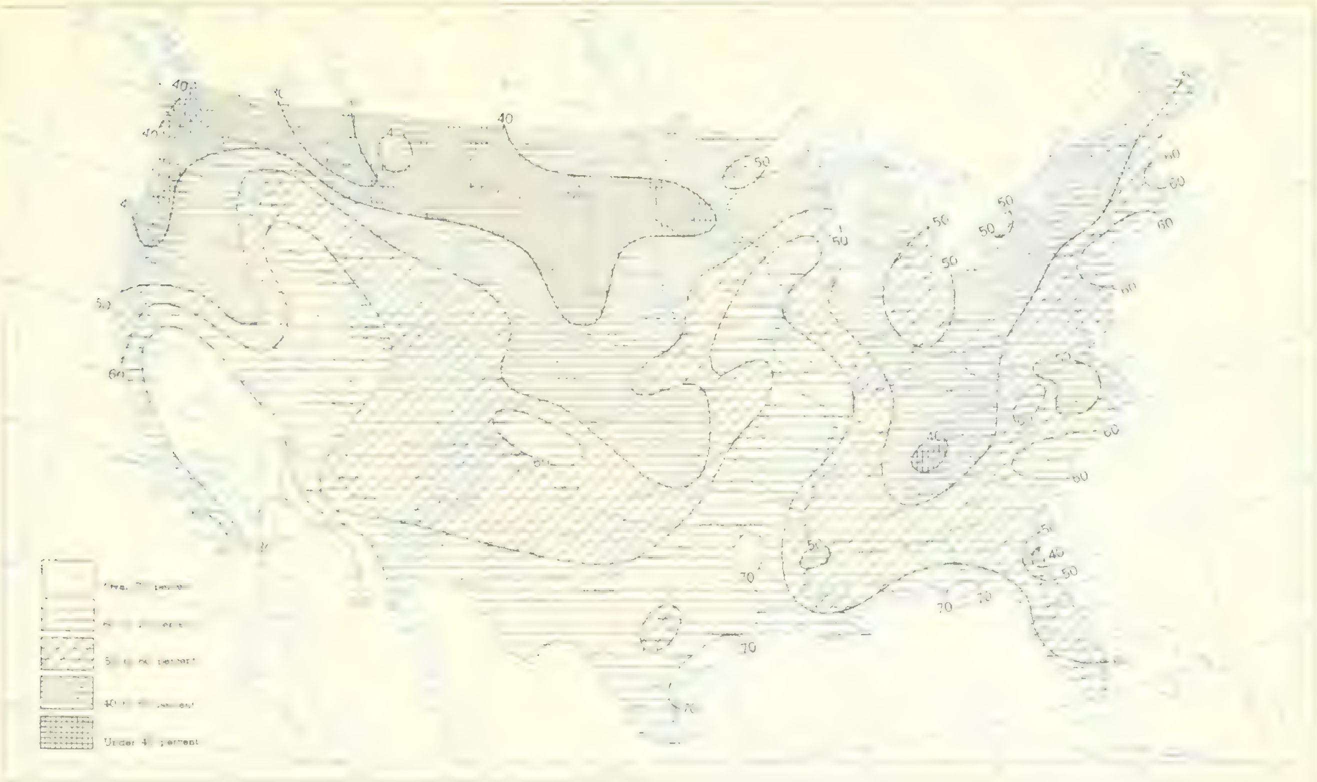


B. Percentage of Normal Sky Cover Between Sunrise and Sunset, October 1957.

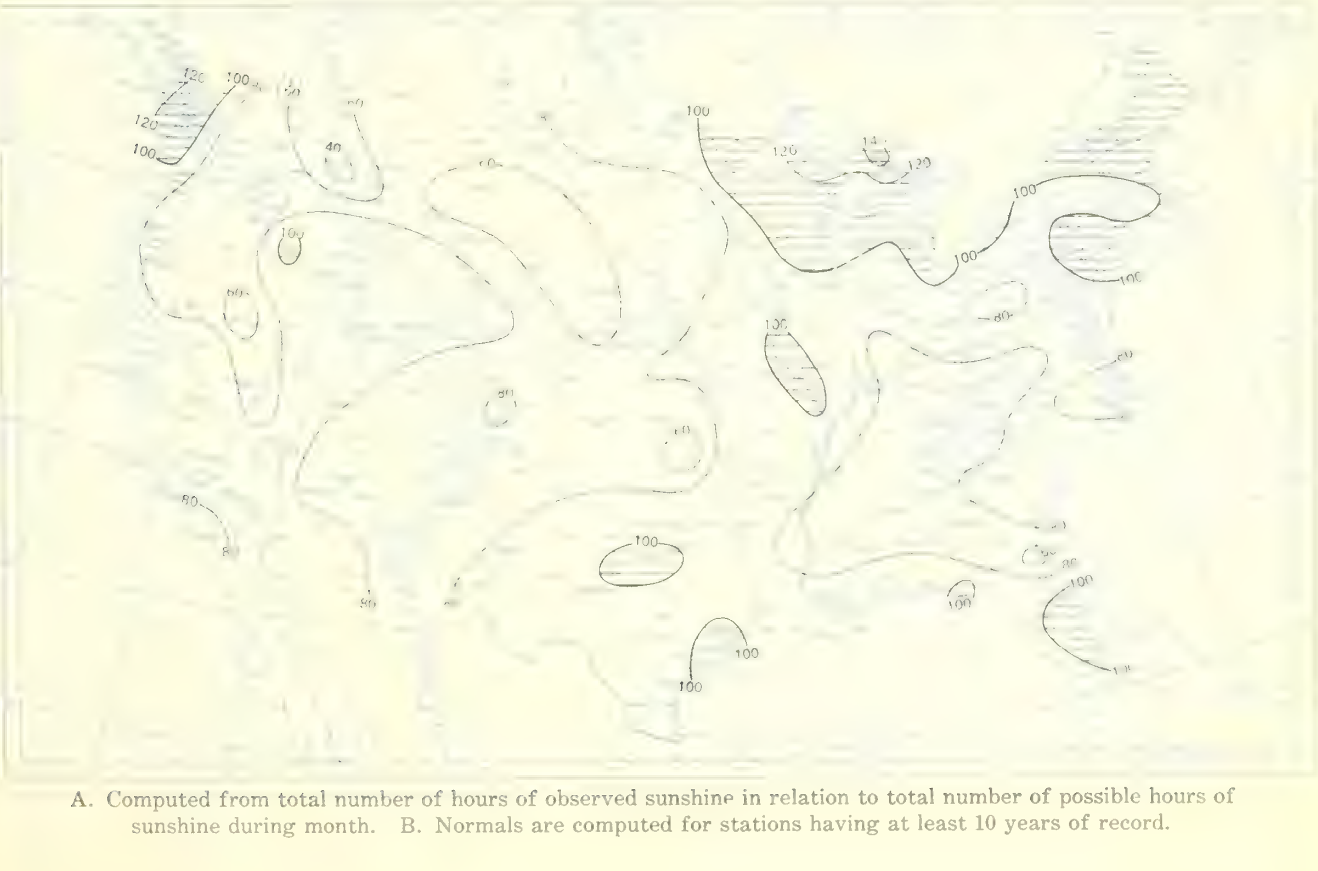


A. In addition to cloudiness, sky cover includes obscuration of the sky by fog, smoke, snow, etc. Chart based on visual observations made hourly at Weather Bureau stations and averaged over the month. B. Computations of normal amount of sky cover are made for stations having at least 10 years of record.

Chart VII. A. Percentage of Possible Sunshine, October 1957.



B. Percentage of Normal Sunshine, October 1957.



A. Computed from total number of hours of observed sunshine in relation to total number of possible hours of sunshine during month. B. Normals are computed for stations having at least 10 years of record.

Chart VIII. Average Daily Values of Solar Radiation, Direct + Diffuse, October 1957. Inset: Percentage of Mean Daily Solar Radiation, October 1957. (Mean based on period 1951-55.)

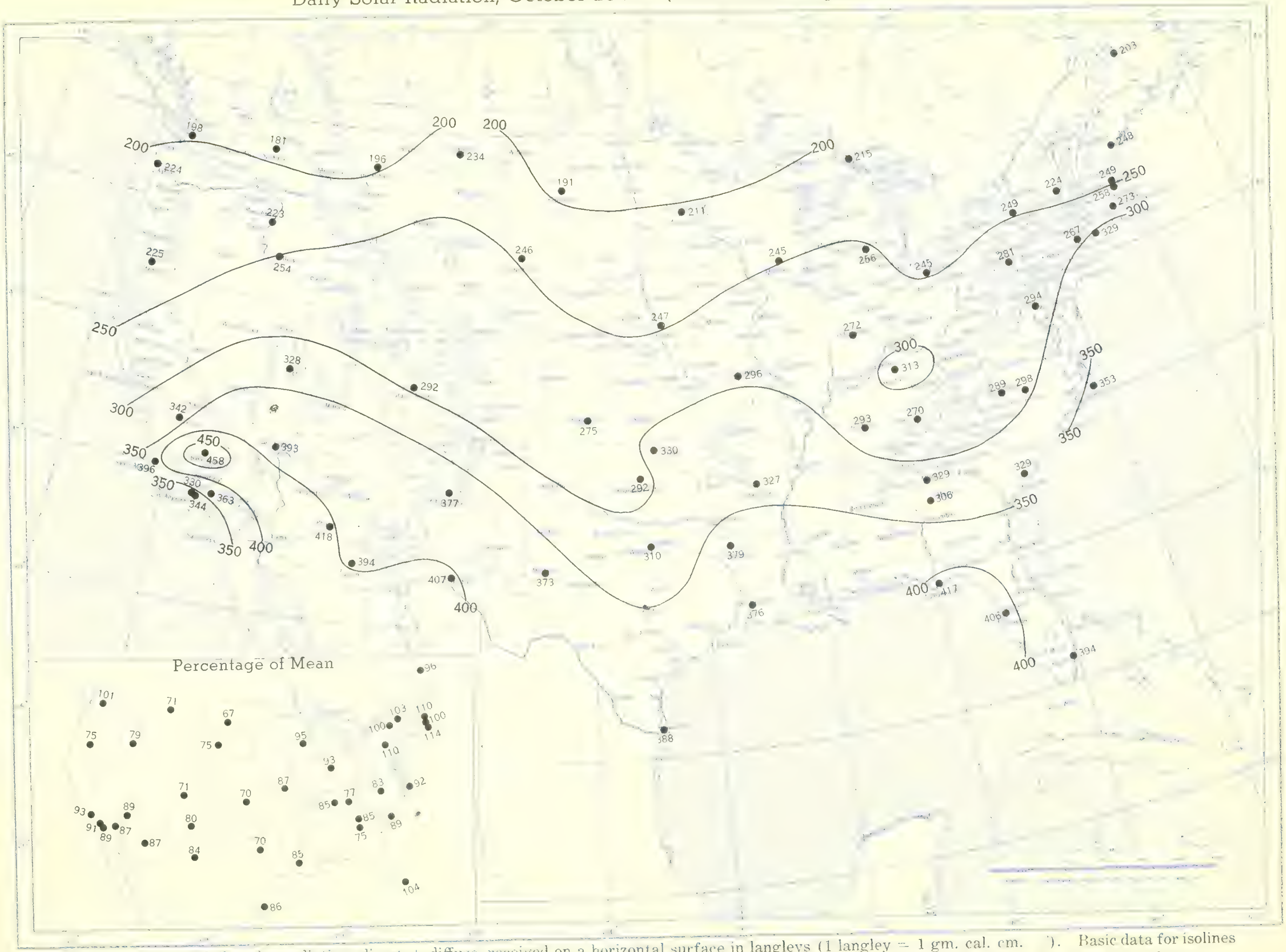
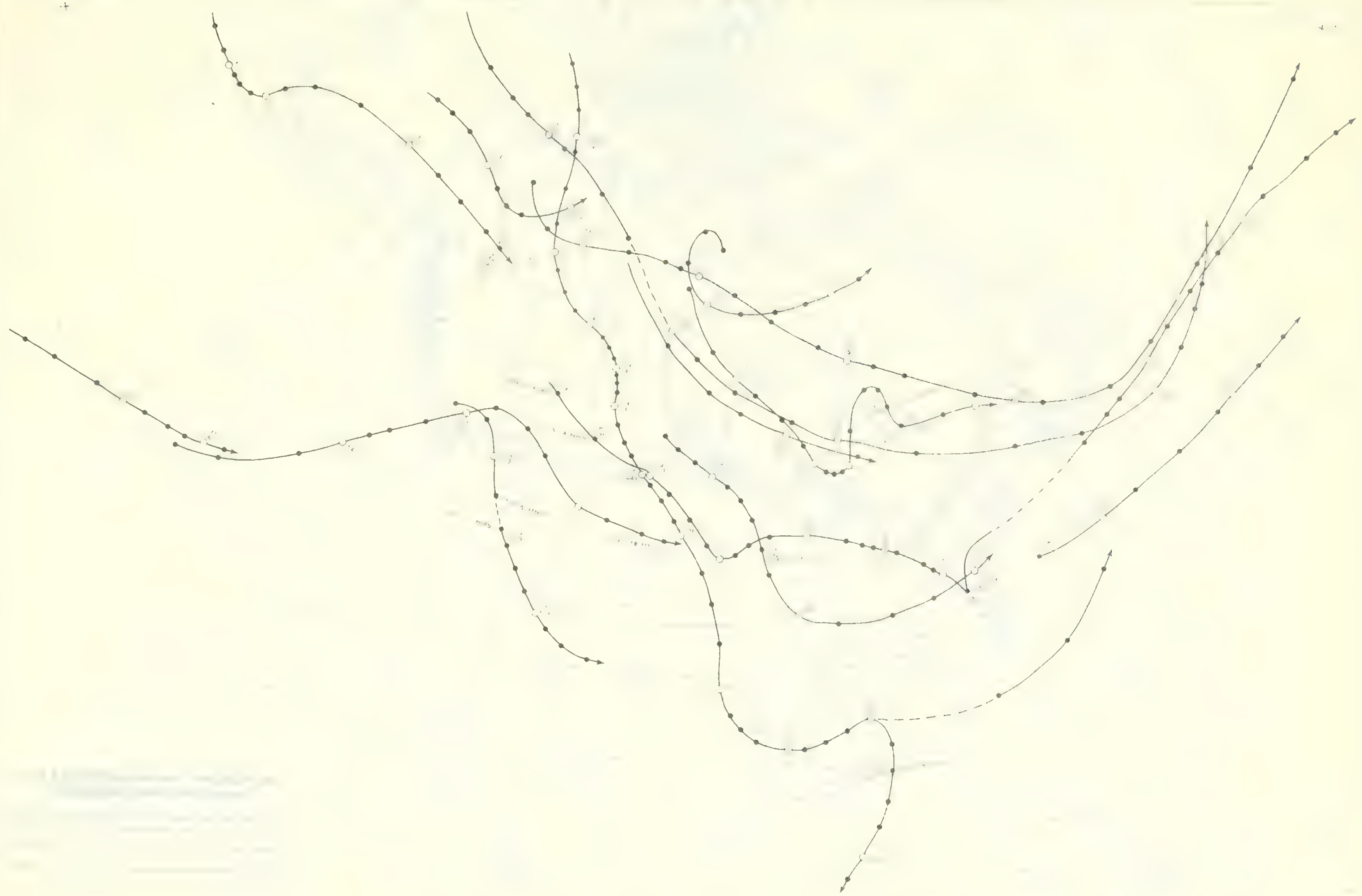


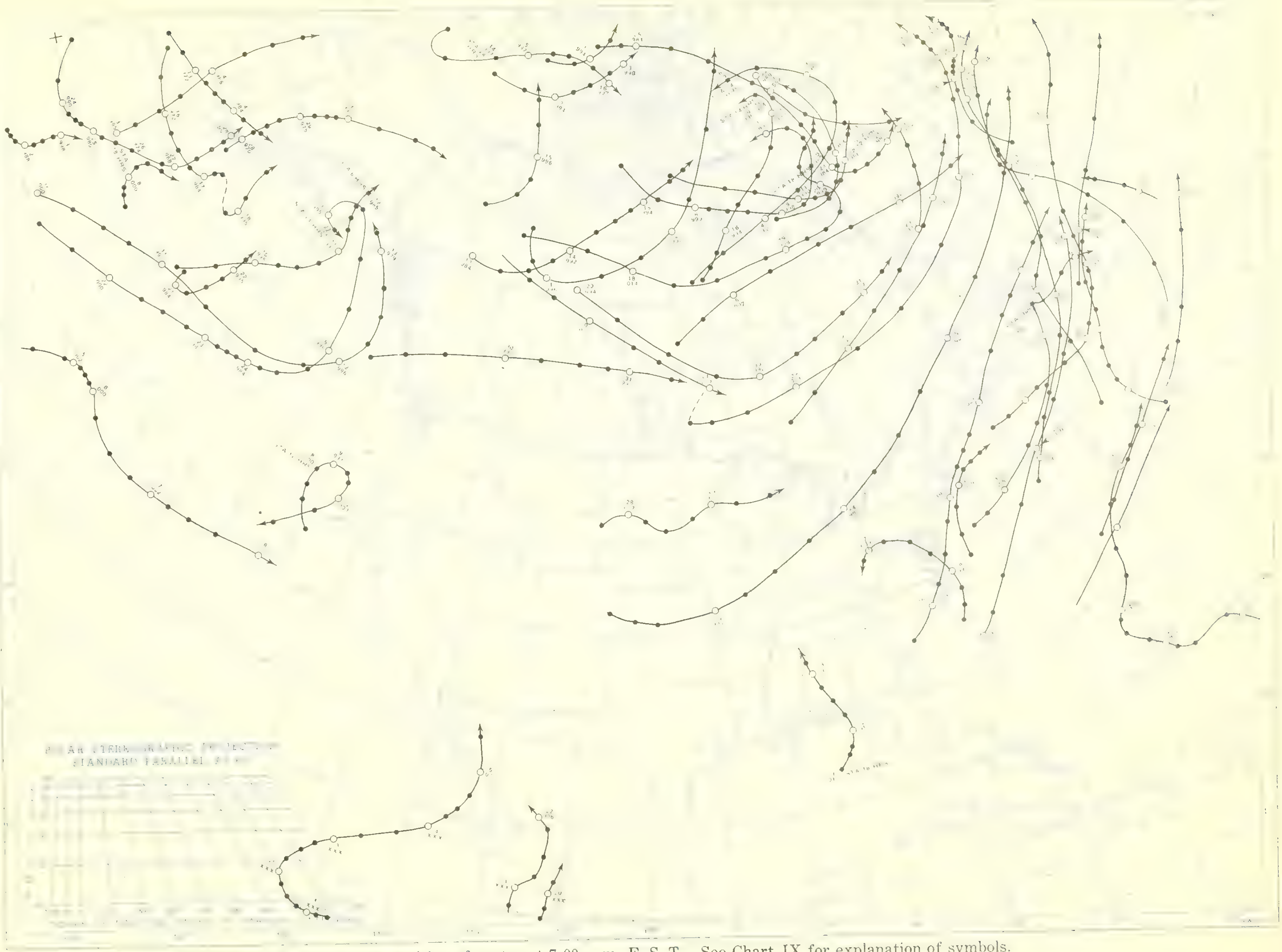
Chart shows mean daily solar radiation, direct + diffuse, received on a horizontal surface in langleys (1 langley = 1 gm. cal. cm.$^{-2}$). Basic data for isolines are shown on chart. Further estimates are obtained from supplementary data for which limits of accuracy are wider than for those data shown. The inset shows the percentage of the mean based on the period 1951-55.

Chart IX. Tracks of Centers of Anticyclones at Sea Level, October 1957.



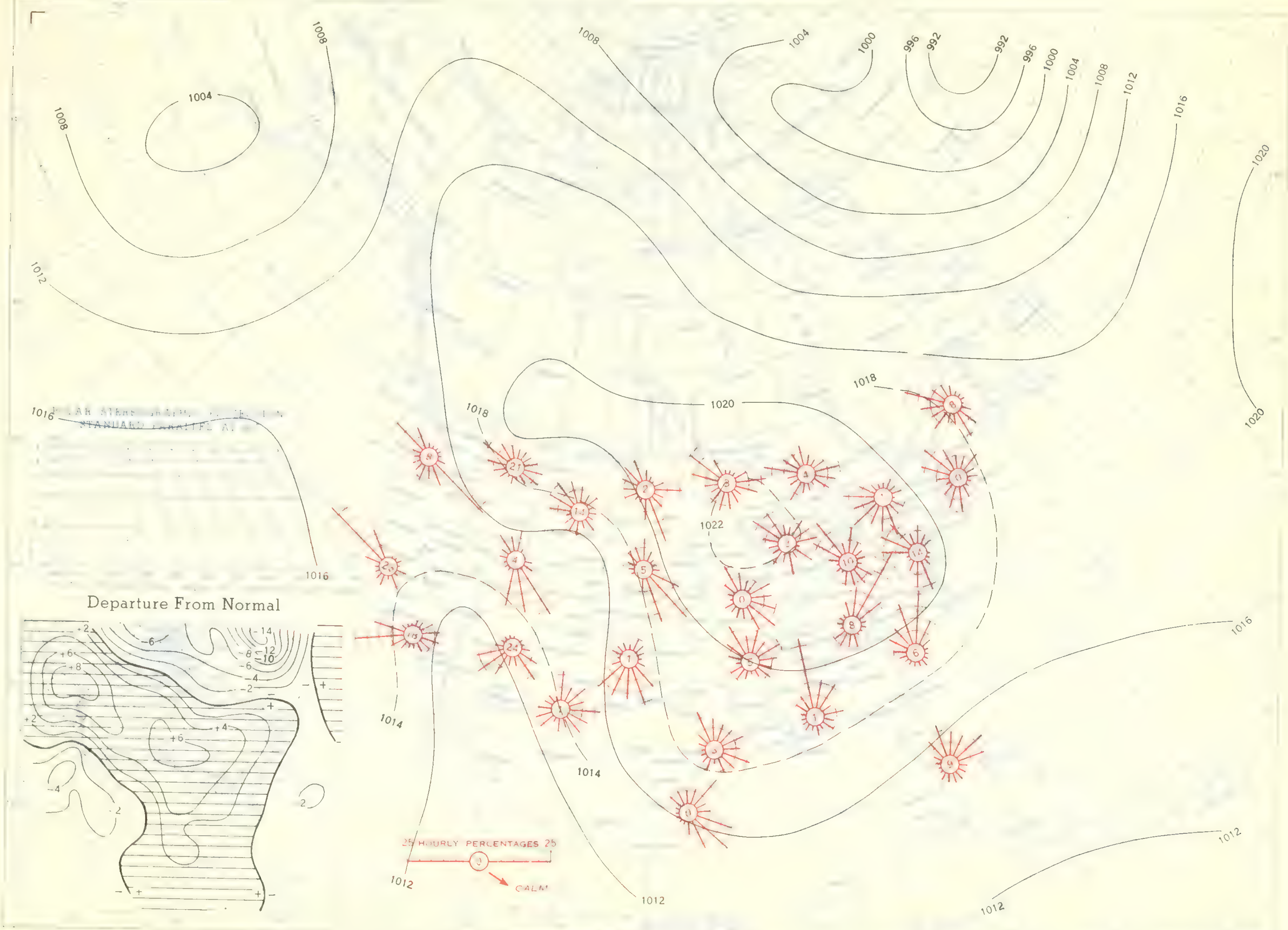
Circle indicates position of center at 7:00 a. m. E. S. T. Figure above circle indicates date, figure below, pressure to nearest millibar. Dots indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track

Chart X. Tracks of Centers of Cyclones at Sea Level, October 1957.



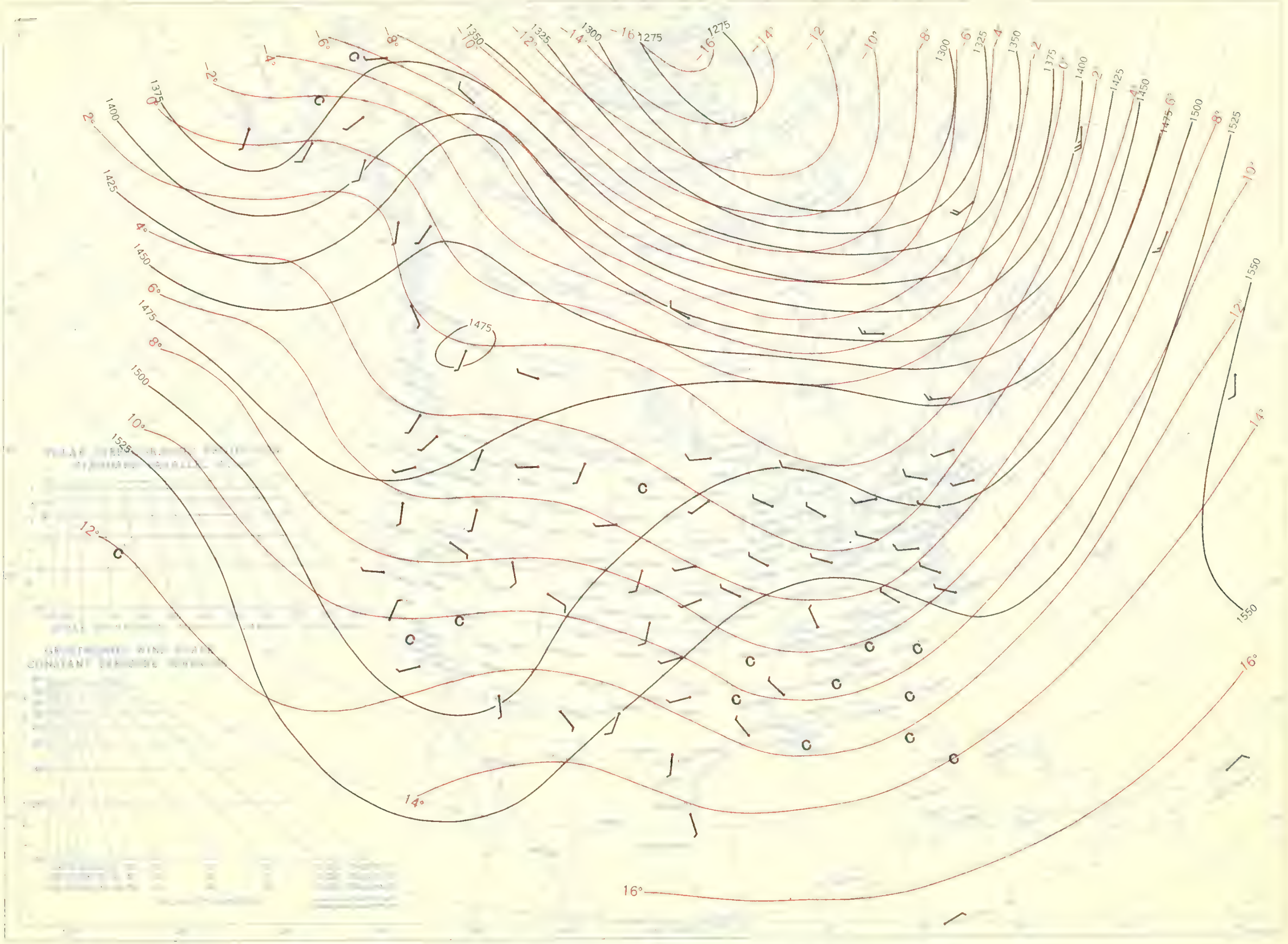
Circle indicates position of center at 7:00 a. m. E. S. T. See Chart IX for explanation of symbols.

Chart XI. Average Sea Level Pressure (mb.) and Surface Windroses, October 1957. Inset: Departure of Average Pressure (mb.) from Normal, October 1957.



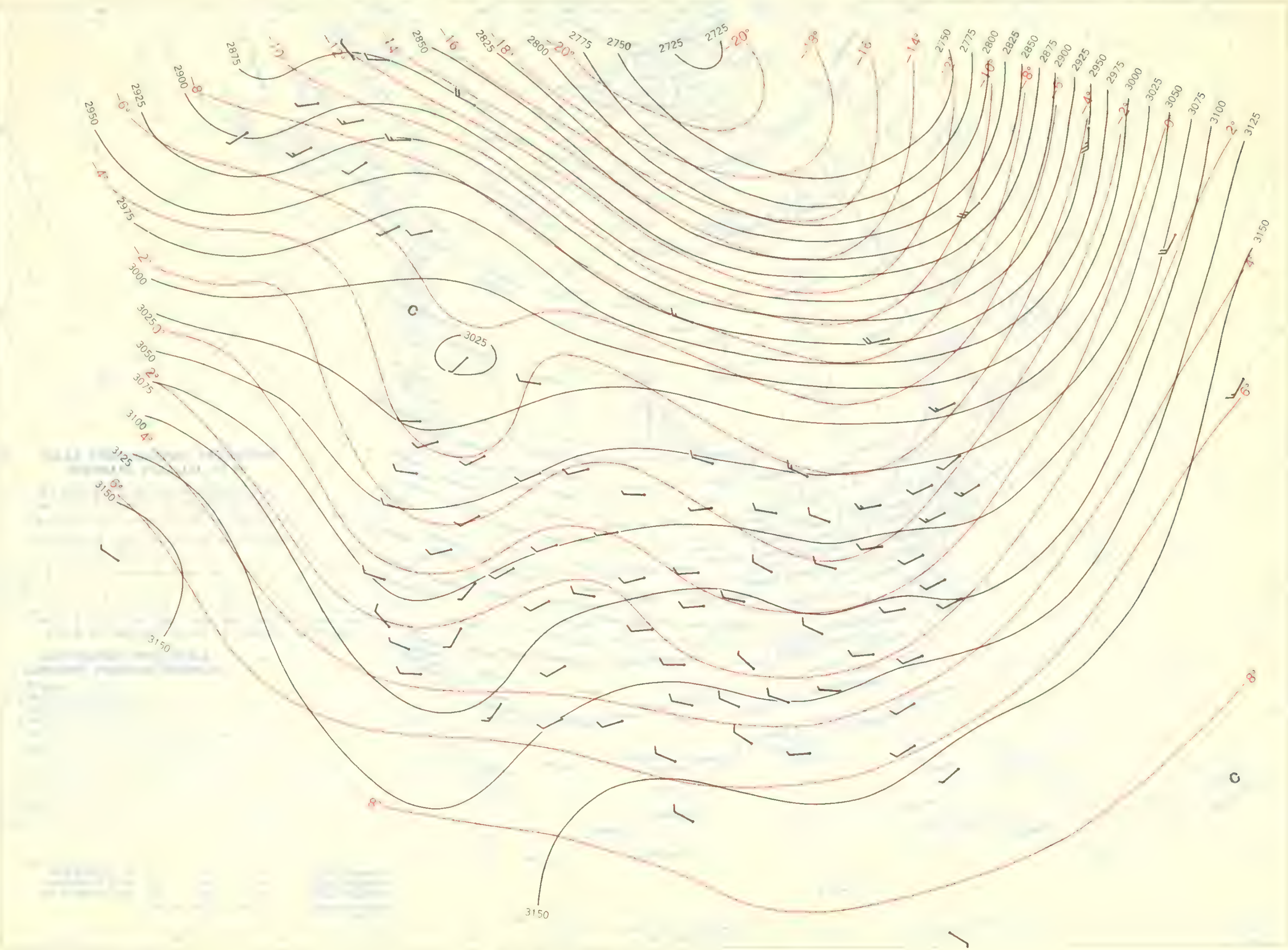
Average sea level pressures are obtained from the averages of the 7:00 a. m. and 7:00 p. m. E. S. T. readings. Windroses show percentage of time wind blew from 16 compass points or was calm during the month. Pressure normals are computed for stations having at least 10 years of record and for 10° inter-

Chart XII. 850-mb. Surface, 1200 GMT, October 1957. Average Height and Temperature, and Resultant Winds.



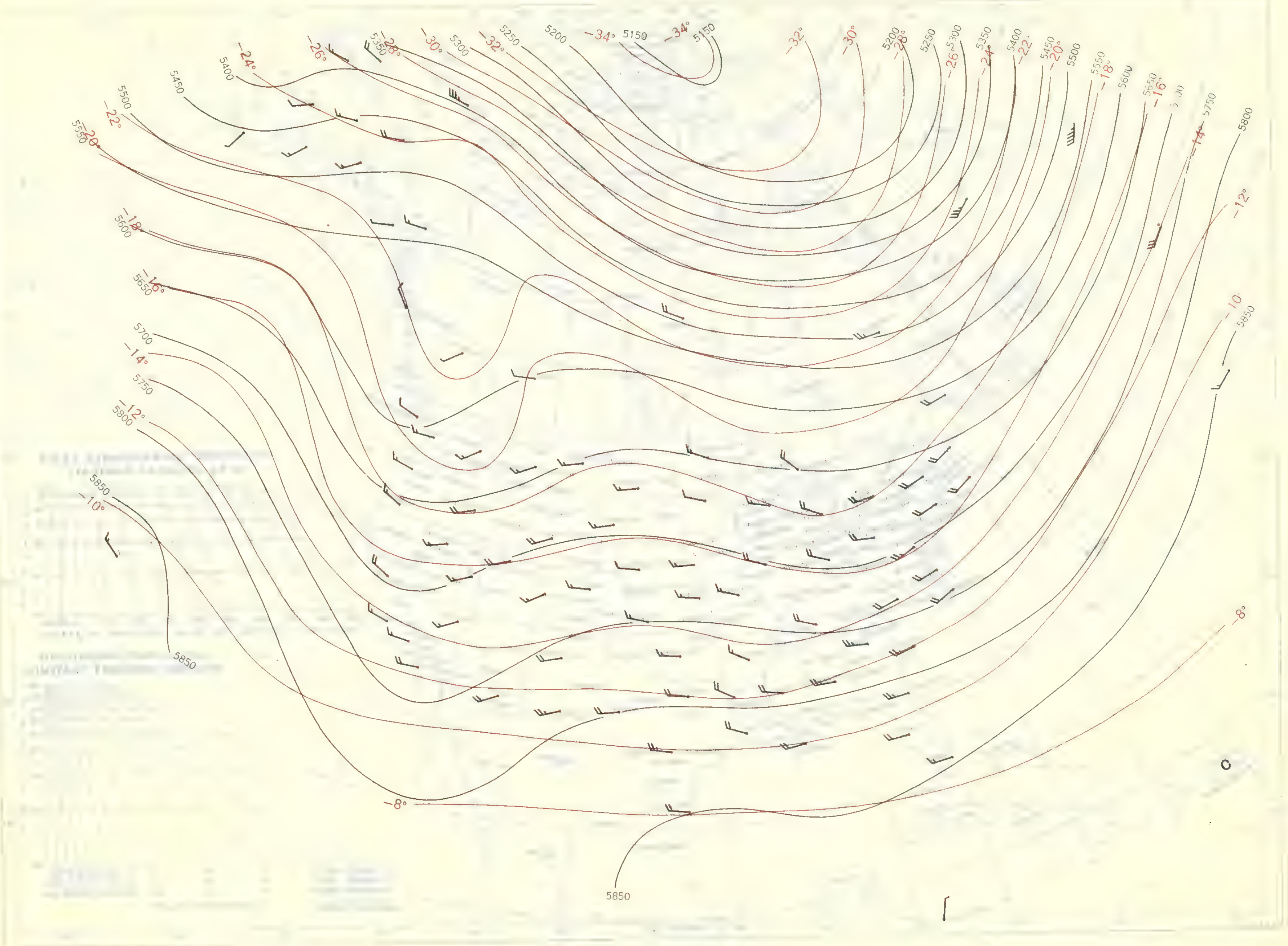
Height in geopotential meters (1 g.p.m. = 0.98 dynamic meters). Temperature in °C. Wind speed in knots; flag represents 50 knots, full feather 10 knots, and half feather 5 knots. All wind data are based on rawin observations.

Chart XIII. 700-mb. Surface, 1200 GMT, October 1957. Average Height and Temperature, and Resultant Winds.



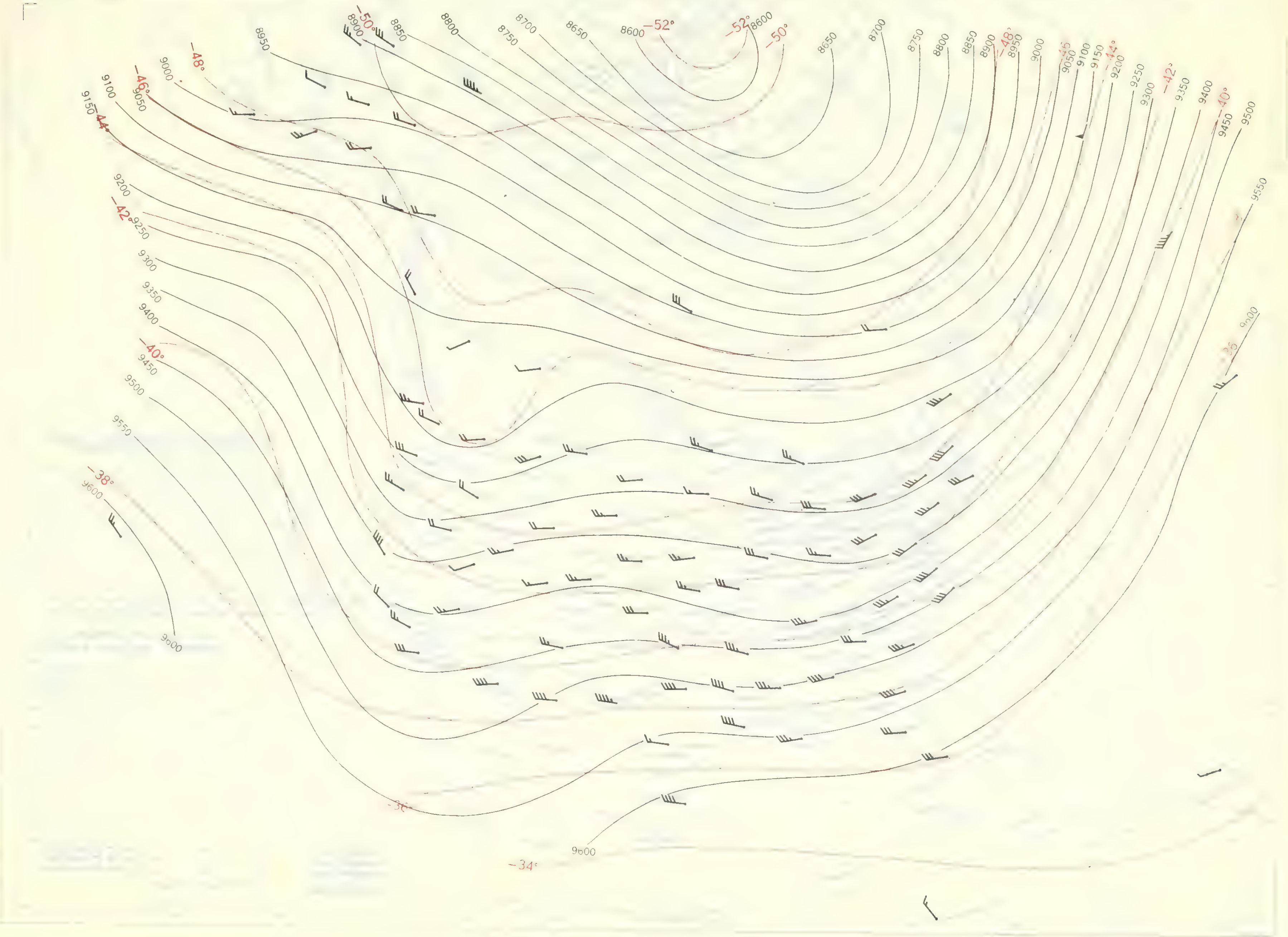
See Chart XII for explanation of map.

Chart XIV. 500-mb. Surface, 1200 GMT, October 1957. Average Height and Temperature, and Resultant Winds.



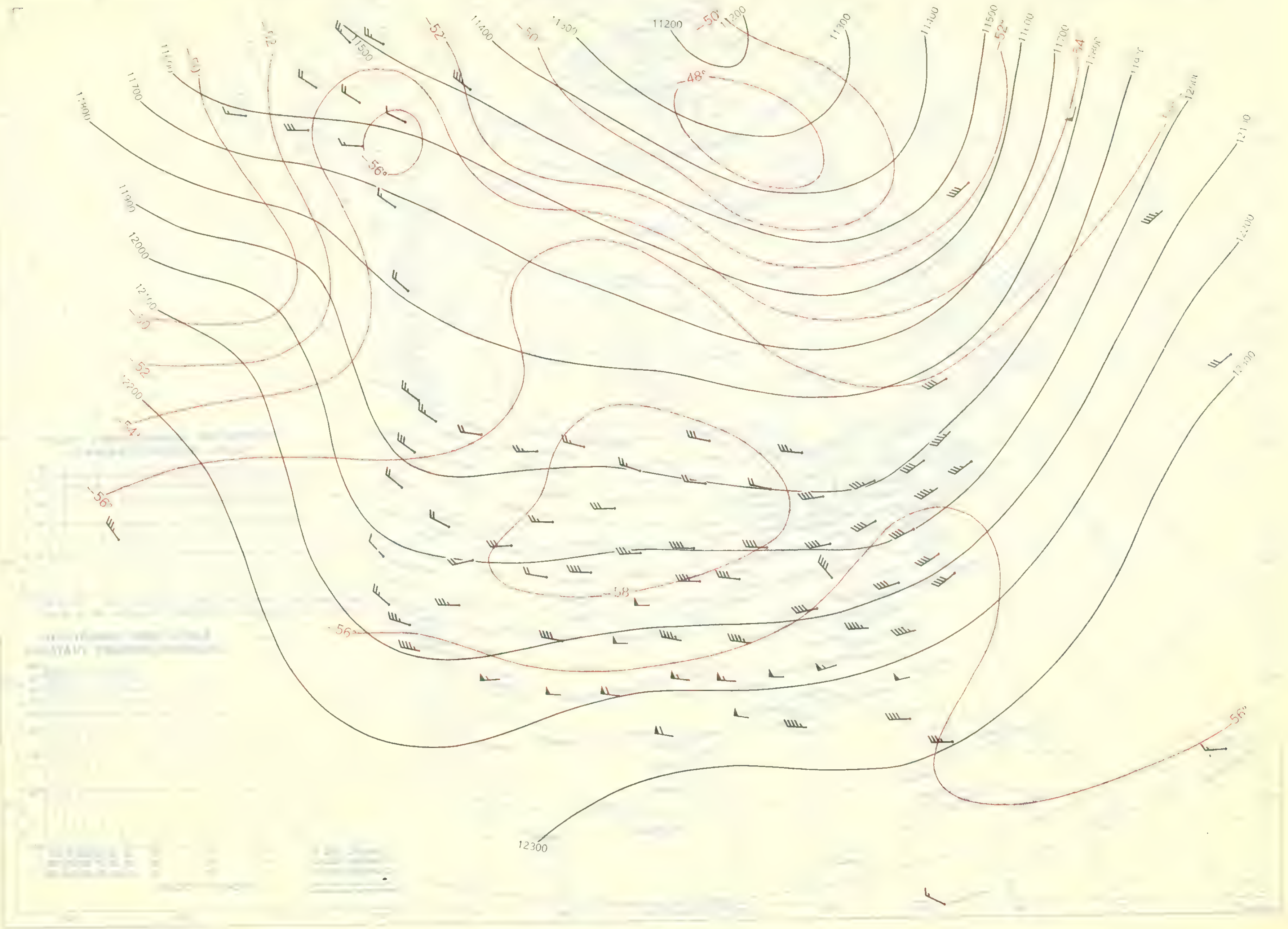
See Chart XII for explanation of map.

Chart XV. 300-mb. Surface, 1200 GMT, October 1957. Average Height and Temperature, and Resultant Winds.



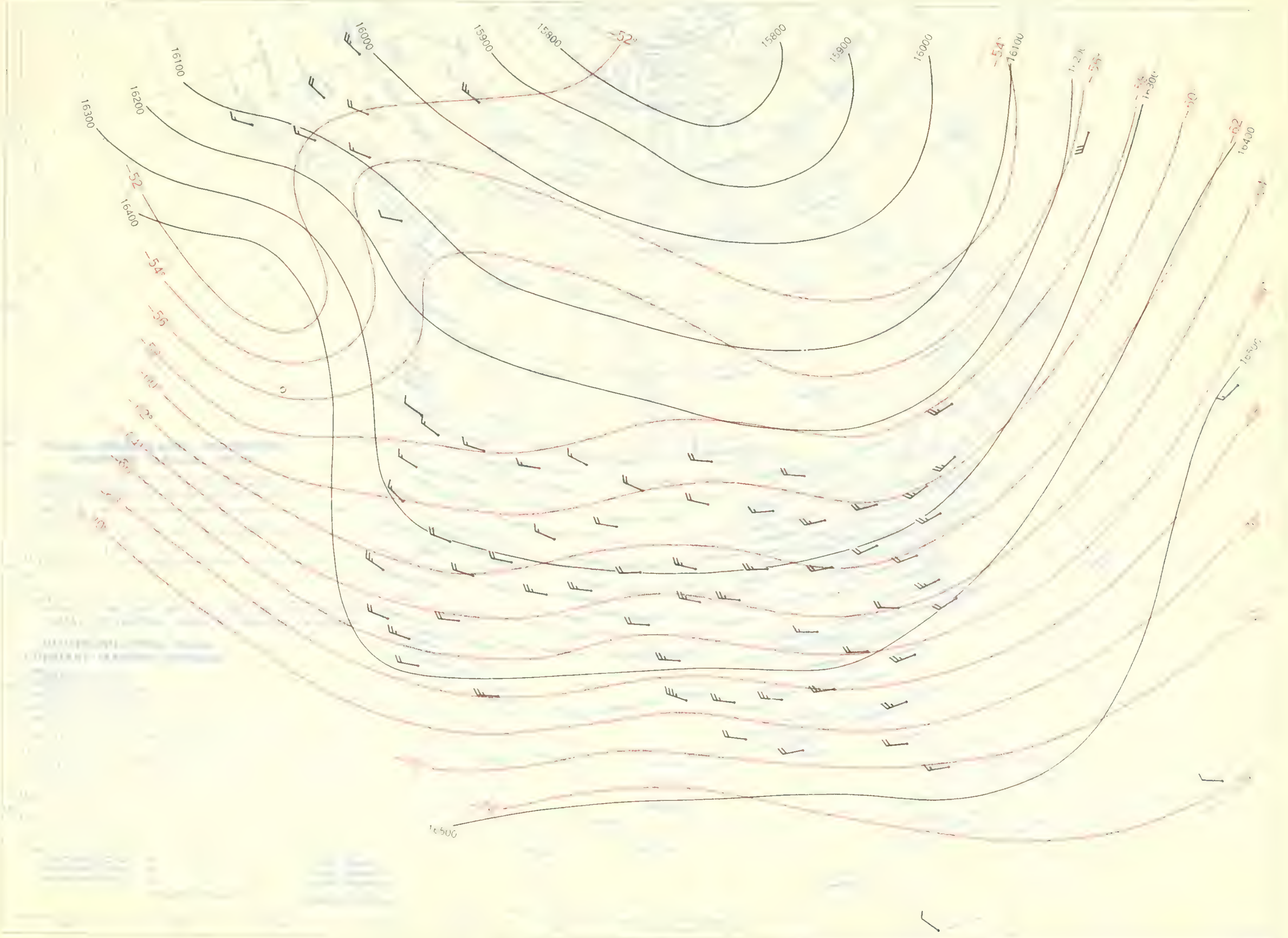
See Chart XII for explanation of map.

Chart XVI. 200-mb. Surface, 1200 GMT, October 1957. Average Height and Temperature, and Resultant Winds.



See Chart XII for explanation of map.

Chart XVII. 100-mb. Surface, 1200 GMT, October 1957. Average Height and Temperature, and Resultant Winds.



See Chart XII for explanation of map.

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NOVEMBER 1957
Volume 8 No. 11

ASHEVILLE: 1958

CONTENTS

SURFACE DATA

Page

General Summary of Weather Conditions---------------------- 479

Condensed Climatological Data - States-------------------- 480

Climatological Data - Stations---------------------------- 481

Heating Degree Days--------------------------------------- 485

Storm Data and Unusual Weather Phenomena------------------ 486

General Summary of River and Flood Conditions------------- 500

Flood Stage Data-- 502

UPPER AIR DATA

Rawinsonde Data--- 504

SOLAR RADIATION DATA

Solar Radiation Intensities------------------------------- 510

Blue Hill Data-- 511

Net Radiation--- 511

Daily Totals and Average Daily Totals by Weeks------------ 512

CHARTS I-XVII

NOTE.--This publication contains all of the climatic data formerly printed in the MONTHLY WEATHER REVIEW.

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CLIMATOLOGICAL DATA

NATIONAL SUMMARY

Volume 8 No. 11

NOVEMBER 1957

GENERAL SUMMARY OF WEATHER CONDITIONS

November weather was stormy, wet, and cloudy in most sections of the country, and unseasonably cold in the Southwest. Generous precipitation helped relieve water shortages brought on in parts of the Northeast by summer and early fall drought, but delayed harvesting in the Midwest and South. Heavy rains caused widespread mostly minor flooding in the South. Tornadoes were unusually numerous for November in south-central areas, and record snowfall was recorded at points in the central Great Plains. At the end of the month soil moisture was ample over the entire country.

TEMPERATURE.--The month was among the coldest Novembers on record in Texas and the Great Basin where rather persistently subnormal temperatures averaged as much as 6° below normal. Amarillo, Lubbock, and Dalhart, Tex., on the 23d recorded lows of 3°, -1°, -1° respectively, record lows for November at all 3 stations.

Elsewhere temperatures were characterized by frequent and sometimes sharp changes with the passage of numerous alternate high and low pressure areas, but generally averaged a little above normal. Montgomery, Ala., recorded a late season high of 85° on the 16th and Portland, Maine, an early season low of 6° on the 27th. Navigation closed in the Mississippi River at Minneapolis, Minn., on the 30th, 3 days later than in 1956. Extreme temperatures for the month ranged from 93° at Tamiami Trail, Fla., on the 10th to -37° at Frazer, Colo., on the 22d.

Cold Polar air began pouring into the Pacific Northwest on the first days of the month and by the 4th had spread across the entire Nation reducing temperatures to subnormal levels which were maintained in most sections until the end of the first decade as cold air continued to pour southward. On the 8th and 9th daytime temperatures at many north-central stations remained near or below freezing, and Minnesota and New York State recorded their first subzero minima of the season.

The first decade was followed by a week of above normal temperatures, except in the Great Basin areas of the Far West where temperatures for the week ending the 18th again averaged as much as 6° below normal. The week ending the 25th was abnormally cold west of the Appalachians except in the northwestern Great Plains and along the California coast where temperatures were well above normal. As the month ended cold air was moving across the Deep South where temperatures were already below freezing at many stations.

PRECIPITATION.--Precipitation was abundant and above normal in most of the country, with less than 75 percent of normal in appreciable areas only in northern and extreme southern sections west of the Continental Divide. Monthly totals were over 400 percent of normal in parts of the Southwest and over twice normal in most of the South and in a belt extending from New Mexico and northern Arizona to southeastern Montana.

New record totals for November were reported from Cairo, Ill., 13.05 inches; Louisville, Ky., 9.12; Winston-Salem, N.C., 7.15; and Brownsville, Tex., 6.26 inches. Monthly totals ranged up to 19.41 inches at Woodworth State Forest in Louisiana, and up to 15 inches or more in Kentucky, Mississippi, North Carolina, Tennessee, Arkansas, and Missouri, and 10 inches or more in Alabama, Florida, South Carolina, Illinois, Indiana, and Texas. Even more significant minimum totals exceeded 5 inches in Mississippi and 3 inches in Maine, New Hampshire, Tennessee, Arkansas, and Louisiana.

Early in the month a Gulf storm produced 6 to 8 inches of rain in northeastern Texas, resulting in a record flood crest of 45.6 feet at Hagansport on the Sulphur River, and some lowland flooding along the Trinity River and in the Sabine River above Logansport, La. During the third week widespread flooding occurred from Texas eastward and in the lower Ohio Drainage Basin.

In New Jersey, southern New England, and some adjacent areas of nearby states, hard hit by summer and fall drought, 2 to over 4 inches of precipitation either replenished or maintained adequate topsoil moisture for fall-planted crops, but was not sufficient to relieve water shortages which remained serious in some sections.

Elsewhere in the Nation water supplies and soil moisture were ample to excessive. Frequent rains and resulting muddy fields delayed the late harvest of cotton and corn and caused considerable damage. Damage to cotton in Arizona by fall rains was estimated at several million dollars. Fall-planted grains remained in good condition, except in many southern lowlands where excessive moisture caused some deterioration.

Heavy snow fell from the central Great Plains to the Great Lakes during a storm on the 17th to 19th. Concordia, Kans., and Lincoln, Nebr., measured 10.2 and 10.4 inches in 24 hours on the 17th and 18th, new 24-hour records at both places for November. Lander, Wyo., measured 32.5 inches for the greatest November total there on record. On the 23d San Antonio, Tex., had measurable snowfall for the first time in November, and on the same date Corpus Christi, Tex., saw its earliest snowfall on record.

DESTRUCTIVE STORMS.--Tornadoes, the most damaging type of storm of the month, were unusually numerous and destructive for November. The worst outbreak of these storms occurred in Texas and Louisiana on the 7th, when several people were killed, scores received injuries, and property was damaged to the extent of several million dollars. A second outbreak, only slightly less severe, occurred in Mississippi and Alabama on the 18th.

Winds caused considerable damage in many sections of the Northeast on the 8th and 9th, Indiana on the 14th, in northern Washington on the 25th, in Texas on the 27th to 29th, and southern California on the 29th and 30th. Glaze caused several thousand dollars damage in southeastern Wyoming on the 2d to 4th, and heavy snowfall in Nebraska on the 17th and 18th was responsible for heavy crop damage.

CONDENSED CLIMATOLOGICAL SUMMARY

NOVEMBER 1957

Section	Temperature						Precipitation			
	Monthly extremes						Monthly extremes			
	Station	Highest	Date	Station	Lowest	Date	Station	Greatest	Station	Least
		°F			°F			In.		In.
Alabama	Gilbertown	88	16	2 Stations	21	10+	Decatur 4	14.85	Enterprise	2.18
Arizona	Gila Bend	85	10	Maverick	-10	18	Junipine	6.32	8 Stations	.00
Arkansas	Perryville	85	2	Gravette	13	23	Hamburg	15.47	Gravette	3.48
California	2 Stations	89	26	White Mtn 1	-13	17	Klamath	12.53	6 Stations	.00
Colorado	Eversoll Ranch	75	25+	Fraser	-37	22	Palisade Lake	5.15	Fort Lupton	.10
Connecticut	Hartford Brainard Fld	70	19	2 Stations	7	27	Lake Konomoc	6.21	Bulls Bridge Dam	2.63
Delaware	2 Stations	74	19	Georgetown 5SW	18	12	Lewes	5.44	Middletown 2S	2.56
Florida	Tamiami Trl. 40 Mi. Bend	93	10	Mariana CAA AP	31	30	Sanborn Tower	14.23	Cornwell 4 NW	.05
Georgia	Alma CAA AP	89	17	Blairsville Exp Sta	13	11	Flat Top	15.65	Douglas	1.88
Idaho	Riggins RS	69	1	Obsidian 2NNW	-25	21	Elk River 1S	4.07	Mackay RS	.14
Illinois	6 Stations	70	1	2 Stations	7	30	Cairo WB City	13.05	Quincy Dam 21	1.19
Indiana	Tell City Pwr Plant	71	2	Greensburg 3W	10	10	Leavenworth Dam 44	11.32	Pendleton Reform	.72
Iowa	Keokuk	66	1	Saratoga 2E	-2	30	Iowa Falls	4.37	Chariton 3E	.98
Kansas	Pratt	81	1	2 Stations	7	22	Fort Scott	3.59	Brewster	.22
Kentucky	Pikeville	78	18	West Liberty	11	11	Cadiz Lock E	15.62	2 Stations	2.62
Louisiana	Angola	88	17	Chatham	27	30	Woodworth State For.	19.41	New Orleans London	3.60
Maine	Winslow	66	1	2 Stations	-2	26+	Hiram 2S	7.39	Jackman	3.70
Maryland	Upper Marlboro 3NNW	76	20	Oakland 1SE	8	11+	Waldorf Police Brks	6.14	Luke	1.09
Massachusetts	Fitchburg 2S	72	16	Tully Dam	4	27	Sterling	6.67	Webster	3.03
Michigan	Boyne Falls St. Nur.	64	1	3 Stations	-1	25+	Kenross Air Force B	6.57	Eagle Harbor Coast Gd.	1.16
Minnesota	Winona	60	2	4 Stations	-10	30	Preston	4.51	Caribou 2S	.28
Mississippi	Dlo	87	17	Hickory Flat 1WNW	22	10	Carrollton 1SSW	15.76	Picayune 4S	5.78
Missouri	6 Stations	75	1+	3 Stations	9	23+	Portageville	15.66	Conception	.81
Montana	Lame Deer	68	24	West Yellowstone	-27	21	Red Lodge	5.18	Biddle	.00
Nebraska	Curtis	73	26	2 Stations	3	22	Spiker 3NW	3.04	Rushville	.01
Nevada	Overton	74	25	Gibbs Ranch	-5	22	Pioche	2.77	Mina	T
New Hampshire	Windham	69	15	Fabyan	-15	27	Mount Washington	8.70	Jefferson	3.24
New Jersey	Burlington	72	19	Layton 3NW	12	27	Toms River	5.87	Trenton WB City	2.47
New Mexico	Hagerman	81	23	Eagle Nest	-33	28	Jemez Springs	3.66	Whitewater	.06
New York	Middleburg 4SW	71	20	2 Stations	-14	27	Derby 2NW	6.69	2 Stations	.85
North Carolina	Greenville 3S	89	17	Celo 2S	4	11	Haywood Gap	17.66	2 Stations	2.65
North Dakota	4 Stations	59	6+	Bottineau	-7	29	Foxholm 7N	1.39	Hansboro	.03
Ohio	McConnelsville Lock 7	75	3	New Lexington 2NW	8	11	Cincinnati Price Hill	6.11	Toledo Sewage	1.59
Oklahoma	Cherokee	85	1	Kenton	2	22	Yuba 2S	9.90	Goodwell	.53
Oregon	3 Stations	70	1+	Austin 3S	-8	21	Valsetz	12.33	Warm Springs Res	.00
Pennsylvania	4 Stations	72	19+	Coudersport 3NW	3	11	DeVault 1W	5.49	Tamarack 2S Fire Twr.	1.18
Rhode Island	Providence WB Airport	68	15+	2 Stations	11	27	Greenville	5.70	Block Island WB AP	2.84
South Carolina	Walterboro	88	3	Landrum 5ENE	13	11	Ware Shoals	12.09	Loris	2.57
South Dakota	2 Stations	66	10+	2 Stations	-5	9+	Bonesteel	3.42	Scenic	T
Tennessee	Allardt	85	2	Mountain City 2	7	11	Lockhart Tower	16.58	Odonville	3.22
Texas	Rio Grande City	92	2	Plains	-2	23	Bronson	13.83	Candelaria	.05
Utah	St George PH	68	1	Navajo Mtn	-20	19	Silver Lake Brighton	5.60	Ibapah	.33
Vermont	3 Stations	68	2+	2 Stations	-9	27+	Dorset 1S	5.86	Salisbury	2.45
Virginia	do	79	3+	Chilhowie 1S	9	11	Clarksville	7.75	Monterey	.91
Washington	2 Stations	69	2+	Deer Park 2E	1	29	Cougar 1E	14.86	Yakima WB AP	.10
West Virginia	Williamson	79	19	Birch River 6SSW	5	11	Lakin	4.65	Buckhannon 2W	1.26
Wisconsin	3 Stations	61	1+	Gordon 2ESE	-16	30	Oconto	4.57	2 Stations	1.13
Wyoming	Archer	71	1	Bondurant	-32	21	Moose 3NW	2.30	4 Stations	T
Puerto Rico	Guayama	95	4	Guineo Reservoir	53	16	Rio Blanco 1800 Ft.	18.75	Central San Francisco	.61
Hawaii	2 Stations	92	11+	Mauna Loa Slope Obsy	27	27	Paakea	46.44	Puumali	.20

+ And also on a later date or dates.

Note: Dates in Table 1 apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for times of observations).

CLIMATOLOGICAL DATA

NOVEMBER 1957

State and station	Elevation (ground)	Pressure		Temperature											Average relative humidity	Precipitation							Wind					No. of days (sunrise to sunset)			Sky cover, tenths (sunrise to sunset)	Possible sunshine
												No. of days							No. of days		Snow, Sleet				Fastest mile							
		Station ø	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F. or above	Min. 32° F. or below	Average dew point		Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy		
	Ft.	Mb.	Mb.	°F	°F	°F.	°F.	°F.		°F				°F.	%	In.	In.	In.			In.	In.	M p. h.		M. p h.			0–3	4–7	8–10	0–10	%
ALABAMA																																
Birmingham	610	993.6	1019.4	63	44	53.8	1.8	81	16	27	10	0	4	44	74	5.67	1.69	2.34	15	3	0.0	0	9.5	S	43	S	18	5	7	18	7.3	38
Mobile	211	1010.7	1019.2	68	51	59.4	.7	80	2	31	30	0	1	51	78	7.38	3.31	3.07	11	2	.0	0	11.6	N	------		--	9	4	17	6.7	--
Montgomery	198	1011.1	1019.5	68	48	58.2	3.0	85	16	30	30	0	1	48	73	5.69	1.74	1.78	9	3	.0	0	7.1	NW	46	S	14	8	2	20	6.9	45
ARIZONA																																
Flagstaff	6993	------	------	44	21	32.7	-3.1	59	25	-2	17	0	27	--	--	4.24	3.35	2.30	9	3	8.2	3	---	---	---	---	--	17	3	10	4.0	--
Phoenix	1114	977.3	1016.9	69	44	56.4	-2.0	78	25	33	29	0	0	39	55	.02	-.45	.01	2	0	0	0	4.3	E	*28	N	21	18	6	6	3.3	85
Prescott	5014	846.9	1018.1	55	29	41.6	-4.0	67	24	16	28+	0	25	--	--	.50	-.12	.33	7	0	T	0	8.0	SSW	47	N	21	15	10	5	3.5	73
Tucson	2558	926.5	1015.5	67	42	54.3	-3.9	76	26	30	23+	0	2	33	49	.56	-.20	.52	3	0	.0	0	7.4	SE	34	E	29	20	2	8	3.1	91
Winslow	4880	851.7	1017.5	53	29	40.7	-2.2	66	26	13	30	0	22	23	53	.26	-.17	.14	5	0	T	T	6.4	WSW	*38	SSW	3	18	5	7	3.6	--
Yuma	199	1011.5	1016.8	74	48	61.0	-3.2	84	10	39	30	0	0	30	37	T	-.14	T	0	0	.0	0	7.2	N	47	N	21	21	6	3	2.5	98
ARKANSAS																																
Fort Smith	458	1001.7	1018.4	59	40	49.4	-1.1	78	1	26	23	0	8	41	75	7.03	4.01	3.85	9	4	T	0	7.9	ENE	29	SW	15	7	8	15	6.5	45
Little Rock	257	1005.4	1018.8	61	44	52.2	.7	78	2	31	30	0	1	42	70	9.54	5.62	5.07	10	6	.8	T	9.7	ENE	35	NW	29	7	6	17	6.9	40
Texarkana	361	------	------	63	45	53.7	-1.0	82	17	30	30	0	3	--	--	9.65	5.32	3.91	11	4	1.5	1	9.1	ENE	---	--	--	--	--	--	---	--
CALIFORNIA																																
Bakersfield	489	1002.0	1020.6	66	43	54.6	-1.6	75	1	37	29	0	0	42	67	.57	.14	.31	2	0	.0	0	3.1	ENE	*21	NW	2	11	10	9	4.9	--
Bishop	4108	876.4	1019.0	60	28	44.0	-2.2	76	24	18	30	0	26	--	--	.32	-.16	.18	5	0	1.0	1	---	---	---	--	--	15	7	8	4.4	--
Blue Canyon	5280	840.5	1019.0	49	35	41.9	-2.0	67	24	24	16	0	10	--	--	5.14	-1.54	3.32	13	1	6.8	2	8.3	---	---	--	--	11	7	12	5.5	--
Burbank	699	991.5	1017.9	71	46	58.2	-1.7	83	25	39	17+	0	0	39	54	.27	-.71	.27	2	0	.0	0	3.8	S	*44	ENE	21	14	8	8	4.1	--
Eureka (U)	43	1018.3	1020.7	58	45	51.5	.2	67	22	38	3+	0	0	--	--	4.44	-.20	2.24	13	0	.0	0	5.3	---	30	N	1	11	4	15	5.5	53
Fresno	331	1007.8	1019.9	64	40	51.9	-1.6	75	1	33	17	0	0	42	75	1.02	.27	.70	3	0	.0	0	3.3	NW	15	NW	11+	11	12	7	4.8	72
Los Angeles (U)	312	------	------	70	51	60.7	-1.4	83	25	43	17	0	0	42	58	.51	-.52	.36	3	0	.0	0	6.2	---	24	SE	2+	19	7	4	3.3	79
Los Angeles	99	1013.9	1017.8	69	51	60.1	.8	80	25	42	28	0	0	46	64	.46	-.64	.35	3	0	.0	0	6.5	W	*21	W	2+	12	13	5	4.4	--
Mt. Shasta (R)	3544	895.7	1022.0	49	28	38.4	-3.1	58	6+	19	29	0	24	--	--	2.27	-1.56	1.55	7	0	3.0	2	---	---	--	--	--	13	5	12	5.0	--
Oakland	3	1020.0	1020.2	63	44	53.5	-.3	68	1+	38	24+	0	0	42	68	.52	-1.43	.26	6	0	.0	0	6.2	WNW	*26	W	14	14	10	6	4.4	--
Red Bluff	341	1007.8	1020.9	62	40	51.3	-3.2	70	26	32	23	0	1	34	58	1.20	-1.07	.76	7	1	.0	0	8.1	NNW	38	N	2	17	0	13	4.5	73
Sacramento	17	1018.6	1019.8	62	41	51.6	-1.5	71	1+	33	22	0	0	39	66	.51	-.99	.44	5	0	.0	0	8.2	NNW	40	NW	21	12	9	9	4.5	82
Sandberg (R)	4517	864.2	1019.0	52	37	44.4	-5.1	65	24	29	3	0	7	--	--	.36	-.34	.33	3	0	.5	T	16.2	---	*55	ENE	21	15	7	8	4.3	--
San Diego	19	1013.9	1017.2	70	52	60.7	-.1	82	25	45	17	0	0	46	65	.59	-.24	.28	4	1	.0	0	5.4	NE	26	SW	2	14	9	7	4.0	74
San Francisco (U)	52	------	------	62	51	56.8	-.4	71	26	48	28	0	0	--	--	1.13	-1.14	.47	8	0	.0	0	6.1	---	23	N	2	--	--	-	---	65
San Francisco	8	1019.6	1020.4	62	46	54.1	-.3	68	26	40	28	0	0	44	71	1.18	-.44	.51	8	0	.0	0	5.9	WNW	29	N	2	15	5	10	4.5	--
Santa Maria	238	1010.2	1019.1	68	41	54.1	-2.3	78	29	32	17	0	1	42	70	.36	-.58	.20	3	0	.0	0	4.3	WNW	*21	WNW	11	17	7	6	3.6	--
COLORADO																																
Alamosa	7536	770.1	1022.4	38	6	21.7	-7.8	55	4	-24	22	0	30	--	--	1.21	.83	.56	11	0	16.5	6	---	---	---	--	--	14	11	5	4.2	--
Colorado Springs	6173	809.0	1019.5	44	22	33.2	-5.9	69	26	-2	22	0	27	21	66	2.21	1.86	.66	13	1	18.3	6	7.3	NNW	*30	NNW	28+	8	13	9	5.6	-
Denver	5292	836.8	1017.5	48	26	36.8	-2.5	70	26	12	21+	0	26	20	58	.49	-.21	.17	11	0	3.0	1	11.3	SSW	37	N	28	10	10	10	5.8	56
Grand Junction	4849	861.2	1020.6	44	28	36.3	-2.3	62	3	14	22	0	21	25	67	1.15	.60	.31	12	0	3.9	1	7.6	ESE	33	NW	28	10	9	11	5.5	51
Pueblo	4639	856.8	1018.8	49	25	37.3	-2.0	73	26	-2	22	0	21	26	67	2.43	1.96	.82	10	0	8.7	4	7.3	E	38	N	27	12	9	9	5.0	61
CONNECTICUT																																
Bridgeport	7	1016.6	------	55	39	47.1	3.6	67	15	19	27	0	6	--	--	3.38	-.21	1.03	9	0	T	T	---	---	---	--		8	7	15	6.3	--
Hartford	169	1010.8	1016.9	54	34	43.9	2.6	67	19	13	27	0	13	34	70	5.04	1.56	1.15	12	1	T	T	11.9	SW	42	SW	8	6	7	17	7.0	38
Middletown (U)	133	1012.3	------	53	35	44.1	----	66	19	16	27	0	15	--	--	5.90	----	1.05	12	2	.0	0	9.7	---	‡53	S	8	--	--	--	---	--
New Haven	6	1016.2	1016.9	55	39	46.5	3.6	66	3+	18	27	0	7	--	--	4.49	.55	1.24	11	0	T	T	7.8	---	29	S	8	8	7	15	6.3	53
DELAWARE																																
Wilmington	78	1014.9	1018.2	55	38	46.6	1.1	73	19	23	12	0	10	38	75	3.11	-.22	.59	11	1	T	T	9.9	NW	---	--	--	8	8	14	6.5	--
DIST. OF COLUMBIA																																
Washington (U)	72	------	------	57	42	49.4	1.4	73	19	27	12	0	4	--	--	3.32	.50	.76	10	1	T	T	7.2	---	29	NW	19	--	--	--	---	--
Wash. Nat'l. AP	14	1014.1	1018.7	57	42	49.6	1.9	74	19	26	12	0	4	39	70	2.87	14	.57	10	1	.3	0	9.6	WNW	40	S	8	8	8	14	6.4	43
FLORIDA																																
Apalachicola (U)	13	1017.0	------	70	57	63.5	2.1	83	3	39	30	0	0	--	--	6.02	3.57	2.98	12	3	.0	0	8.6	---	32	NW	29	12	4	14	5.6	58
Daytona Beach	31	1017.2	1019.0	79	58	68.5	3.4	87	15+	43	30	0	0	60	79	.82	-1.45	.25	7	1	.0	0	10.7	S	*29	NE	11	10	6	14	6.0	--
Fort Myers	15	1017.4	------	82	61	71.6	2.4	89	15+	51	2	0	0	--	--	1.52	.31	.91	5	2	.0	0	8.7	---	*27	ENE	11	7	17	6	5.3	--
Jacksonville	24	1017.6	1019.0	75	55	65.3	3.7	85	15+	38	30	0	0	57	79	1.55	-.07	.69	8	0	.0	0	10.1	NE	33	NE	11	8	6	16	6.3	40
Key West (U)	9†	1016.7	------	84	71	77.5	2.9	88	15	62	1+	0	0	--	--	1.20	-.82	.32	8	0	.0	0	8.5	---	26	N	30	8	19	3	†4.6	78
Lakeland (U)	214	------	------	79	60	69.4	2.7	88	16	44	30	0	0	--	--	1.01	-.38	.53	4	2	.0	0	7.1	---	---	--	--	10	9	11	5.3	62
Miami (U)	8	------	------	79	69	74.2	1.9	84	4+	60	1	0	0	--	--	11.88	9.72	6.30	6	1	.0	0	13.4	---	40	NE	11	15	10	5	4.2	65
Miami	7	1016.5	1017.8	82	68	75.0	2.9	87	30	54	2	0	0	67	80	2.54	.13	1.74	4	1	.0	0	8.8	ESE	24	ENE	11	11	11	8	5.1	--
Miami Beach	9	------	------	80	71	75.4	1.4	85	20	62	1	0	0	--	--	7.85	5.57	4.02	10	0	.0	0	---	---	---	--	--	9	16	5	---	--
Orlando	106	1014.1	1018.7	80	59	69.4	2.6	89	16+	44	30	0	0	61	78	.82	-.50	.46	6	0	.0	0	9.4	S	*29	SE	13	11	7	12	5.5	--
Pensacola (U)	13	1016.3	------	69	54	61.2	1.0	84	3	33	30	0	0	--	--	5.13	1.29	1.90	13	1	.0	0	†10.7	---	32	NW	30	--	--	--	---	35
Tallahassee	64	1016.1	1018.9	73	53	63.1	4.3	83	3	36	30	0	0	54	77	5.18	2.66	1.60	11	4	.0	0	7.0	NW	---	--	--	7	9	14	6.7	--
Tampa	19	1017.1	1018.7	78	59	68.6	1.9	85	15+	45	30	0	0	60	79	1.44	.40	.71	4	3	.0	0	9.9	S	*29	ENE	11	11	7	12	5.6	58
West Palm Beach	15	1016.8	1017.9	82	66	74.1	2.4	87	19+	54	2	0	0	65	77	76	-2.23	.24	8	1	0	0	12.3	SE	*29	NE	11+	5	13	12	6.3	--
GEORGIA																																
Athens	798	989.9	1019.4	63	44	53.5	1.5	78	3	27	11+	0	3	45	77	9.16	6.14	3.27	13	5	.0	0	9.7	NW	*35	WNW	30	8	5	17	6.4	--
Atlanta	975	975.6	1019.2	62	46	53.7	1.8	77	16	26	30	0	2	45	76	6.70	3.29	1.80	12	3	.0	0	10.8	NW	42	NW	30	6	6	18	6.9	46
Augusta	143	1012.3	1019.2	68	44	55.9	2.1	81	18	25	10	0	5	48	79	6.18	3.74	1.40	11	5	.0	0	6.0	NE	*30	E	14+	8	5	17	6.5	--
Columbus	385	1005.2	------	67	47	56.9	2.6	80	3	33	20	0	0	--	--	8.62	5.76	3.25	10	4	.0	0	---	---	---	--	-	8	3	19	6.8	--
Macon	356	1005.3	1019.1	68	47	57.5	1.5	83	3	30	30	0	2	47	74	5.89	3.16	1.54	11	2	.0	0	9.8	WNW	54	SW	8	8	7	15	6.3	45
Rome	637	995.9	------	62	40	51.2	.7	76	2+	23	11	0	9	--	--	5.85	2.09	1.67	16	6	T	0	---	---	---	--	--	5	9	16	7.1	--
Savannah	48	1016.4	1019.1	70	48	59.0	1.5	83	3	33	30	0	0	51	77	4.57	3.06	1.77	12	3	.0	0	9.0	WNW	34	W	14	9	3	18	6.1	49
Thomasville (U)	283	------	------	72	53	62.2	2.7	84	3	36	30	0	0	--	--	5.58	3.34	1.85	10	5	.0	0	---	---	---	--	--	--	--	--	---	--
IDAHO																																
Boise	2842	924.8	1023.4	46	27	36.4	-3.2	57	9	17	21	0	26	25	66	.81	-.54	.52	5	0	T	T	9.3	SE	32	W	28	13	8	9	4.8	68
Idaho Falls 46W (R)	4933	850.3	1023.0	40	15	27.3	-2.7	54	5	-2	21+	0	30	--	--	.39	-.17	.23	4	1	2.5	1	5.8	---	a31	SW	13	--	--	--	---	--
Idaho Falls 42NW (R)	4790	------	------	38	13	25.6	-3.3	57	5	-3	23	0	30	--	--	.45	.14	.33	5	--	---	--	7.4	---	a37	NNW	28	--	--	--	---	--
Lewiston	1413	969.5	1022.3	47	30	38.8	-1.3	55	11+	22	4+	0	20	--	--	.77	-.58	.28	7	0	.0	0	---	---	---	--	--	6	6	18	6.8	--
Pocatello	4444	865.6	1023.1	40	21	30.4	-5.5	55	10	5	21	0	27	24	78	.79	-.27	.35	9	0	5.8	3	10.3	SW	39	W	28	7	11	12	6.1	54
ILLINOIS																																
Cairo (U)	314	1005.1	------	55	41	48.0	-.6	69	1	24	30	0	4	--	--	13.05	9.25	4.33	10	6	T	T	8.8	N	42	SW	18	8	10	12	6.0	53
Chicago	610	992.2	1015.9	47	33	40.2	.7	63	1	12	30	0	17	31	71	2.72	.39	1.32	9	0	.5	1	11.9	W	42	W	19	6	6	18	7.3	32
Moline	589	993.9	1014.9	46	30	38.1	-.7	62	1	10	30	0	18	31	75	2.38	.23	1.19	11	0	.3	T	11.5	WNW	34	NW	8+	7	5	18	6.9	35
Peoria	654	993.6	1016.7	47	32	39.5	-.2	63	1	12	30	0	18	31	73	2.55	.20	1.35	10	0	.4	T	12.7	S	47	W	8	6	9	15	6.7	45
Springfield	589	993.9	1017.8	49	32	40.7	-.2	65	1	13	30	0	18	32	74	2.25	-.37	.77	12	1	1	T	14.7	SSW	56	W	8	8	5	17	6.5	43
INDIANA																																
Evansville	383	1002.4	1018.8	54	34	44.3	-1.7	68	1	19	30	0	11	35	73	8.49	5.29	2.68	9	1	T	T	9.4	NW	42	NW	8	9	5	16	6.3	52
Fort Wayne	801	986.5	1018.1	47	32	39.7	.0	62	27	15	30	0	17	33	78	1.93	-.53	.75	9	0	.3	T	12.3	WSW	57	SW	19	6	4	20	7.5	31
Indianapolis	793	987.5	1018.2	50	32	40.7	-.8	65	27	17	10	0	17	32	72	3.40	.27	1.23	9	1	T	T	14.0	SW	47	SW	14	6	8	16	6.8	39
South Bend	768	987.1	1015.8	47	33	40.0	1.3	61	1+	14	30	0	16	32	76	3.26	.52	1.63	10	0	3.5	2	13.5	SSW	*40	SW	19	1	7	22	8.4	--

See footnotes at end of table.

CLIMATOLOGICAL DATA

NOVEMBER 1957

State and station	Elevation (ground)	Pressure		Temperature											Average relative humidity	Precipitation							Wind					No. of days (sunrise to sunset)			Sky cover, tenths (sunrise to sunset)	Possible sunshine
												No. of days							No. of days		Snow, Sleet				Fastest mile							
		Ø Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F. or above	Min. 32° F. or below	Average dew point		Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max. depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy		
	Ft.	Mb	Mb.	°F	°F.	°F.	°F.	°F.		°F.				°F.	%	In.	In.	In.			In.	In.	M. p. h.		M. p. h.			0–3	4–7	8–10	0–10	%
IOWA																																
Burlington	694	990.5	1016.7	47	30	38.6	-0.9	63	1	10	30	0	18	30	74	2.08	-0.18	1.05	10	1	T	T	13.1	NW	42	NW	8	5	8	17	7.1	48
Des Moines	948	985.1	1017.4	43	28	35.5	-2.9	58	1	10	22+	0	19	30	80	1.94	.26	.84	10	0	6.8	6	13.4	NNW	68	NW	8	5	7	18	7.1	48
Dubuque	1065	989.8	1015.7	41	27	34.4	-1.2	59	1	7	30	0	21	27	74	2.96	.83	1.35	11	0	1.4	1	---	---	---	---	--	8	1	21	7.3	--
Sioux City	1094	974.6	1017.2	43	28	35.8	.3	55	11+	9	22	0	18	27	72	2.58	1.38	1.29	9	1	5.7	5	14.6	NNW	45	S	11	6	3	21	7.6	32
Waterloo	870	------	------	41	26	33.4	-2.6	58	1	5	30	0	19	--	--	2.56	.62	.85	9	0	7.5	8	15.1	---	---	---	--	--	--	--	---	--
KANSAS																																
Concordia (U)	1375	967.2	------	47	32	39.2	-2.9	73	1	15	22	0	15	--	74	1.47	.32	1.07	7	0	10.4	9	8.5	W	29	NW	29	12	5	13	5.5	53
Dodge City	2594	928.5	1018.3	48	31	39.5	-3.2	71	1	19	19+	0	16	31	75	.98	.11	.55	7	0	3.8	3	15.0	NNW	45	N	29	11	7	12	5.7	49
Goodland	3645	887.9	1017.9	47	24	35.5	-2.0	69	26	12	22	0	28	25	71	.26	-.32	.17	4	0	2.2	2	10.2	NNW	*32	NNW	29	11	10	9	5.2	--
Topeka	877	982.1	1018.7	50	33	41.4	-1.2	70	26	18	30	0	14	32	72	1.92	.33	.65	7	2	T	T	11.7	W	35	NW	8+	7	9	14	6.3	44
Wichita	1321	968.8	1018.2	50	34	41.8	-3.3	74	1	20	30	0	13	34	77	1.45	-.28	.65	10	1	T	T	12.7	SSE	45	N	29	10	5	15	6.4	48
KENTUCKY																																
Lexington	979	982.5	1019.1	54	35	44.5	-.3	68	16	18	30	0	15	36	76	5.57	2.42	2.58	13	4	.6	T	10.9	S	---	---	--	8	7	15	6.2	--
Louisville	474	998.6	1018.4	55	36	45.6	-.1	70	1	21	10+	0	10	36	71	9.12	6.00	3.07	7	1	T	T	9.4	SE	47	S	8	10	4	16	6.3	46
LOUISIANA																																
Baton Rouge	64	1015.6	1018.6	70	51	60.4	1.3	83	16	33	30	0	0	52	77	6.22	1.49	1.90	12	8	.0	0	9.6	S	---	---	--	6	6	18	7.3	--
Lake Charles	12	1016.3	1017.7	69	53	61.2	1.9	83	1+	37	30	0	0	54	80	10.35	6.01	4.92	14	6	.0	0	9.1	S	*27	SSE	7	7	5	18	7.2	--
New Orleans (U)	9	1016.3	------	70	56	63.0	.5	85	16	43	30	0	0	--	--	4.69	.68	1.50	9	4	.0	0	7.4	---	25	W	14	8	5	17	6.7	39
New Orleans	3	1015.9	1018.3	70	54	61.8	.9	83	16	38	30	0	0	54	78	4.15	.06	1.42	9	4	.0	0	8.0	SSE	*37	NW	30	8	7	15	6.4	--
Shreveport	252	1008.5	1017.6	64	47	55.5	-.8	83	17	31	30	0	1	47	77	9.49	5.59	2.00	17	7	.0	0	10.1	S	---	---	--	8	2	20	6.9	49
MAINE																																
Caribou	624	990.4	1014.4	41	29	34.9	5.7	54	9	2	26	0	20	30	84	5.51	2.48	1.22	13	0	7.8	7	11.1	WSW	*35	W	25	3	4	23	8.2	--
Portland	61	1011.5	1015.7	50	32	40.7	3.2	63	15	6	27	0	15	35	79	5.85	2.06	1.92	11	0	T	0	11.0	WSW	49	S	9	6	10	14	6.5	43
MARYLAND																																
Baltimore (U)	14	------	------	58	44	50.8	2.1	75	19	31	11	0	1	--	--	3.19	.23	.73	9	--	---	--	---	---	---	---	--	--	--	--	---	--
Baltimore	146	1013.7	1018.6	56	38	47.2	1.6	74	19	18	12	0	8	38	72	2.87	-.09	.77	9	1	T	0	12.2	WNW	40	S	8	8	7	15	6.5	51
Frederick	294	------	------	54	36	44.7	-.7	70	19	19	12	0	11	--	--	2.53	-.42	1.00	11	0	T	T	---	---	---	---	--	--	--	--	---	--
MASSACHUSETTS																																
Blue Hill Obs. (R)	629	992.1	1015.9	52	37	43.8	3.1	68	15	10	27	0	10	--	70	5.44	1.24	1.80	11	2	.2	T	16.2	WNW	50	S	8	8	8	14	6.4	48
Boston	15	1010.4	1015.3	54	40	47.2	2.8	70	15	17	27	0	5	36	66	5.75	2.26	1.60	14	0	.1	T	12.4	NW	*38	SSW	9	8	8	14	6.5	57
Nantucket	43	1015.7	1016.2	54	41	47.2	2.7	65	3	23	27	0	4	40	76	4.84	1.12	1.12	16	0	.2	T	12.4	---	40	S	9	8	6	16	6.7	51
Pittsfield	1153	972.5	------	49	30	39.5	2.6	65	19	7	27	0	16	--	--	3.71	-.27	.80	14	1	T	T	---	---	---	---	--	--	--	--	---	--
Worcester	986	979.1	------	49	33	41.2	1.6	64	15+	10	27	0	12	--	--	5.78	1.47	1.39	14	2	T	0	14.0	---	*36	ESE	19	5	9	16	6.8	--
MICHIGAN																																
Alpena (U)	587	989.8	------	44	32	37.7	1.5	57	16	19	30	0	15	--	74	2.05	-.13	.85	14	0	1.2	T	12.2	---	38	SE	8+	2	5	23	8.4	28
Detroit	619	988.8	1016.1	48	34	41.0	.9	62	16	20	30	0	13	32	72	3.28	1.10	1.67	11	0	1.7	1	13.9	SW	42	SW	8	2	7	21	8.3	29
Detroit (Willow Run)	722	986.5	1015.4	48	32	39.9	.2	60	1+	19	30	0	17	32	76	2.08	-.12	.94	12	0	2.1	1	13.1	WSW	*40	SW	14	2	6	22	8.3	--
East Lansing (U)	856	------	------	47	32	39.4	1.5	61	1	18	30	0	17	--	--	2.75	.45	1.05	14	0	3.4	1	6.8	SW	23	SW	14	--	--	--	---	19
Escanaba (U)	594	989.2	------	40	29	34.7	.8	52	1	9	30	0	19	--	77	3.96	1.76	1.11	14	0	4.5	2	11.0	---	34	NW	16	4	5	21	7.9	29
Flint	761	986.5	1015.0	46	31	38.6	1.0	60	1	15	30	0	17	32	79	2.07	-.11	.87	12	0	1.0	1	11.0	SSW	*32	SSW	19	2	5	23	8.5	--
Grand Rapids	681	988.8	1014.9	46	31	38.3	.7	60	27	16	10	0	19	32	79	3.74	1.21	1.45	13	0	9.9	3	12.3	WSW	41	SW	8	3	4	23	8.4	23
Marquette (U)	677	984.1	------	39	29	33.7	-.2	59	1	9	30	0	19	--	75	5.07	1.95	1.43	16	0	24.2	5	9.2	---	33	NW	8	2	6	22	8.4	24
Muskegon	627	990.9	1014.6	45	34	39.6	1.1	61	1	21	30	0	14	33	75	3.58	.94	1.86	15	1	3.3	1	---	---	---	---	--	4	3	23	8.3	--
Sault Ste. Marie	721	988.8	1011.9	41	29	34.8	3.3	57	1	5	26	0	17	31	85	4.98	1.72	1.50	19	0	11.5	3	12.0	WSW	*32	S	19	2	2	26	8.9	15
MINNESOTA																																
Duluth	1409	970.9	1013.7	34	22	28.1	1.1	50	1+	-5	30	0	24	23	81	2.59	.81	.74	12	0	12.6	8	14.1	NW	61	NW	8	3	5	22	8.1	28
Intern'l. Falls	1179	971.2	1013.6	32	19	25.5	1.5	45	1+	-9	30	0	28	21	80	2.09	.92	.71	15	0	10.9	5	12.7	W	*29	W	23	2	3	25	8.8	--
Minneapolis	830	980.0	1015.8	38	27	32.7	-.3	57	11	6	30	0	20	27	78	1.56	.12	.91	10	0	10.3	10	13.3	NW	42	NW	8	5	4	21	7.7	27
Rochester	1017	977.0	1015.3	40	27	33.6	1.1	56	1+	3	30	0	20	24	67	2.69	1.17	.90	15	0	12.4	11	11.7	WNW	---	---	--	6	2	22	7.6	--
St. Cloud	1034	975.6	1015.0	37	25	30.9	1.5	55	11	1	30	0	23	25	77	1.28	-.09	.50	10	0	5.6	5	---	---	---	---	--	6	4	20	7.8	--
MISSISSIPPI																																
Jackson	305	1006.9	1019.0	65	47	55.6	.4	85	16	28	30	0	1	48	78	9.78	5.73	4.01	15	5	T	0	8.3	SSE	34	SW	7	6	6	18	7.0	35
Meridian	294	1005.0	------	66	46	56.1	2.0	84	16	27	30	0	4	--	--	8.88	4.85	4.50	12	6	.0	0	---	---	---	---	--	5	11	14	6.7	--
Vicksburg (U)	234	1009.4	------	64	49	56.5	-.3	84	16	36	30	0	0	--	--	9.05	4.44	2.28	16	5	T	T	9.3	---	37	W	7	5	8	17	7.0	36
MISSOURI																																
Columbia	778	988.5	1017.8	51	33	41.9	-1.3	69	1	14	30	0	16	33	71	1.68	-.93	.59	5	1	.1	T	11.3	SSE	34	NW	8+	6	9	15	6.4	41
Kansas City	741	982.7	1018.6	51	36	43.1	-1.2	68	26	20	30	0	12	32	67	1.98	-.19	.85	6	1	T	0	11.0	NW	42	NW	8	8	6	16	6.6	43
St. Joseph	809	981.4	------	48	32	39.9	-2.4	65	26	16	30	0	18	--	--	.96	-1.04	.34	7	0	.2	T	12.6	NNW	*35	NNW	29	10	5	15	6.3	--
St. Louis (U)	465	------	------	52	37	44.5	-1.5	67	1	16	30	0	9	--	--	2.93	.21	1.10	12	2	T	0	10.0	NW	35	NW	8	8	8	14	6.3	53
St. Louis	552	997.0	1018.0	52	35	43.5	-1.5	67	1+	17	30	0	13	33	68	2.96	.39	1.02	12	2	T	T	9.2	WNW	---	---	--	9	7	14	6.3	--
Springfield	1265	969.5	1018.1	52	35	43.4	-1.1	71	15	15	30	0	14	34	73	2.74	-.01	1.06	10	1	.7	1	11.6	S	38	S	15	6	9	15	6.6	44
MONTANA																																
Billings	3568	892.0	1019.1	42	27	34.3	-1.5	58	23	17	5	0	27	24	68	1.31	.63	1.17	7	0	8.2	2	13.1	SW	57	NW	26	7	4	19	6.8	44
Butte	5530	830.0	1022.9	37	15	25.9	-2.3	56	24	-13	21	0	29	17	--	.10	-.59	.05	4	0	4.5	2	6.4	NNW	*31	WNW	26	7	6	17	7.8	--
Glasgow (U)	2277	940.7	1018.0	42	24	33.0	5.0	56	25	11	21	0	30	--	76	.09	-.43	.04	6	0	.6	T	---	---	---	---	--	6	6	18	7.2	--
Great Falls	3664	888.6	1018.1	42	28	35.0	-.2	58	24	15	21	0	22	22	62	.61	-.06	.23	10	0	5.7	2	18.9	SW	65	W	23	7	2	21	7.2	42
Havre (U)	2488	926.5	1014.2	43	25	33.9	3.0	59	24	13	17+	0	28	--	--	.25	-.23	.09	8	0	2.6	3	10.0	---	35	W	27	6	6	18	6.8	40
Helena	3893	875.0	1021.2	42	23	32.3	.6	58	24	9	30	0	28	22	67	.61	-.03	.32	6	0	10.3	6	7.8	WSW	45	SW	23	4	8	18	7.3	39
Kalispell	2965	------	------	39	23	31.2	-.8	49	25	2	29	0	28	--	--	.56	-.99	.27	7	0	4.5	4	---	---	---	---	--	5	6	19	7.3	--
Miles City	2629	931.9	1018.1	44	25	34.4	1.6	63	24	17	29	0	29	25	--	1.25	.76	1.18	3	0	1.9	1	11.9	NW	*39	WNW	26	6	7	17	6.6	--
Missoula	3200	905.5	1021.9	41	25	32.7	.8	52	24	12	21	0	29	25	76	.45	-.66	.14	10	0	4.5	2	4.2	WNW	37	W	26	5	4	21	7.6	39
NEBRASKA																																
Grand Island	1841	949.9	1017.7	46	28	36.8	-.8	69	25	15	19	0	23	29	75	.70	-.28	.37	6	0	4.2	3	12.9	NNW	---	---	--	6	8	16	6.8	--
Lincoln (U)	1166	------	------	45	30	37.5	-2.8	60	26	14	22	0	18	--	--	1.91	.50	1.07	7	0	12.6	10	11.4	S	41	NW	8	6	10	14	6.8	44
Norfolk	1544	959.4	1016.4	44	28	36.0	1.1	66	25	13	30	0	21	29	75	1.26	.20	.43	6	1	5.4	4	---	---	---	---	--	5	6	19	7.4	--
North Platte	2779	916.0	1017.7	47	24	35.3	-1.5	69	25	13	9	0	26	27	76	.96	.41	.60	7	1	3.0	3	9.6	NW	40	N	29	8	9	13	6.1	53
Omaha	978	976.6	1017.8	44	30	37.1	-1.8	57	1	13	22	0	19	30	76	2.19	.90	.78	7	1	12.0	9	12.2	SSE	46	N	29	6	8	16	6.9	46
Omaha, N.Omaha AP	1323	968.2	------	42	27	34.5	-2.5	54	1	6	22	0	22	--	--	2.52	1.23	.91	9	0	13.9	11	---	---	---	---	--	6	8	16	7.0	--
Scottsbluff	3950	879.1	1018.8	46	22	33.7	-2.4	64	10+	8	19+	0	29	23	71	.39	-.18	.34	5	0	4.4	4	11.3	WNW	*37	NNW	26	9	8	13	5.8	--
Valentine	2587	923.8	------	46	23	34.7	.3	65	11	10	29	0	28	--	--	.58	-.06	.40	3	0	1.0	1	11.3	---	47	N	29	6	8	16	6.8	56
NEVADA																																
Elko	5075	847.3	1022.7	44	17	30.5	-4.0	54	24	2	29	0	30	20	64	1.02	.09	.44	7	0	5.3	4	4.3	SW	*40	W	14	10	6	14	5.8	--
Ely	6257	809.7	1021.3	42	16	29.1	-6.1	63	25	-3	22	0	30	19	69	.54	-.15	.32	6	0	10.0	5	9.2	S	32	NW	28	10	5	15	6.1	69
Las Vegas	2162	952.3	1018.5	60	38	49.0	-4.9	70	23+	25	30	0	5	27	46	.26	.04	.19	3	1	.0	0	6.2	W	*38	NNW	21	16	8	6	3.6	78
Reno	4397	865.2	1022.5	50	24	36.6	-3.6	62	13	14	29	0	29	25	66	.58	-.06	.29	10	0	3.1	1	4.8	NW	56	SW	13	8	7	15	6.1	66
Winnemucca	4299	871.7	1023.0	47	19	32.9	-4.7	59	9	5	30	0	28	23	67	.58	-.26	.42	6	0	2.0	1	6.2	NE	32	W	14	10	7	13	6.0	55
NEW HAMPSHIRE																																
Concord	339	1005.0	1015.9	51	31	40.9	4.2	65	15	10	27	0	18	32	72	6.59	3.02	1.37	14	1	T	0	7.3	NW	25	S	8	5	11	14	6.8	42

See footnotes at end of table.

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure		Temperature										Average dew point	Average relative humidity	Precipitation							Wind					No. of days (sunrise to sunset)			Sky cover, tenths (sunrise to sunset)	Possible sunshine
												No. of days							No. of days		Snow, Sleet				Fastest mile							
		ø Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 90° F. or above	Min. 32° F. or below			Total	Departure from normal	Greatest in 24 hours	.01 inch or more	With thunderstorms	Total	Max. depth on ground	Average hourly speed	Prevailing direction	Speed	Direction	Date	Clear	Partly cloudy	Cloudy		
	Ft.	Mb	Mb.	°F	°F	°F.	°F.	°F.		°F				°F.	%	In.	In.	In.			In.	In.	M p. h.		M p. h.			0–3	4–7	8–10	0–10	%
NEW HAMPSHIRE (Cont'd.)																																
Mt. Washington	6262	800.6	------	28	16	21.8	1.9	49	2	-15	26	0	27	--	94	8.50	1.92	1.23	18	0	12.1	4	41.1	W	‡98	NW	27	0	6	24	8.5	22
NEW JERSEY																																
Atlantic City (U)	8	1015.6	------	57	44	50.6	2.5	69	15	30	11	0	3	--	--	4.54	1.22	1.49	13	0	T	T	16.2	---	52	NW	8	8	8	14	6.2	50
Newark	11	1016.2	1017.4	56	41	48.3	3.4	70	19	26	17	0	6	37	66	3.13	.03	.90	11	1	T	T	10.1	WNW	*37	S	8	10	6	14	6.1	--
Trenton (U)	56	1010.2	1017.4	55	41	48.3	2.7	71	19	28	27	0	7	--	--	2.47	-.39	.64	12	0	.6	1	9.5	---	34	S	8+	9	7	14	6.2	51
NEW MEXICO																																
Albuquerque	5310	848.6	1017.1	50	31	40.3	-3.7	62	1	16	22	0	17	25	59	1.24	.82	.63	6	2	T	0	7.8	NNW	41	E	21	10	12	8	4.8	61
Clayton	4969	844.6	1016.9	48	26	37.1	-5.3	71	1	1	22+	0	22	--	--	.79	.40	.29	5	0	8.0	5	---	---	--	---	--	14	4	12	5.0	--
Raton	6379	804.6	1019.0	43	19	31.1	-7.3	65	1	-5	22	0	27	--	--	1.72	1.15	.62	11	0	14.5	6	---	---	--	---	--	10	7	13	5.6	--
Roswell	3612	894.0	1016.9	56	34	44.8	-3.5	75	14	7	23	0	12	34	69	.80	.41	.43	7	0	3.3	3	11.0	---	47	NW	29	16	4	10	4.3	--
NEW YORK																																
Albany	277	1012.5	1016.1	50	33	41.7	2.7	66	2	8	27	0	14	33	74	2.24	-.45	.92	11	1	T	0	8.8	S	37	S	8	4	10	16	7.3	39
Binghamton	1601	956.1	1016.3	46	32	39.1	1.9	65	19	13	27	0	16	31	73	1.71	-1.14	.65	13	0	1.4	1	12.8	WNW	42	W	30	2	6	22	8.1	29
Buffalo	693	987.4	1015.9	48	34	40.8	.9	63	8+	18	27	0	13	34	76	5.30	2.21	1.14	16	3	19.2	3	13.8	W	65	SW	8	2	5	23	8.6	22
New York (U)	10	1016.2	------	55	43	49.3	3.0	67	3	29	27	0	2	--	--	3.64	.55	.97	11	0	T	0	16.1	---	52	S	8	13	3	14	5.9	62
New York	19	1015.4	1017.2	56	44	50.0	3.2	66	15	28	27	0	2	36	62	4.17	1.18	1.08	11	0	T	0	14.5	WNW	45	S	8	10	7	13	6.0	--
Rochester	543	995.8	1015.8	48	34	40.7	1.0	63	16	17	27	0	13	35	80	1.81	-.93	.46	21	0	9.9	4	13.9	WSW	45	SW	8	1	5	24	8.7	39
Schenectady	217	------	------	51	35	42.6	4.0	65	2	13	27	0	12	--	--	2.60	-.24	1.53	11	0	T	0	---	---	--	---	--	10	14	6	4.7	--
Syracuse	424	994.2	1016.8	49	35	42.0	.8	67	19	12	27	0	12	34	75	1.86	-1.27	.65	18	0	5.0	4	11.9	WSW	43	NW	19	1	6	23	8.5	21
NORTH CAROLINA																																
Asheville (U)	2203	938.5	------	57	38	47.7	1.1	75	17	18	11	0	10	--	--	6.22	4.11	1.57	12	0	.5	1	8.8	---	38	NW	30	9	6	15	6.0	47
Cape Hatteras (R)	9	1017.7	1018.4	65	51	57.9	.6	74	19+	35	7+	0	0	51	79	6.64	2.79	1.42	14	3	.0	0	11.2	N	--	---	--	7	7	16	6.6	44
Charlotte	725	990.9	1019.6	63	43	53.0	2.6	78	17	28	11	0	7	44	77	7.70	5.05	1.77	12	4	.0	0	8.6	SSW	47	NW	30	10	3	17	6.3	47
Greensboro	891	987.4	1019.9	60	40	49.8	1.8	76	17	22	11	0	11	41	74	6.18	3.47	2.19	13	1	.0	0	7.1	SW	33	S	19	8	5	17	6.3	53
Raleigh	433	1005.2	1019.2	62	41	51.7	1.3	78	17	22	11+	0	5	44	78	6.53	3.68	1.65	13	2	.0	0	6.4	S	*25	SW	8	7	8	15	6.4	49
Wilmington	30	1017.8	------	66	46	56.1	.4	79	3	28	11	0	2	--	--	3.75	1.16	.76	12	0	.0	0	10.7	---	32	SW	19	9	6	15	6.4	57
Winston-Salem	967	983.4	1019.4	60	41	50.6	2.0	76	2	23	11	0	6	40	71	7.15	4.36	2.53	11	1	.0	0	9.9	SW	*42	NW	30	9	5	16	6.2	--
NORTH DAKOTA																																
Bismarck	1650	955.0	1017.1	40	22	31.0	2.6	55	12	4	29	0	30	24	77	.42	-.11	.12	6	0	2.9	1	10.9	NW	45	NW	27	5	7	18	7.5	36
Devils Lake (U)	1471	960.7	------	34	20	26.9	1.8	50	11	-1	29	0	30	--	84	.52	-.15	.24	11	0	6.0	3	8.5	NW	27	N	28	1	5	24	8.5	29
Fargo	895	981.4	1016.6	36	22	29.0	1.4	54	11	1	30	0	28	25	82	.82	-.05	.74	5	0	1.6	1	15.8	N	57	N	29	2	3	25	8.5	21
Williston (U)	1877	947.9	1016.8	39	23	31.0	2.7	51	25	6	29	0	29	25	77	.84	.26	.39	10	0	5.7	1	6.8	W	25	W	26	6	2	22	7.8	33
OHIO																																
Akron	1210	979.2	1018.1	49	32	40.5	.1	65	16	18	11+	0	17	33	79	2.03	-.35	.63	10	1	.6	1	12.6	S	--	---	--	3	8	19	7.4	--
Cincinnati Obs.	761	------	------	53	36	44.7	.1	69	16	22	10+	0	10	--	--	5.83	2.77	1.95	11	--	.3	T	7.2	---	27	SW	19	--	--	--	---	51
Cincinnati	869	985.4	1018.1	53	35	43.6	.2	67	16	19	10	0	13	32	67	6.25	3.22	2.12	11	1	.4	T	10.4	WSW	32	WSW	8+	7	6	17	6.8	--
Cleveland (U)	787	988.3	1016.8	50	35	42.8	1.1	67	16	21	11	0	10	32	69	2.27	-.39	.63	12	0	2.5	1	16.1	S	54	S	8	4	3	23	8.0	31
Columbus (U)	724	------	------	52	36	43.9	.7	69	16	20	30	0	9	--	--	3.22	.68	.89	8	--	T	0	---	---	--	---	--	--	--	--	---	--
Columbus	815	987.5	1018.4	53	34	43.4	1.5	69	16	19	10	0	12	34	72	3.23	.37	1.10	8	0	T	0	9.4	SSW	47	SE	14	6	6	18	7.0	52
Dayton	1002	980.9	1018.1	50	33	41.8	-.1	64	16	19	10+	0	14	32	69	3.22	.61	.97	9	0	T	T	12.9	S	49	SW	8	6	7	17	7.0	51
Sandusky (U)	603	993.8	------	49	35	42.1	-.1	66	16	22	30	0	14	--	--	2.43	.16	.81	10	0	.5	T	10.6	---	46	SW	8	1	10	19	7.9	27
Toledo	676	990.9	------	48	32	40.0	.2	61	1+	17	25	0	17	--	--	1.94	-.21	.93	9	0	T	T	12.9	---	65	SW	14	4	6	20	7.9	30
Youngstown	1178	974.4	1017.9	49	33	40.8	.2	65	16	18	23	0	16	32	74	2.22	-1.27	.70	14	1	2.3	1	13.5	SW	*52	WSW	8	3	6	21	7.6	--
OKLAHOMA																																
Oklahoma City	1280	973.9	1018.6	54	37	45.6	-3.4	75	1	25	23+	0	11	38	78	2.25	.43	.99	9	1	T	T	12.8	N	43	NW	29	7	10	13	6.3	48
Tulsa	672	993.2	1018.3	56	39	47.7	-1.9	75	1	23	23	0	10	37	69	2.09	-.31	.64	9	1	T	0	9.5	SSE	51	N	29	8	6	16	6.4	35
OREGON																																
Astoria	8	1020.0	1020.5	55	37	45.9	-1.2	61	5	29	4	0	6	40	84	7.68	-2.68	1.91	14	1	.0	0	5.3	SE	*24	SSW	10	6	6	18	7.0	--
Burns (U)	4140	876.4	1022.7	47	21	34.2	-2.3	59	6	12	27+	0	29	23	68	.72	-.45	.48	6	0	1.7	1	---	---	--	---	--	16	5	9	4.6	--
Eugene	361	1008.1	1022.1	53	33	43.0	-2.3	64	23	24	4+	0	18	--	--	2.81	-2.88	.85	10	0	.0	0	6.3	---	*46	SW	13	6	8	16	6.5	--
Meacham	4050	------	------	39	26	32.6	-2.3	51	5	12	21	0	26	--	--	3.30	-.57	1.78	12	0	14.2	5	---	---	--	---	--	8	4	18	6.6	--
Medford	1312	974.3	1023.2	51	31	40.7	-3.5	60	5	21	4+	0	18	35	85	2.28	-.39	1.09	8	0	.0	0	1.9	N	*29	NNW	14	8	5	17	6.9	--
Pendleton	1492	967.2	1022.1	50	32	41.0	-.1	62	24	24	21	0	20	31	70	1.10	-.41	.73	8	0	.0	0	9.2	SE	*41	WSW	28	10	7	13	5.6	--
Portland	21	1015.9	1021.5	53	35	44.0	-1.5	60	5	26	23+	0	12	38	81	3.07	-2.15	.86	12	0	.0	0	7.2	ESE	39	S	10	6	8	16	7.0	39
Roseburg	505	1003.1	1022.0	53	33	43.2	-3.0	63	5+	23	4	0	17	--	--	2.75	-1.76	.92	12	0	.0	0	2.9	---	23	SE	10	6	7	17	7.1	33
Salem	195	1014.2	1021.8	53	33	42.9	-2.5	60	2	25	21+	0	19	37	84	3.44	-2.52	1.17	11	0	.0	0	5.4	S	*29	S	10	9	5	16	6.2	--
Sexton Summit (R)	3836	------	------	47	36	41.5	.3	63	24	30	26	0	17	--	--	3.33	-1.21	1.17	10	0	5.3	2	---	---	--	---	--	13	2	15	5.6	--
PENNSYLVANIA																																
Allentown	376	1003.6	1018.1	53	35	43.9	1.9	70	19	22	13+	0	14	36	74	3.28	.21	.92	11	1	T	0	12.1	WSW	--	---	--	7	10	13	6.6	--
Erie	732	------	------	49	36	42.3	1.3	67	16	23	23	0	11	--	--	2.26	-1.00	.53	17	2	7.9	5	14.6	---	*35	S	8+	3	3	24	8.4	--
Harrisburg	335	1004.2	1018.3	53	37	44.9	.9	70	19	22	12	0	8	34	67	2.81	.08	.94	10	0	T	0	7.8	W	34	NW	30	6	6	18	7.2	38
Philadelphia (U)	26	------	------	56	43	49.5	1.7	70	19	32	11	0	1	--	--	----	----	----	--	--	---	--	---	---	--	---	--	--	--	--	---	--
Philadelphia	10	1013.2	1017.7	56	40	47.8	1.9	70	19	26	11+	0	6	38	72	2.98	-.10	.61	11	1	T	0	9.3	NW	56	SW	8	8	9	13	6.6	49
Pittsburgh (U)	749	------	------	54	38	45.8	1.2	69	16	26	10+	0	11	--	--	1.80	-.81	.69	8	--	.6	--	---	---	--	---	--	--	--	--	---	31
Pittsburgh	1151	986.5	1018.1	51	35	42.7	1.7	66	16	22	11	0	14	34	71	2.50	-.09	1.11	11	1	1.0	1	10.2	WSW	*32	WSW	8	4	7	19	7.5	50
Reading (U)	266	1005.6	1018.0	54	40	47.0	1.6	71	19	27	13+	0	7	--	--	3.07	.02	.92	11	0	T	T	11.8	---	50	S	19	6	9	15	6.8	40
Scranton	940	983.1	1018.2	50	34	41.9	1.2	68	19	18	27	0	14	33	71	2.42	-.79	.83	10	1	.3	T	10.1	WSW	45	S	8	5	6	19	7.3	35
Shippingport (U)	736	------	------	52	33	42.6	----	67	16	18	11	0	14	--	--	2.80	----	1.14	9	3	T	T	3.3	---	‡40	W	8	--	--	--	---	--
Williamsport	527	998.3	------	51	34	42.6	.9	68	1	21	11+	0	14	--	--	3.12	-.14	1.08	13	--	.2	T	---	---	--	---	--	2	12	16	7.4	--
RHODE ISLAND																																
Block Island	110	1011.7	1016.1	54	43	48.4	3.1	63	15+	23	27	0	3	--	--	2.84	-.69	1.07	15	1	T	0	---	---	--	---	--	8	8	14	6.4	--
Providence	55	1010.1	1016.3	54	37	45.5	2.9	68	15+	16	27	0	11	35	69	3.99	.25	.71	17	1	.2	T	11.5	SW	*52	S	9	9	9	12	5.9	56
SOUTH CAROLINA																																
Charleston (U)	9	------	------	68	52	59.7	1.1	78	3	36	30	0	0	--	--	3.07	1.15	1.21	10	--	.0	0	9.6	---	29	SW	19	--	--	--	---	56
Charleston	41	1017.2	1019.2	69	47	58.2	1.9	79	16+	33	21	0	0	51	81	4.71	2.66	1.43	11	3	0	0	10.5	NNE	--	---	--	10	3	17	6.5	--
Columbia	217	1010.6	1019.3	67	44	55.7	1.8	82	18	25	10	0	3	46	76	7.20	4.95	2.06	11	2	.0	0	6.9	NE	*25	S	8+	9	6	15	6.2	52
Florence	146	1013.5	------	67	46	56.7	3.1	83	18	27	11	0	2	--	--	4.19	1.91	1.46	12	2	.0	0	---	---	--	---	--	10	3	17	6.2	--
Greenville	1018	981.2	1019.0	62	44	52.8	1.5	79	3	28	11+	0	3	41	68	7.59	4.55	2.13	13	4	.0	0	8.9	NE	35	NW	30	9	5	16	6.5	54
Spartanburg	801	------	------	62	43	52.6	1.4	77	3+	27	11	0	4	--	--	8.89	5.92	2.91	13	5	.0	0	8.5	--	31	SW	8	--	--	--	---	--
SOUTH DAKOTA																																
Huron	1282	968.5	1016.9	41	25	33.0	.5	55	23	8	29	0	25	28	82	1.94	1.28	1.23	9	0	3.5	2	11.8	S	37	NW	8	5	3	22	7.7	38
Rapid City	3165	901.1	1017.7	46	25	35.4	.1	66	10	14	29	0	27	22	61	.39	-.16	.13	9	0	2.1	1	10.7	NNW	36	NW	19+	5	12	13	6.5	66
Sioux Falls	1420	963.8	1016.5	41	25	33.3	1.1	54	23	6	30	0	23	25	72	1.66	.55	.98	5	0	1.6	1	12.4	NW	*35	NW	8	6	2	22	7.5	--
TENNESSEE																																
Bristol	1519	964.0	------	59	37	48.3	2.5	77	18	18	11	0	10	--	--	5.38	2.82	2.55	16	2	4	T	---	---	--	---	--	7	7	16	6.7	--
Chattanooga	670	991.3	1019.5	60	41	50.5	1.4	75	18	25	30	0	6	42	77	10.36	6.33	2.56	15	4	T	0	7.4	S	30	S	18	6	6	18	7.2	43
Knoxville	950	983.8	1019.7	60	41	50.6	2.2	76	18	24	30	0	4	41	73	7.45	4.30	2.28	14	4	T	T	9.0	NE	38	W	19	7	4	19	7.1	39
Memphis (U)	271	------	------	59	44	51.3	-.8	74	1	28	30	0	2	--	--	8.89	4.58	2.86	15	--	T	T	---	---	--	---	--	--	--	--	---	--
Memphis	263	1004.0	1018.9	60	43	51.3	.7	76	2	29	10+	0	3	41	70	8.56	4.00	2.54	14	7	T	T	9.9	S	38	NW	29	7	4	19	6.9	43
Nashville	577	998.5	1019.0	58	39	48.6	-.7	76	16	23	11+	0	5	41	78	6.31	2.90	1.75	15	6	1.2	1	8.1	S	40	W	18	6	6	18	6.8	43

See footnotes at end of table.

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure: Station ø	Pressure: Sea level	Temperature: Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	No. of days: Max. 90° F. or above	No. of days: Min. 32° F. or below	Average dew point	Average relative humidity	Precipitation: Total	Departure from normal	Greatest in 24 hours	No. of days: .01 inch or more	No. of days: With thunderstorms	Snow, Sleet: Total	Snow, Sleet: Max. depth on ground	Wind: Average hourly speed	Prevailing direction	Fastest mile: Speed	Fastest mile: Direction	Fastest mile: Date	No. of days (sunrise to sunset): Clear	Partly cloudy	Cloudy	Sky cover, tenths (sunrise to sunset)	Possible sunshine
	Ft.	Mb.	Mb.	°F.	°F	°F.	°F.	°F.		°F.		#		°F.	%	In.	In.	In.			In.	In.	M. p. h.		M. p. h.			0–3	4–7	8–10	0–10	%
TENNESSEE (Cont'd.)																																
Oak Ridge (R)	905	985.2	------	60	41	50.4	3.4	74	18	27	11+	0	6	--	--	10.07	6.09	2.97	15	5	T	T	4.0	---	37	---	14	6	10	14	6.5	--
TEXAS																																
Abilene	1759	956.0	1017.9	58	40	48.9	-4.8	80	1	23	23	0	5	39	73	2.45	1.43	.79	13	2	3.5	3	10.6	N	38	N	29	9	6	15	6.1	52
Amarillo	3590	889.3	1017.5	50	31	40.7	-4.5	74	1	3	23	0	15	32	75	.94	.06	.27	5	0	2.9	3	11.0	SW	41	N	27	12	6	12	5.2	58
Austin	615	996.3	1018.4	65	47	55.9	-3.3	84	2	33	24	0	0	49	81	2.95	.60	.79	15	2	T	0	8.2	N	30	N	22	7	5	18	6.8	37
Brownsville	16	1013.5	1016.3	75	58	66.6	-1.2	86	2+	38	24+	0	0	60	81	6.26	4.71	3.64	7	1	.0	0	13.9	SE	35	S	7+	5	8	17	6.7	44
Corpus Christi	41	1015.6	1016.8	72	55	63.2	-1.7	86	2+	35	24	0	0	56	81	5.24	3.50	2.88	7	1	T	0	11.5	SSE	35	N	18	6	6	18	6.9	52
Dallas	487	999.3	1018.4	61	44	52.6	-3.2	79	15+	30	30	0	1	44	75	5.25	2.82	2.49	14	4	T	0	9.8	NNE	49	NW	29	9	2	19	6.6	46
Del Rio (U)	957	------	------	65	47	56.0	-4.2	82	15	32	30	0	1	--	--	1.51	.71	.72	9	4	.1	T	---	---	--	---	--	--	--	--	---	--
El Paso	3920	886.9	1016.5	60	38	49.0	-3.0	75	2	18	23	0	8	31	53	.74	.36	.52	5	0	4.1	3	12.4	NE	40	N	29	19	6	5	3.2	82
Fort Worth	544	997.3	1018.6	60	43	51.6	-4.2	78	17	29	30	0	1	44	77	4.72	2.48	2.05	13	4	T	T	11.9	NNE	*50	NNW	29	9	3	18	6.4	--
Galveston (U)	7	------	------	69	58	63.1	-.5	81	2	40	23	0	0	--	--	3.17	-.67	.92	13	--	.0	0	13.6	---	42	NW	30	--	--	--	---	55
Galveston	5	1015.2	1017.6	69	57	62.9	-.5	82	2	40	30	0	0	56	79	4.28	.09	1.37	13	3	.0	0	14.2	SSE	--	---	--	6	10	14	6.6	--
Houston (U)	41	1012.2	------	69	55	61.9	.0	86	2	36	30	0	0	--	--	8.24	4.29	2.13	15	4	.0	0	10.7	S	38	N	29	9	3	18	6.6	55
Houston	50	1014.9	1017.8	70	53	61.3	.4	85	2	35	30	0	0	54	80	6.70	2.52	1.64	15	5	.0	0	12.9	SSE	--	---	--	6	5	19	7.1	--
Laredo	500	1001.0	1016.4	71	52	61.4	-4.6	90	1	32	24	1	1	52	74	3.15	2.18	1.44	9	3	T	T	9.2	SE	*27	NW	18	7	10	13	6.2	--
Lubbock	3243	904.2	1017.7	53	33	42.7	-5.9	73	1	-1	23	0	15	35	76	1.27	.64	.41	9	1	3.5	3	13.6	NE	*58	N	29	14	5	11	5.0	--
Midland	2854	917.4	1017.7	57	37	47.2	-5.6	77	1	19	23	0	9	36	69	1.56	.89	.70	10	2	1.1	1	10.4	WSW	*32	N	29	13	5	12	5.2	--
Port Arthur	16	1016.6	1018.0	69	53	61.1	1.8	84	2	36	30	0	0	55	81	5.18	1.62	1.87	14	4	.0	0	13.1	SSE	56	SW	7	8	5	17	6.8	40
San Angelo	1903	949.9	1018.0	60	40	50.0	-6.4	80	1	25	30	0	6	40	74	1.65	.56	.61	10	3	5.4	4	11.1	WSW	*38	NE	21	10	7	13	5.7	--
San Antonio	792	992.2	1017.4	67	47	57.1	-2.7	82	1	30	30	0	1	49	76	2.90	1.50	1.22	11	1	.3	T	9.7	NNE	34	NE	22	7	6	17	6.8	43
Victoria	110	1011.9	1017.2	70	51	60.4	-3.4	85	2	34	24	0	0	53	78	7.38	5.15	3.09	11	1	.0	0	11.1	S	‡47	N	29	5	7	18	7.0	--
Waco	500	996.6	1018.0	63	45	54.1	-3.7	80	2	31	30	0	1	47	79	4.77	2.52	1.01	17	5	T	T	11.2	N	*35	NNW	29	8	2	20	6.9	--
Wichita Falls	1020	980.7	1018.2	58	40	48.6	-3.1	81	1	25	23+	0	6	39	73	5.69	4.30	1.95	11	6	3.9	4	9.1	S	*29	NNW	29	8	8	14	5.8	--
UTAH																																
Milford	5028	846.3	1022.4	43	19	31.3	-6.1	61	25	2	30	0	29	--	--	1.13	.59	.68	6	0	11.8	5	---	---	--	---	--	8	10	12	6.1	--
Salt Lake City	4220	870.6	1022.4	44	25	34.5	-4.8	57	10	15	22+	0	26	25	70	1.37	-.05	.67	9	0	6.3	2	7.0	SSE	29	S	3	7	7	16	6.5	47
VERMONT																																
Burlington	331	1000.4	1015.5	46	33	39.4	3.0	59	15	-1	27	0	10	30	73	3.07	.22	.82	16	0	1.8	2	9.9	SSW	36	S	8	0	7	23	8.6	33
VIRGINIA																																
Lynchburg	947	984.1	------	58	39	48.6	1.3	74	3	25	11+	0	10	--	--	4.36	1.99	.87	12	2	T	0	7.6	---	40	S	8	7	11	12	6.0	51
Norfolk	26	1017.2	1018.6	62	46	53.9	2.5	75	19	29	12	0	2	46	76	4.81	2.14	1.39	10	1	.0	0	11.7	S	40	S	8	7	9	14	6.3	50
Richmond	162	1012.8	1019.2	61	40	50.3	1.9	73	3+	22	12	0	6	42	78	5.30	2.81	1.82	13	0	T	0	7.8	S	35	S	8	7	8	15	6.3	43
Roanoke	1174	976.3	1019.4	57	39	48.1	1.2	74	2	18	11	0	[illegible]	36	66	3.39	.58	.67	12	2	2.2	T	7.9	NW	--	---	--	7	11	12	6.0	--
WASHINGTON																																
Olympia	190	1013.5	1020.8	51	35	43.0	-.5	64	5	25	21	0	14	37	82	4.05	-2.72	1.70	10	0	.0	0	6.2	SW	*40	S	10	2	9	19	8.0	--
Seattle (U)	14	------	------	51	41	46.3	-.7	61	23	32	21	0	1	--	--	2.68	-1.78	.92	10	0	.0	0	8.3	---	36	S	11+	5	4	21	7.5	39
Seattle	14	1020.0	1020.8	--	--	----	----	--	--	--	--	--	--	38	79	----	-----	-----	--	--	---	--	5.7	S	--	---	--	--	--	--	---	--
Seattle-Tacoma	386	1006.4	1020.9	50	37	43.5	-.4	57	5+	27	21	0	7	39	85	3.00	-1.55	1.07	12	0	.0	0	10.5	SE	*38	SSW	25	6	4	20	7.6	--
Spokane	2357	951.2	1022.0	43	28	35.6	-.1	53	4	18	20	0	24	29	78	.82	-1.06	.41	8	0	2.0	2	7.0	NE	34	SW	25	8	5	17	6.4	42
Stampede Pass (R)	3958	881.1	1022.1	38	28	33.0	1.4	55	23	18	21	0	23	—	—	8.41	-4.85	1.49	14	0	44.7	22	---	---	--	---	--	8	3	19	7.0	--
Tatoosh (R)	101	1016.3	1019.4	52	45	48.1	.7	56	4+	39	25	0	0	42	81	4.47	-5.05	1.05	14	0	.0	0	17.1	E	59	S	27	4	3	23	8.0	42
Walla Walla (U)	949	985.8	1022.7	51	34	42.4	-.1	63	24	25	20	0	13	—	--	1.80	-.06	.93	[illegible]	0	.0	0	4.7	---	22	W	13	9	6	15	6.3	68
Yakima	1061	982.1	1022.3	49	24	36.7	-1.4	59	4	16	21+	0	28	28	72	.10	-.88	.05	4	0	.0	0	4.1	WNW	*23	WNW	14	8	6	16	6.3	--
WEST VIRGINIA																																
Charleston	950	982.7	1018.7	58	36	47.0	1.2	71	18	16	11	0	10	34	62	1.99	-1.18	.43	12	2	.8	1	6.2	SW	29	W	8	4	12	14	6.9	--
Elkins	1970	------	------	53	31	42.0	1.2	69	18	11	11	0	17	34	--	1.71	-1.16	.46	10	0	T	T	7.2	WNW	*25	WNW	8	2	10	18	7.7	--
Huntington (U)	565	------	------	59	36	47.5	.8	72	16	19	11	0	10	--	--	3.69	.90	2.25	10	--	T	T	---	---	--	---	--	--	--	--	---	--
Parkersburg (U)	615	------	------	55	36	45.6	.6	69	16	18	11	0	11	--	--	3.56	.89	1.98	11	1	.1	T	6.0	---	33	SW	8	5	9	16	6.5	36
WISCONSIN																																
Green Bay	689	990.9	1013.5	41	28	34.4	.9	54	1	5	30	0	21	29	80	3.52	1.58	1.25	12	1	2.9	1	13.4	WNW	52	W	19	5	5	20	7.4	33
La Crosse	652	989.5	1014.6	40	28	34.2	-.1	58	1+	7	30	0	19	27	75	2.88	1.07	1.14	16	0	13.0	12	10.9	S	*33	WNW	8	6	2	22	7.7	--
Madison	857	978.3	1014.8	42	28	35.3	.0	58	1	5	30	0	21	29	78	2.91	.62	1.03	11	1	2.3	T	12.5	W	39	W	8	7	1	22	7.5	36
Milwaukee	672	989.2	1015.0	44	29	36.5	-.8	56	27	7	30	0	19	30	77	2.88	.77	1.02	10	0	.8	1	15.9	WNW	46	SW	23	7	3	20	7.4	37
WYOMING																																
Casper	5322	836.4	1018.5	37	21	29.3	-4.0	51	25	5	21	0	27	21	74	.77	-.05	.21	12	0	10.5	3	16.1	SW	*46	SW	28+	8	6	16	6.5	--
Cheyenne	6131	809.7	1018.5	39	20	29.8	-5.3	59	25	3	21	0	27	19	67	.57	-.13	.26	12	0	8.0	4	14.5	WNW	56	W	30	10	10	10	5.6	55
Lander	5563	835.4	1021.1	35	14	24.9	-5.1	48	26	2	18+	0	30	15	73	2.08	1.21	.78	8	0	32.5	16	4.8	---	27	SW	26	8	5	17	6.4	48
Sheridan	3942	884.5	1019.0	43	22	32.3	-.8	66	24	5	18	0	29	23	71	1.15	.22	.31	11	0	10.6	4	10.2	NW	43	NW	26	9	5	16	6.5	45
PACIFIC AREA																																
Canton Island	8	1006.8	1007.1	90	78	84.0	.3	93	4+	73	19	22	0	76	80	14.57	14.30	5.07	21	6	.0	0	15.4	W	*46	W	21	0	0	30	10.0	--
Guam (R)	361	------	------	85	71	78.1	----	89	4	62	23+	0	0	--	--	18.14	----	7.26	26	4	.0	0	---	---	--	---	--	--	--	--	---	85
Hilo	31	1012.9	1015.0	81	67	73.7	.7	85	20	62	16+	0	0	67	85	12.30	-.09	2.26	29	0	.0	0	8.2	WSW	*28	SSE	20	2	6	22	8.2	28
Honolulu	7	1013.5	1014.0	83	72	77.4	1.7	87	18	69	18+	0	0	68	76	2.62	.83	2.16	10	1	.0	0	11.8	NE	65	NE	30	9	10	11	5.7	60
Koror (R)	94	1006.8	1010.5	89	76	82.3	.9	91	7+	72	20+	10	0	76	82	4.70	-7.14	1.46	23	4	.0	0	---	---	--	---	--	0	14	16	7.9	--
Lihue	115	1008.8	1014.3	82	71	76.3	2.7	85	1+	63	19	0	0	68	79	6.94	2.70	4.30	18	1	.0	0	10.5	NE	36	S	20	4	12	14	6.9	51
Majuro	10	1007.5	1012.0	86	77	81.5	----	88	4+	74	1+	0	0	77	84	20.83	----	10.01	20	3	.0	0	---	---	--	---	--	0	3	27	9.5	--
Ponape (R)	120	1003.4	1008.8	88	73	80.0	-1.3	92	9	67	12	7	0	75	87	31.79	17.32	22.48	21	2	.0	0	---	---	--	---	--	2	5	23	8.6	--
Truk, Moen Island	8	1009.1	1009.5	87	77	81.7	.9	89	4+	73	13+	0	0	77	85	13.41	2.31	4.90	27	0	.0	0	---	---	--	---	--	0	0	30	9.9	--
Wake Island	11	1013.9	1014.6	84	76	80.3	.4	87	8	73	30	0	0	71	74	1.35	-1.82	.45	14	0	.0	0	18.3	ENE	*35	ENE	12	4	16	10	6.1	--
Yap (R)	53	1008.1	1009.9	89	76	82.5	.7	91	9+	72	23	12	0	76	82	1.96	-8.76	.66	19	0	.0	0	——	---	--	---	--	0	1	29	9.8	--
WEST INDIES																																
San Juan, P.R. (U)	47	------	------	83	74	78.7	.3	85	1+	71	21	0	0	--	--	4.86	-1.51	1.60	17	2	.0	0	---	---	--	---	--	--	--	--	---	--
San Juan P. R.	15	1012.4	1014.0	85	73	78.6	----	87	6+	67	21	0	0	70	79	4.13	----	.73	25	2	.0	0	9.5	ENE	23	N	15	3	20	7	5.9	54
Swan Island	31	1011.6	------	85	78	81.6	1.8	87	8+	76	3+	0	0	--	--	1.20	-5.90	.31	12	0	.0	0	---	---	--	---	--	8	17	5	5.4	--
ALASKA																																
Anchorage	92	995.9	1000.9	38	28	33.0	10.7	48	2	16	23+	0	21	29	84	1.51	.51	.80	11	0	5.7	3	6.8	N	*28	S	18	1	2	27	9.1	16
Annette	110	1008.5	1013.0	47	38	42.8	2.1	52	22	29	20	0	2	40	88	23.65	13.43	5.19	25	0	T	0	14.9	ESE	*40	SSE	17+	1	2	27	9.3	--
Barrow	22	1019.3	1020.0	-1	-9	-4.9	-5.6	12	6	-17	22	0	30	-11	76	.25	-.02	.23	4	0	2.5	4	15.2	NE	35	NE	3	⦶10	⦶1	⦶7	---	--
Barter Island	39	1014.6	1016.6	0	-9	-4.6	----	18	6	-22	11	0	30	-11	70	.24	----	.14	6	0	2.4	16	15.2	ENE	*43	E	26	⦷3	⦷4	⦷18	---	--
Bethel	10	993.9	995.4	32	20	25.9	8.9	45	1	-8	15	0	27	23	89	1.02	.05	.30	12	0	9.3	8	10.2	NNE	*23	NE	16+	2	3	25	8.7	--
Cold Bay	90	989.8	993.9	42	34	38.0	3.3	49	7	27	30	0	12	34	85	5.19	1.37	.67	27	0	3.6	1	19.5	SSE	*55	WSW	28	0	4	26	9.0	--
Cordova	40	1001.7	1003.2	43	33	38.3	7.2	54	3	20	23	0	17	35	89	12.16	1.61	2.52	26	5	8.1	3	6.5	E	*32	ESE	20	1	0	29	9.4	--
Fairbanks	436	987.1	1004.8	22	8	14.9	11.8	35	3+	-11	29+	0	30	10	78	.30	-.33	.11	8	0	8.0	7	5.1	N	*20	N	12	3	1	26	8.5	--
Juneau	15	1008.8	1009.8	42	34	37.9	4.8	51	3	25	15+	0	14	35	89	8.55	2.63	1.62	24	0	4.6	3	8.8	ESE	34	SE	2	0	2	28	9.7	11
King Salmon	44	994.2	996.0	41	28	34.4	12.3	50	2	8	14	0	21	31	86	2.96	1.64	.75	19	0	8.3	3	11.1	E	*33	ENE	7	0	4	26	9.0	--
Kotzebue	10	1003.7	1004.2	21	12	16.6	9.1	35	20	-10	28	0	30	12	77	.14	-.29	.05	9	0	5.8	4	13.2	E	*43	E	26	2	2	26	8.9	--
McGrath	334	988.5	1001.6	22	10	15.6	10.1	37	5	-13	25	0	29	14	88	1.53	.44	.23	19	0	18.3	12	1.9	ESE	*15	ESE	6	3	1	26	8.8	--
Nome	13	999.0	999.6	27	18	22.4	5.6	41	3	-5	29	0	30	19	85	.80	-.34	.25	13	0	5.9	5	9.5	NE	*32	SSE	30	3	1	26	8.6	9
St. Paul Island	22	991.9	992.9	38	30	34.2	.4	44	1+	22	5	0	22	31	84	2.39	-.20	.43	22	0	4.8	1	---	---	--	---	--	0	8	22	8.1	--
Yakutat	28	1005.1	1006.3	44	34	38.8	5.1	52	1+	22	30	0	10	38	90	16.42	.96	2.39	21	0	.5	1	9.1	E	*63	ESE	3	1	1	28	9.4	--

Data from airport unless otherwise specified. U indicates Urban, R indicates Rural, sites.
* Data entered in column "Fastest Mile" is the fastest mile observed. This station is not equipped with automatic recording wind instrument.
+ And also on a later date or dates.
a Maximum hourly average † Airport data ‡ Peak gust
# Number of days maximum 70° or above for Alaskan stations. ⦶ Sun continuously below horizon after 18th. ⦷ Sun continuously below horizon after 25th.
ø Station pressures apply to elevations shown in Table 10b of the annual issue of this publication.

HEATING DEGREE DAYS

(Base 65°F.)

NOVEMBER 1957

State and station	Current season		Normals
	This month	Period July through this month	July through this month
ALABAMA			
Birmingham	344	585	532
Mobile	197	312	247
Montgomery	234	384	373
ARIZONA			
Flagstaff	961	1909	1832
Phoenix (U)	245	264	195
Phoenix	253	265	245
Prescott	695	1028	877
Tucson	314	355	246
Winslow	723	998	957
Yuma	125	125	105
ARKANSAS			
Ft. Smith	462	659	575
Little Rock	378	542	525
Texarkana	348	480	386
CALIFORNIA			
Bakersfield	304	349	314
Bishop	625	974	872
Blue Canyon	689	1465	1184
Burbank	200	248	256
Eureka (U)	397	1285	1525
Fresno	386	465	431
Los Angeles (U)	131	147	198
Los Angeles	143	159	396
Mt. Shasta (R)	792	1608	1387
Oakland	337	490	730
Red Bluff	403	562	378
Sacramento (U)	361	466	413
Sacramento	393	516	477
Sandberg (R)	609	1081	702
San Diego	126	134	241
San Francisco (U)	239	703	841
San Francisco	319	570	873
San Jose	292	369	411
Santa Maria	317	652	722
COLORADO			
Alamosa	1291	2378	2207
Colorado Springs	950	1550	1352
Denver	838	1399	1332
Grand Junction	854	1260	1161
Pueblo	824	1229	1228
CONNECTICUT			
Bridgeport	530	947	1045
Hartford	627	1198	1198
New Haven	549	1025	1137
DELAWARE			
Wilmington	544	968	914
DIST. OF COLUMBIA			
Washington (U)	462	810	773
Washington	458	790	793
FLORIDA			
Apalachicola (U)	95	155	171
Daytona Beach	37	68	83
Fort Myers	3	17	25
Jacksonville	85	135	164
Key West (U)	0	0	0
Miami (U)	0	5	5
Miami	0	1	8
Miami Beach	0	0	0
Orlando	23	46	61
Pensacola (U)	152	244	195
Tallahassee	108	188	240
Tampa	21	46	60
West Palm Beach	0	3	7
GEORGIA			
Athens	344	584	495
Atlanta	340	583	511
Augusta	284	471	341
Columbus	260	409	404
Macon	246	397	343
Rome	410	668	583
Savannah	209	319	263
IDAHO			
Boise	850	1405	1286
Lewiston	781	1273	1286
Pocatello	1032	1749	1543
ILLINOIS			
Cairo (U)	501	734	681
Chicago	736	1222	1205
Chicago University	725	1215	
Moline	800	1405	1253
Peoria	758	1236	1195
Springfield	721	2421	1127
INDIANA			
Evansville	613	974	844
Ft. Wayne	754	1366	1260
Indianapolis	721	1228	1090
South Bend	742	1372	1289
IOWA			
Burlington	783	1287	1184
Des Moines	877	1441	1269
Dubuque	911	1620	1511
Keokuk (U)	735	1146	
Sioux City	868	1452	1443
KANSAS			
Concordia (U)	769	1163	1019
Dodge City	757	1148	971
Goodland	880	1476	1333
Topeka (U)	683	1037	914
Topeka	702	1112	1010
Wichita	687	1044	848
KENTUCKY			
Lexington	608	1017	951
Louisville	577	915	862
Pikeville (U)	460	773	
LOUISIANA			
Baton Rouge	187	281	242
Lake Charles	177	259	240
New Orleans (U)	135	204	146
New Orleans	149	226	176
Shreveport	310	425	358
MAINE			
Caribou	895	2064	2356
Greenville (U)	877	1991	
Portland	721	1482	1610
MARYLAND			
Baltimore (U)	419	685	725
Baltimore	529	945	910
Frederick	599	1106	911
MASSACHUSETTS			
Blue Hill Obs. (R)	637	1214	
Boston	529	910	1017
Nantucket	528	992	1154
Pittsfield	759	1659	1687
MICHIGAN			
Alpena (U)	815	1743	1744
Detroit	713	1282	1232
Detroit (Willow Run)	746	1319	1258
East Lansing (U)	762	1395	
Escanaba (U)	900	1853	1892
Grand Rapids	794	1521	1471
Marquette (U)	933	1859	1868
Muskegon	755	1489	1483
S. Ste. Marie	897	2016	2177
MINNESOTA			
Duluth (U)	1094	2228	2140
Duluth	1102	2257	2236
Internat. Falls	1178	2413	2490
Minneapolis	963	1660	1601
Rochester	937	1700	1718
St. Cloud	1014	1902	1948
MISSISSIPPI			
Jackson	301	466	379
Meridian	288	459	428
Vicksburg (U)	280	429	319
MISSOURI			
Columbia	687	1055	984
Kansas City	651	982	905
St. Joseph	750	1169	1000
St. Louis (U)	607	905	810
St. Louis	638	978	878
Springfield	642	993	933
MONTANA			
Billings	916	1755	1595
Glasgow	952	1925	1948
Great Falls	894	1917	1765
Havre (U)	925	1920	1915
Helena	976	2042	2038
Kalispell	1007	2198	2085
Miles City	912	1696	1695
Missoula	964	1925	1987
NEBRASKA			
Grand Island	836	1386	1281
Lincoln (U)	816	1278	1137
Norfolk	865	1477	1464
North Platte	882	1546	1409
Omaha	828	1323	1207
Scottsbluff	935	1597	1460
Valentine	902	1606	1518
NEVADA			
Elko	1028	1934	1724
Ely	1074	2030	1749
Las Vegas	475	564	405
Reno	845	1563	1440
Tonopah	849	1431	1246
Winnemucca	957	1754	1527
NEW HAMPSHIRE			
Concord	714	1447	1636
Mt. Washington Obs.	1289	4250	
NEW JERSEY			
Atlantic City (U)	427	726	766
Newark	495	838	951
Trenton (U)	493	864	922
NEW MEXICO			
Albuquerque	739	1011	858
Clayton	828	1300	1064
Roswell	600	832	665
NEW YORK			
Albany	691	1326	1386
Binghamton	770	1598	1623
Buffalo	717	1352	1354
New York (U)	464	779	863
New York	446	733	824
Rochester	721	1422	1375
Schenectady	665	1226	
Syracuse	683	1319	1256
NORTH CAROLINA			
Asheville (U)	509	967	864
Cape Hatteras (R)	226	335	307
Charlotte	361	627	592
Greensboro	448	785	741
Raleigh	399	733	603
Wilmington	277	437	361
Winston-Salem	428	773	702
NORTH DAKOTA			
Bismarck	1012	1925	1989
Devils Lake (U)	1134	2200	2235
Fargo	1074	1951	1989
Grand Forks	1137	2123	
Pembina	1142	2040	
Williston (U)	1014	1976	2038
OHIO			
Akron	730	1377	1216
Cincinnati (U)	543	864	831
Cincinnati	636	1045	1026
Cleveland	656	1162	1124
Columbus	640	1126	1107
Dayton	689	1176	1096
Sandusky (U)	680	1185	1077
Toledo	741	1366	1257
Youngstown	721	1386	1189
OKLAHOMA			
Oklahoma City	572	852	648
Tulsa	515	745	632
OREGON			
Astoria	561	1346	1270
Burns (U)	917	1709	1673
Eugene	652	1185	1183
Meacham	965	2138	1992
Medford	723	1190	1027
Pendleton	712	1260	1174
Portland (U)	547	879	926
Portland	624	1099	1067
Roseburg	648	1123	
Salem	657	1147	1071
Sexton Summit (R)	702	1747	1496
PENNSYLVANIA			
Allentown	626	1137	1154
Harrisburg	594	1046	1007
Philadelphia (U)	458	754	768
Philadelphia	510	909	889
Pittsburgh (U)	568	1026	966
Pittsburgh	662	1246	1211
Reading (U)	534	936	935
Scranton	685	1351	1215
Williamsport	664	1208	1193
RHODE ISLAND			
Block Island	491	891	1036
Providence	576	1059	1186
SOUTH CAROLINA			
Charleston (U)	180	272	248
Charleston	224	359	322
Columbia	287	467	420
Florence	265	437	441
Greenville	368	645	552
Spartanburg	371	653	557
SOUTH DAKOTA			
Huron	950	1659	1622
Pierre	926	1605	
Rapid City	876	1640	1640
Sioux Falls	943	1654	1648
TENNESSEE			
Bristol	496	892	873
Chattanooga	429	717	670
Knoxville	430	717	710
Memphis	407	604	575
Nashville	488	768	647
TEXAS			
Abilene	487	634	453
Amarillo	721	1069	871
Austin	298	396	244
Brownsville	102	120	59
Corpus Christi	161	192	113
Dallas	371	478	352
Del Rio (U)	214	285	342
El Paso	476	607	460
Ft. Worth	402	546	357
Galveston (U)	145	194	131
Galveston	152	204	132
Houston (U)	175	246	162
Houston	185	256	188
Laredo	189	222	91
Lubbock	661	908	688
Midland	530	687	
Port Arthur	181	264	238
TEXAS (Cont'd.)			
San Angelo	451	589	352
San Antonio	270	341	226
Victoria	199	262	131
Waco	340	453	295
Wichita Falls	491	685	524
UTAH			
Milford	1006	1613	1404
Salt Lake City	909	1412	1240
VERMONT			
Burlington	764	1533	1617
VIRGINIA			
Lynchburg	488	914	816
Norfolk	329	552	569
Richmond	434	801	741
Roanoke	498	917	826
WASHINGTON			
Olympia	654	1370	1460
Seattle (U)	558	993	1097
Seattle-Tacoma	638	1336	1382
Spokane	877	1663	1637
Stampede Pass (R)	951	2723	2628
Tatoosh Island (R)	501	1584	1832
Walla Walla (U)	673	1161	1076
Yakima	844	1519	1410
WEST VIRGINIA			
Charleston	534	962	886
Elkins	683	1398	1300
Huntington (U)	520	904	794
Parkersburg (U)	574	1014	928
WISCONSIN			
Green Bay	912	1825	1733
La Crosse	917	1625	1551
Madison (U)	888	1580	1460
Madison	883	1633	1544
Milwaukee	848	1560	1445
WYOMING			
Casper	1063	1919	1796
Cheyenne	1049	1917	1787
Lander	1198	2071	1956
Sheridan	975	1877	1842
ALASKA			
Anchorage	955	2620	3220
Annette	659	1860	2126
Barrow	2103	6085	6055
Barter Island	2090	5846	
Bethel	1164	3193	3767
Cold Bay	805	2778	
Cordova	793	2525	3000
Fairbanks	1496	3560	4077
Juneau	808	2401	2807
King Salmon	910	2622	
Kotzebue	1446	4057	4500
McGrath	1476	3573	4137
Nome	1269	3979	4191
St. Paul	918	3259	3449
Yakutat	778	2374	2918

Data from airport unless otherwise specified.
U indicates Urban, R indicates Rural, sites.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
OKLAHOMA Garvin County	1	8 a.m.			1				Electrical	Lightning struck and killed 13-year old boy while herding cattle.
SOUTH DAKOTA Fairfax, Gregory County	1	Afternoon				1	2		Electrical	Lightning entered residence through telephone line. 1 person slightly cut when lightning arrester shattered. Plaster knocked from wall around telephone and several appliances burned out.
TEXAS Lake Whitney (near), Bosque and Hill Counties	1	5:28 p.m.			0	0			Funnel aloft	Pilot reported small funnel aloft.
	1									Minor storms also reported in Lawrence County and in northern Black Hills, S. Dak.
MONTANA Red Lodge, Carbon County	1-2		25	*12			1	4	Snow	Snow covered beets in ground and dry beans not harvested. One of heaviest November snowstorms ever experienced in this section. Storm moved southeastward.
MAINE, MASSACHUSETTS, NEW HAMPSHIRE, AND VERMONT	1-3				6	Many	3	1	Rain	Heavy rains very beneficial, but minor damages from a few washouts. Phone cables flooded at Waterville, Maine, and Hyannis, Mass. Rain said to be factor in numerous automobile accidents involving deaths and injuries.
COLORADO Southwestern portion	1-7								Rain, hail, and snow	Continued rain, hail, and snow the first week in November did heavy damage to crops still in fields because of previous wet weather. About one-third of bean crop could not be harvested. Baled hay which was thoroughly soaked will be complete loss. 1 potato farmer in Mancos area had estimated loss of $4,000 in potatoes rotting in fields. Wet field conditions also prevented fall planting of grain.
CALIFORNIA Napa and Solano Counties	2						3		Wind	Strong northerly winds blew down trees and powerlines in Benicia, Napa, and Vallejo. In Vallejo, 28-foot neon sign blown onto roof of apartment house.
ARIZONA Northern and Central portions	2-3-4				1				Rain	3-day rainstorm caused flooding of rivers and streams. Boy drowned in flash flood 12 miles southeast of Cottonwood and some 200 deer hunters stranded in mountains. Several roads and highways washed out, otherwise property damage light. About 5,000 acres of cotton land near Maricopa flooded, but damage not extensive.
WYOMING Southeastern quarter	2,3,4					Some	3	4	Ice	Storm was result of long period of freezing drizzle. Because of nature and length of time of storm, boundaries of area affected were very indefinite. Heavy damage to telephone and powerlines, considerable damage to trees and bushes, and some automobile accidents resulted from storm. A few injuries from automobile accidents, but no fatalities. Because of nature of damage, it is almost impossible to assess property damage or actual number of injuries. Crop damage mostly to alfalfa because of seed that could not be harvested.
CALIFORNIA San Diego, San Bernardino, and Riverside Counties	3						4		Wind and rain	Strong, gusty winds, with locally heavy rain, blew down trees and television antennas. Many powerlines snapped by falling branches. Sections of roof on Air Force radar station on Mt. Laguna ripped off by wind, reported reaching gusts of 110 m.p.h. Heavy rain in nearby foothills flooded some intersections in San Bernardino. In Borrego Valley, strong gust of wind blew down wall of home under construction.
	3									Minor storm also reported at Brigham City, Utah.
CALIFORNIA San Gabriel Mountains, San Gabriel and San Fernando Valleys	5					1	3		Electrical, rain, and snow	Lightning struck tree in Pasadena, breaking windows in 3 nearby homes, and damaging parked automobile. Occupant of 1 home treated for shock. 5 inches of snow fell on Kratna Ridge in San Gabriel Mountains. Locally heavy downpours occurred in valleys.
MISSOURI Bootheel area	6-18				1	100			Rain	Following unusually wet year, excessive rains moved back into Bootheel counties, (Pemiscot, Dunklin, New Madrid, Mississippi, Scott, Stoddard, Butler, and Cape Girardeau) about November 6. These rains continued off and on through November 18. Many Bootheel stations got from 8 to over 15 inches in November, most of which came during November 6 to 18. Thousands of acres of croplands under water several times.

See footnotes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MISSOURI (Cont'd.)										Basements of homes and business buildings flooded. Estimated 50,000 bales of cotton will be unfit for picking, and much cotton that was harvested was of lower quality because of rains. Boy drowned on November 14 in drainage ditch near Portageville.
LOUISIANA Lecompte-Cheneyville area, Rapides Parish	7	1 p.m.	1/2	880			4	3	Wind	Severe thunderstorm damaged 4 farm homes and several barns; moved eastward.
LOUISIANA Robson to Fillmore, Caddo and Bossier Parishes	7	2-2:30 p.m.	15	100	0	0	°4	C	Tornado	Moved northeastward over mostly wooded land, followed by State Police for time; 1 home damaged in Fillmore; much timber lost, and powerlines downed.
LOUISIANA Lowry to Iota (near), Cameron, Jefferson Davis, and Acadia Parishes	7	2:30-3 p.m.	15	50	0	0	4	3	Tornado and funnel aloft	Began as tornado near Lowry then lifted to pass near Jennings and Iota as funnel cloud aloft; 1 house destroyed and 1 damaged. Storm moved north-northeastward.
INDIANA Evansville, Vanderburgh County	7	Afternoon					4	1	Rain	Heavy rain flooded streets and basements.
ARKANSAS Sheridan, Grant County	7	4:30 p.m.					5	1	Electrical	Roof of auditorium of high school collapsed when supporting beam struck by lightning. Extensive damage to building and contents.
LOUISIANA Torras, Pointe Coupee Parish	7	4:50 p.m.	3	50	0	5	5	3	Tornado	15 homes and farm buildings destroyed and 7 homes and buildings badly damaged. Tornado moved northeastward.
LOUISIANA Iota, Acadia Parish	7	5:25 p.m.	5				4	3	Wind	1 warehouse badly damaged. Storm moved northward.
LOUISIANA Leesville (2 miles west of), Vernon Parish	7	8:35 p.m.			0	0	4	1	Tornado	3 buildings destroyed and 2 badly damaged; reported by State Police.
TEXAS China and Nome, Jefferson County	7	8:45 p.m.			0	0	4		Tornado	Slight to moderate dwelling damage. Tornado moved southeastward.
LOUISIANA Boyce to Alexandria, Rapides Parish	7	9-9:15 p.m.	13	50-75	3	16	6	3	Tornado	Widespread minor damage occurred outside path of this tornado; tornado tore through 10-block area of Alexandria, moving from northwest corner to southeast; 98 homes and 6 other buildings destroyed, while 137 homes and 3 other buildings heavily damaged; 318 buildings minor damage.
TEXAS Groves, Jefferson County	7	9:15 p.m.	3	200	2	59	6		Tornado	160 homes, several business buildings and many outbuildings completely demolished or extensively damaged in area of 15 to 20 blocks in center of town. Several hundred damaged to lesser extent, 1 school badly damaged. Electric power entirely out for 1 hour. Gas mains broken at several points, thousands of telephones cut off. Winds estimated greater than 100 m.p.h., where tornado struck. Lasted only about 5 minutes. Storm moved east-northeastward.
TEXAS Port Acres, Jefferson County	7	9:23 p.m.			0	1	5		Tornado	About 20 houses extensively damaged or destroyed in southeastern residential area. Tornado moved east-northeastward.
LOUISIANA Vinton to Sulphur, Calcasieu Parish	7	9:40-10:25 p.m.	10	2500			4	3	Wind	Storm moving eastward destroyed 1 building, unroofed several others and caused other minor damage in both towns.
MISSISSIPPI Alcorn A&M College, Claiborne County	7	10 p.m.			0	0	5	3	Tornado	No details available.
MISSISSIPPI Cruger (3 miles south of), Greenwood (10 miles east of), and Grenada (1 mile south of), Holmes, Carroll, and Grenada Counties	7	10-10:30 p.m.	20	300	2	1	5	3	Tornado and wind	Began as tornado 3 miles south of Cruger and degenerated into large area squalls as it moved northeastward; 8 homes, 16 farm buildings and radio tower destroyed; several homes and other buildings damaged.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

NOVEMBER 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TEXAS Orange, Orange County	7	11:10 p.m.			1	81	6		Tornado	Several business houses destroyed, 130 homes demolished, 250 others heavily damaged; 100 families homeless. 9 ships and 3 barges torn from moorings. Thousands of telephones cut off and power disrupted. Tornado moved east-northeastward.
LOUISIANA Carencro, Lafayette Parish	7	11:30 p.m.			2	13	5	3	Tornado	Several homes and numerous farm buildings destroyed, while many received more or less damage. Tornado moved northeastward.
LOUISIANA Higginbothan to Cankton, Acadia and St. Landry Parishes	7	11:30 p.m.	8	200	4	10	5	3	Tornado	Tornado moved northeastward through thickly settled rural area, destroying 25 homes, 60 farm buildings, and causing major damage to 14 homes and 2 farm buildings; path first toward northeast and then east, with funnel lifting and dipping as it moved.
MISSISSIPPI Winston County	7	11:30 p.m.			0	0	4	1	Tornado	2 buildings destroyed and 7 damaged; no other details available.
LOUISIANA Crowley, Acadia Parish	7	11:50 p.m.	2	2500			4	3	Wind, electrical, and rain	High winds with thunderstorm uprooted trees, severed powerlines, and caused extensive minor damage. Storm moved eastward.
	7									Minor storms also reported near Stevenson and at Tallulah, La.; and at Vicksburg, Miss.
MISSISSIPPI Bond (10 miles east of), Philadelphia, Preston, and Gholson, Neshoba, Kemper, and Noxubee Counties	8	1:30-3 a.m.	30	200	0	3	5	1	Tornado	6 homes, 15 barns, and 3 other buildings destroyed; 13 homes and 18 other buildings damaged. Tornado moved north-northeastward.
TENNESSEE Pulaski and vicinity, Giles County	8	2-4 a.m.	4	100	0	0	3	1	Tornado	At Pulaski, several houses suffered roof and TV antenna damage. Leaving Pulaski, storm lifted for about 3 miles, descending again on Powell Chapel Community. Here wall ripped from 1 house and roof and porch from another. Barn and garage destroyed. Tornado moved northeastward.
ALABAMA Aliceville area, Pickens County	8	2:25 a.m.	8		0	5	5	1	Tornado	Tornado moved northeastward, demolished 15 houses and damaged several others. Storm path slightly northwest of Aliceville.
LOUISIANA New Orleans, Orleans Parish	8	2:30 a.m.					4	1	Wind	Storm moving eastward uprooted trees, severed powerlines, and smashed plate-glass windows.
MISSISSIPPI Meridian (15 miles west-northwest of), Newton County	8	2:30 a.m.					4	3	Wind	12 homes and 10 farm buildings damaged. Trees uprooted and powerlines downed. Storm moved northeastward.
ALABAMA Tuscaloosa County	8	Early a.m.			0	0	2	1	Tornado (suspected)	Power pole blown down between Buhl and Coker. No estimate of damage caused by power being off.
ALABAMA Franklin County	8	Early a.m.			0	0	2	1	Tornado (suspected)	5 power poles and 2 trees blown down.
ALABAMA Selma, Dallas County	8	4:22 a.m.	1-1/2	50-400	0	0	5	1	Tornado, wind, electrical, and funnel aloft	In northwest suburbs of Selma diagnosed as tornado, although damage was by winds blowing in same direction. Short path of fallen trees about 50 yards wide first made, followed by skip of about 1/2 mile. Second hit was about 200 yards wide and about 400 yards long. Short distance further to northeast it hit third time over path about 400 yards wide and about 500 yards long. Several hundred houses damaged, with only a few heavily damaged and none demolished. 1 automobile turned over on its side. Pressurejump occurred at Craig Field at 4 a.m., accompanied by drop of several degrees in temperature, and it is believed that tornado aloft managed to briefly penetrate unfavorable surface conditions to produce these surface gusts on right hand side of path. Funnel cloud seen in area at time of storm by weather forecast personnel of Craig AFB, presumably by light of lightning flashes. Storm moved northeastward.
ALABAMA Shelby County	8	4:30 a.m.	9	40	0	0	4	1	Tornado	Tornado moved northeastward from 2 miles northeast of Columbiana to 2 miles west of Wilsonville. Skipping path with width reported only along last 2-1/2 miles.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
GEORGIA Early and Calhoun Counties	8	9-10 a.m.	15		0	1	4	1	Tornado	Storm moved northeastward from south of Blakely, Early County, to near Leary, Calhoun County, causing property damage at 4 different places along path. About 7 small houses and several barns destroyed and 2 larger houses damaged. Many trees uprooted or twisted off and 2 automobiles damaged by falling trees. 1 person injured slightly.
NORTH CAROLINA Yadkin and Surry Counties	8	12:30-2 p.m.	20	300			4		Wind	School damaged, wall blown in. Roofs damaged, outbuildings destroyed. Some indication of tornado activity, but not conclusive. Storm moved northeastward.
ILLINOIS Central and northern portions	8	Afternoon							Wind	Rapidly intensifying LOW center moved from northern Illinois to Lake Superior. Westerly winds 30-45 m.p.h., caused scattered light damage, especially in Chicago area.
NORTH CAROLINA Catawba County	8	Afternoon			1				Wind	Man electrocuted by "live" wire blown down in windstorm.
WEST VIRGINIA Western and central counties	8	Afternoon				1		1	Wind	Scattered reports of trees blown down or large limbs broken off, roads temporarily blocked, windows blown in, roofs and other parts of buildings damaged, antennas blown over, power services disrupted. Storm moved northeastward.
WISCONSIN Northern and Central portions	8	Afternoon				2	4	1	Wind and snow	Storm moved eastward.
NORTH CAROLINA Wake County	8	4 p.m.				1	3		Wind and rain	Woman injured in automobile accident, due to blinding rain and wind. 2 houses partially unroofed in Raleigh suburb.
PENNSYLVANIA Statewide	8	Afternoon-evening				9	4	1	Wind	Strong, gusty winds which reached 70 m.p.h., caused most of damage in western part of State. Flying glass from broken plate-glass store windows responsible for all injuries. Several buildings unroofed. Property damage from uprooted trees and snapped utility lines widespread. Several large cinder-block walls under construction blown down and home near McKean blown off its foundation. Storm moved eastward.
NORTH CAROLINA Wilson, Edgecombe, and Bertie Counties	8	6:30-7 p.m.	40	1-200	0	5	5	4	Tornado	American Red Cross reports only 1 major injury. Following also reported by Red Cross: 10 homes, 23 farm buildings, 5 other buildings destroyed; major damage to 8 homes, 21 farm buildings, 6 others; minor damage to 20 buildings, 34 families affected. Greatest single item of damage was 1,250-pupil school destroyed in Wilson County. Tornado moved northeastward.
	8									Minor storms also reported at Canton and Waleska and near Dahlonega, Ga.; and at Golden Meadow, La.
MICHIGAN Upper and Lower all portions	8-9	Noon 8th-noon 9th					5	1	Wind, snow, and glaze	Light to moderate snow and some glaze. $50,000 damage to pier at Grand Haven, rest of damage to plate-glass windows, billboards, automobiles, minor structures, etc.
NEW YORK	8-9	Afternoon 8th				3			Wind, snow, and rain	Low pressure storm area moving through southern Canada north of New York State caused strong, damaging winds over many sections of State. Some rains also occurred and snow squalls developed as cold air followed storm. Innumerable power- and communications lines downed as well as trees, branches, etc. Wind gusts reached 72 to 80 m.p.h., in Niagara with gale winds or more in many sections of State. 2 school boys in Lackawanna hit by falling chimney and 73-year old man in Buffalo blown down and suffered broken wrist. Snow squalls in Lake Erie and to less extent in Lake Ontario snow belts caused usual traffic problems along with some fallen lines due to snow accumulation.
CONNECTICUT Southwestern portion	8-9	P.m. 8th-early a.m. 9th				2	5		Wind and rain	High winds of 30 to 40 m.p.h., general over State and gusts to 60 m.p.h. Concentrated damage in Fairfield County. Falling trees and limbs caused widespread power and telephone failures for several hours throughout County. 2 persons escaped injury from large tree blown over on front end of car. Car heavily damaged. DC-3 aircraft touching runway at Westchester, N.Y., airport blown aloft suddenly by wind gust and forced to land in residential street of Greenwich, Conn., a few miles away. Pilot and co-pilot slightly injured; no damage to residential property, but plane damaged in excess of $100,000. Small boats blown ashore in Westport harbor.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MAINE, MASSACHUSETTS, NEW HAMPSHIRE, and VERMONT	8-9	Evening-night				4	4	1	Wind, rain, and electrical	Winds over entire section caused widespread minor damage from falling trees, limbs, and wires, most numerous instances in Massachusetts. Outdoor movie screen damaged at Chicopee, Mass. Many small boats and fish traps along Cape Cod damaged. Tree fell across road at Swansea, Mass., causing 4-car accident and 2 injuries. Tree smashed automobile at Springfield, Mass. 2 additional injuries in automobiles said to be due to storm. Lightning burned grist mill at Rockland, Mass. Tree fell on house in Laconia, N. H. Extensive power failure for short time at St. Johnsbury, Vt.
OHIO Scattered points, especially northern portion	8-9				2	Several	4	2	Wind	Storm moved southward. Injuries from flying debris and deaths caused by contact with fallen power wires. High winds covered all of Great Lakes and Ohio Valley. Speeds high, particularly following cold front which moved past Cleveland area shortly after noon. Winds of 80 m.p.h., measured along Lake Shore, and nearly as strong at some inland points. Damage widespread and significant, although in many places confined to roofing, windows, trees, signs, utility lines, etc. Most spectacular were Highway Patrol radio tower destroyed at Massillon, and Weather Bureau storm warning tower toppled at Conneaut.
	8-9									Minor storm also reported at South Bend, Ind.
OREGON Western portion	10	Afternoon-evening	250	*100			4	2	Wind and rains	High winds accompanied locally by heavy rain occurred nearly full length of Oregon coast and inland for 60 to 100 miles. Gusts recorded up to 48 m.p.h., at Portland, 46 m.p.h., at Medford, 44 m.p.h., at Salem. 1 home suffered heavy damage in Albany area, several roofs damaged in other scattered areas. Numerous power service interruptions for short periods. Practically all damage due to wind. Estimated not more than $2,000 due to rains. Storm moved eastward. Some traffic accidents in which injuries occurred, but no known injuries as direct result of storm elements.
CALIFORNIA Santa Barbara County	12					1	2		Wind	Strong, gusty winds broke branches from trees. Woman injured by falling branch. 2 boats dragged anchors in harbor, but no damage reported.
LOUISIANA Alexandria (20 miles southeast of), Rapides Parish	13	11:10 a.m.			0	0	3	1	Tornado (suspected)	2 homes destroyed, but no other information available.
LOUISIANA De Ridder, Beauregard Parish	13	1:20 p.m.							Wind	Only report was by radio station but no details available from any source; not included in Red Cross report.
LOUISIANA Burrwood (1 mile south of), Plaquemines Parish	13	1:25 p.m.		8	0	0	3	1	Tornado	Tornado moving northward damaged 1 house and 1 warehouse, broke some windows, and overturned rain gage.
MISSISSIPPI Meridian, Lauderdale County	13	10 p.m.					4	1	Wind	Buildings unroofed, trees uprooted plate-glass windows smashed, and powerlines downed.
MISSISSIPPI Stringer, Jasper County	13	10:30 p.m.				6	4	3	Wind	6 injured when automobile crashed into fallen tree during storm; some damage to homes.
LOUISIANA Ramsay St. Tammany Parish	13	11:25 p.m.	2	100	0	0	5	1	Tornado	Tornado moving northeastward caused heavy damage to church and dormitories of St. Joseph's Abbey and St. Gertrudes Convent, with trees uprooted or twisted off 6 to 12 feet above ground; downed trees indicated rotating winds.
NEVADA Washoe and Mineral Counties	13	Evening							Wind	In Reno-Sparks area, gusty winds up to 72 m.p.h., blew over 45-foot house trailer, toppled several trees, and caused damage to roofs, sign boards, and powerlines. Damage to dwelling roofs reported at Hawthorne.
	13									Minor storms also reported in Delta area, and at Mansford and Oakdale, La.; and at Vicksburg, Miss.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

NOVEMBER 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
ALABAMA Russellville, Franklin County	13-14	Night							Wind	General high winds over State. Power disruption due to fallen trees in Russellville.
ALABAMA Mobile County	13-14	Night					4	1	Wind	General high winds over State. Tug boat at Mobile driven into L&N bridge by wind and current early on 14th. Trains halted at Mobile, Pensacola, and Flomaton. Tree fell across automobile at Citronelle.
FLORIDA Quincy area, Gadsden County	14	8:30 a.m.			0	0	3		Wind and tornado (suspected)	3 homes sustained major damage, several other buildings unroofed.
INDIANA	14	Midday				6	5	1	Wind	High winds from intense Low pressure center blew down television antennas, utility lines, and trees; broke windows, and damaged buildings. Peak gusts reached 69 m.p.h., at Indianapolis. Some of cities reporting damage were: Bedford, Muncie, Rushville, Anderson, Columbus, Whiteland, Greenwood, and Auburn.
	14									Minor storms also reported at Brunswick, Jonesboro, and Savannah, Ga.; in Erie area, Pa.; and at Crossville, Tenn.
MICHIGAN Lower Southern half	14-15	A.m.14th - a.m. 15th					4	1	Wind	
MISSISSIPPI Grenada, Grenada County	15	3:30 p.m.					4	1	Hail and wind	Some homes unroofed and windows broken.
	15									Minor storms also reported in Gregory and Lawrence Counties and in northern Black Hills, S. Dak.
TENNESSEE Knoxville and vicinity, Knox County	15-18							1	Rain	Heavy rains caused flooding of some streets, severe erosion and some rock slides onto streets; some families evacuated in Knoxville and about 10 in Fountain City.
LOUISIANA Ft. Jessup, Sabine Parish	16	5 a.m.	1	100	0	1	4	1	Tornado	Tornado moving northeastward demolished 3 homes and 1 automobile and damaged several homes.
TENNESSEE Chestua Community, Monroe County	16	A.m.						1	Electrical	Barn containing 1,200 bales of hay, 2 calves, and 6-acre tobacco crop struck by lightning and burned to ground.
ALABAMA Red Hill, Marshall County	16	Morning					4	1	Wind	3 barns unroofed.
	16									Minor storm also reported in Georgetown area, S.C.
MISSISSIPPI Macon (5 miles west of), Brooksville, to Deerbrook, Noxubee and Lowndes Counties	17	12:15-12:40 p.m.	15	70	2	2	5	3	Tornado	Developed 5 miles west of Macon, crossed highway just north of Brooksville and dissipated after passing Deerbrook; followed by State Police; 5 homes, 2 barns, and 4 other buildings destroyed; 5 homes and 7 barns damaged. Tornado moved north-northeastward, probably passed into Alabama.
ALABAMA Pine Springs, Lamar County	17	1:10 p.m.			0	0	3	1	Tornado	Near Sulligent. Brief dips in spots of tornado which hit near Gattman, Miss.
MISSISSIPPI Kilmichael to near Stewart, Montgomery County	17	1:30 p.m.	8	100	0	0	4	1	Tornado	2 homes and 1 other building destroyed and 8 buildings damaged. Tornado moved eastward.
ALABAMA Walker County	17	3:12 p.m.	5	15-400	4	15	4	1	Tornado and hail	Tornado moved northeastward from Cross Roads, 6 miles northwest of Jasper, to 1 mile north of Manchester. Hail occurred ahead of storm.
ALABAMA Cullman County	17	4:10 p.m.	8		0	3	5	4	Tornado	Tornado moved northeastward from Trimble to Crane Hill and Bethsaida. Became wide and dissipated over Cullman, where damage scattered. Crop damage mostly to unpicked cotton.
OKLAHOMA Idabel to Eagletown, McCurtain County	17	4:30 p.m.							Wind, hail, and rain	Strong winds caused general damage to utilities, roofs, windows, outbuildings, trees, etc., in Idabel area. Hail up to 1/2 inch in diameter fell at Idabel and up to size of golf balls at Eagletown. Storm moved northeastward into Arkansas.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TEXAS Fort Worth (5 miles west of), Tarrant County	17	4:35 p.m.		50-75	0	2	3		Tornado	Small tornado touched ground momentarily in southwestern part of White Settlement Township. Mainly roofs, glass windows, signs, and TV antennas damaged; 1 small outbuilding demolished; 2 house trailers moved, 1 blown over. Woman and child in trailer injured. Tornado moved northeastward.
ARKANSAS DeQueen and Smyrna areas, Sevier County	17	5:30-6:10 p.m.					4	3	Wind, hail, and rain	Hailstones as large as tennis balls reported in scattered localities; extensive damage to roofs, automobiles, and timber. Principal wind damage in Smyrna area. Storm moved southeastward.
ARKANSAS Mt. Ida (6 miles west of), Montgomery County	17	Early evening				1			Hail	Extremely heavy hail. 1 stone reported to have measured 11 inches by 9 inches in circumference and another 9-1/2 by 10 inches in circumference. 1 person reported injured by hailstones. Damage to roofs and automobiles. Pine trees stripped of needles and small branches.
MISSISSIPPI Ripley, Tippah County	17	8:30 p.m.			0	0			Funnel aloft	Cloud aloft, roar heard.
TENNESSEE Memphis (15 miles north of), Shelby County	17	9:15 p.m.			0	0			Funnel aloft	Pilot reported funnel cloud almost touching ground; no damage.
TENNESSEE Giles County	17	P.m.						1	Wind	Extensive roof damage to homes and barns, with resultant loss of stored crops, particularly tobacco. Elkton and vicinity hardest hit by wind; part of roof blown from home at Bryson.
TENNESSEE Athens, McMinn County	17							1	Rain	Several streets covered by water; 3 persons evacuated; heavy damage to cafe; some water in downtown basements.
	17									Minor storms also reported at Rosetta, Miss.; at Neosho and Springfield, Mo.; at Panama and Sallisaw, Okla.; at Ripley, Tenn.; and at Deport, Tex.
KANSAS North-central counties	17-18	Afternoon-night							Snow	Heavy snow totaling near 10 inches in area 50 miles wide from Lane and Ness Counties northeastward to Smith and Republic Counties resulted in some blocked roads and loss of unharvested grain sorghums. Greater losses avoided due to lack of strong winds and severe cold. Storm moved southeastward.
IOWA Northwestern two-thirds	17-18	7 p.m. 17th-5 p.m. 18th			4	18	5	1	Snow	Up to 18 inches snow covered band from southwest to northeast across central Iowa. Traffic stalled for 24 hours in some areas. Hundreds of traffic accidents during storm and on slippery highways in days following storm. 4 persons died from over-exertion, due to shoveling snow. Injuries resulted from traffic accidents. Storm moved northeastward.
MISSISSIPPI Holly Bluff (6 miles east of), to Yazoo City, Yazoo County	17-18	During night					3	4	Wind and rain	Squalls blew open cotton out and rains damaged it; trees uprooted, powerlines downed, some roof damage. Storm moved east-northeastward.
MISSISSIPPI Nitta Yuma and Rolling Fork areas, Sharkey County	17-18	During night					3	4	Wind and rain	Squalls blew cotton out on ground and rains ruined it.
NEBRASKA South-central and eastern portions	17-18	P.m.-a.m.					3	6	Snow	Much milo or grain sorghum broken off and dropped to ground, increasing difficulty of harvesting and causing much grain to be lost. Considerable damage to ornamental shrubs and trees. Snow depths up to 14 inches, many localities report heaviest November snow of record. Storm moved east-northeastward.
TENNESSEE Indian Mound Community, Stewart County	17-18							1	Rain	7 families evacuated; minor damage to 8 homes, 6 farm buildings, and 5 other buildings. 1 building destroyed.
	17-18									Minor storm also reported at Black Hawk, Miss.
ARKANSAS Blakely Mountain Dam (near), Garland County	18	3:30 a.m.				1	3	1	Wind	1 cabin destroyed and boat dock and trees damaged.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

NOVEMBER 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TENNESSEE Needmore Community, Montgomery County	18	4 a.m.			0	0	3	1	Tornado	House wrecked and most of its furniture damaged; porch blown off second house; numerous trees and utility poles blown down or sheared off.
ARKANSAS West Memphis, Crittenden County	18	7 a.m.							Wind	Roofs damaged, utility poles broken, and power services disrupted.
MISSISSIPPI LeTourneau Community, Warren County	18	10:30 a.m.			0	0	3	1	Tornado	Struck in mostly wooded area; moved eastward.
MISSISSIPPI Warren, Hinds, and Rankin Counties	18	10:30 a.m. 12:30 p.m.	50	*1			5	3	Wind	Moved eastward from Vicksburg through Bolton, Clinton, and Jackson into Rankin County; Clinton and Bolton hardest hit; 1 home and 18 farm buildings destroyed; 16 homes and 32 barns damaged; 22 other buildings, including an oil derrick damaged or destroyed.
LOUISIANA Springville to Kentwood (5 miles southwest of), Livingston and St. Helena Parishes	18	11-11:45 a.m.	15	25	0	0	4	1	Tornado	Began as severe storm near Springville and moved over thinly settled area to near Kentwood; damage spotty with heaviest near Kentwood where 1 house and dairy barn destroyed and 2 homes damaged. Tornado moved north-northeastward.
KENTUCKY Pulaski County	18	A.m.			1				Electrical	Woman killed when struck by lightning while working in barn.
SOUTH CAROLINA Anderson County eastward to Fairfield County	18	Morning				1	4	1	Rain	4- to 5-inch rainfall occurred on early morning of 10th from about Anderson County through Fairfield County; caused considerable damage to county roads, etc.
MISSISSIPPI Meridian and Russell areas Lauderdale County	18	Noon					4	1	Wind	Widespread high winds destroyed 1 home, damaged 7 others and damaged numerous other buildings, uprooted trees, downed power- and communication lines. Storm moved eastward.
MISSISSIPPI Pontotoc County	18	Noon					4	1	Wind	1 home destroyed, 3 homes and 3 barns damaged; no other data available.
LOUISIANA Franklinton area, Washington Parish	18	12-12:30 p.m.	10	3000			4	3	Wind, electrical, and rain	Severe thunderstorms with high winds caused widespread mostly minor damage over western half of Parish, with greatest damage in Franklinton area where 5 homes and 5 farm buildings suffered major damage; trees uprooted and powerlines downed. Storm moved eastward.
MISSISSIPPI Cairo community to Holcut, Prentiss and Tishomingo Counties	18	12:10 p.m.	10	50	0	2	5	1	Tornado	Moved northeastward from Cairo community, 15 miles east of Booneville, into Tishomingo County, destroying 6 homes and 6 farm buildings and damaging 13 homes, 6 farm buildings, and 2 other buildings.
TENNESSEE Hohenwald, Lewis County	18	1 p.m.						1	Wind	Several trees uprooted and many homes damaged; side blown from garage.
ALABAMA Franklin County	18	1:30 p.m.	8		0	0	4	1	Tornado	Tornado moved northeastward, partially destroyed 1 house and moved another on foundation at Belgreen. Several downtown store roofs damaged in Russellville probably due to spread-out winds of dissipating tornado passing Belgreen.
MISSISSIPPI Sharon Community to Sandersville (near), Jones County	18	1:30 p.m.	5	50	0	2	4	1	Tornado	3 homes and 6 farm buildings destroyed, 13 homes and 6 other buildings including church damaged. Tornado moved northeastward.
MISSISSIPPI Hattiesburg (12 miles west of), Forrest County	18	1:30 p.m.					4	1	Wind	3 homes and 1 barn damaged.
TENNESSEE Maury County	18	1:30 p.m.				2	5	1	Wind	At Columbia, blew portion of roof off 1 school, allowing rain damage to interior and splintered door of another; moderate wind damage to 4 business establishments; numerous TV antennas damaged; many trees felled or damaged, some damaging phone lines; minor injuries to 2 persons, due to wind-blown objects; damage in County as a whole, about $250,000.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TENNESSEE Columbia (5 miles southeast of), Maury County	18	1:30 p.m.						1	Wind and rain	Wind hit suddenly. Rain came down so hard could not see trees a few feet from house. 1 house considerably damaged and moved 8 feet off foundation, porch blown off another, and part of roof blown off third; 6 smaller farm buildings blown or knocked down; 15 trees snapped off, utility lines downed, and minor damage to several other barns and outbuildings.
TENNESSEE Mt. Pleasant, Maury County	18	1:30 p.m.						1	Wind	Building unroofed, allowing extensive rain damage; store door and window smashed.
TENNESSEE Nashville and vicinity, Davidson County	18	2 p.m.				1	4	1	Wind	Chimney, toppled by wind, punctured school roof causing serious injury to 1 child inside; display shed, containing 15 motor boats, blown over; 48 feet of new metal roofing ripped from State Capitol building and flagpole atop building bent; several trees and windows broken and numerous power- and phone lines downed.
ALABAMA Greene and Hale Counties	18	2:30 p.m.	28		0	5	5	1	Tornado	Tornado moved northeastward. From Forkland in Greene County it "plowed several miles" and lifted to strike again in Hale County, passing successively Sawyerville, near Akron, and Havana.
MISSISSIPPI Hale, DeSoto, and Linden, Clarke County	18	2:30 p.m.	10	75	0	0	4	1	Tornado and wind	5 homes, 5 barns, and 4 other buildings destroyed with 7 homes and 20 other buildings damaged; attendant squalls also caused minor damage over most of County. Storm moved east-northeastward.
ALABAMA Tuscaloosa (12 miles north of), Tuscaloosa County	18	2:45 p.m.	3	Narrow	0	1	4	1	Tornado	Storm moved northeastward.
ALABAMA Dallas County	18	2:45 p.m.	35	Narrow	0	0	4	1	Tornado and hail	Northeastward skipping path, with only brief dips to ground, from Safford to near Orrville, near Marion Junction, and on to Summerfield and Plantersville. At Plantersville, hail large as hens' eggs reported. Residents of Plantersville terrified by funnel dipping up and down.
MISSISSIPPI Bunker Hill to Bassfield, Walthall, Marion, and Jefferson Davis Counties	18	3-4 p.m.	25	75	0	2	5	1	Tornado and wind	Began in Walthall County where heaviest damage occurred, degenerating into area squalls as moved across Marion County into Jefferson Davis County; 4 homes and 13 farm buildings destroyed, while 10 homes and 16 barns suffered major damage with 38 homes and 31 other buildings damaged to some extent. Storm moved northeastward.
ALABAMA Jefferson County	18	3:30 p.m.	7	50-200	1	35	6	1	Tornado	Tornado moved northeastward from Ensley past north Birmingham to Tarrant City. Storm passed about 2 miles northwest of Birmingham Airport. Red Cross reported 121 houses damaged or destroyed and 395 homes with minor damage.
ALABAMA Hulaco, Morgan County	18	Afternoon	Short	Narrow	0	0	4	1	Tornado	Brief dips of tornado wrecked 1 home, took back porch off 1 home, blew washhouse away, and unroofed barn.
ALABAMA Entire State	18	Afternoon					4	1	Winds	Pressure gradient over State gave rather windy afternoon when gusts of 40 to 50 m.p.h., common. Local scattered damage occurred over Marion and Fayette Counties, including section of bleachers blown over at school stadium at Brilliant, Marion County, and many trees and TV antennas downed. In Selma, Dallas County, scattered trees and TV antennas blown down, windows broken, and signs overturned. Tree in Decatur blown across house; wet soil contributed to felling of tree.
ALABAMA DeKalb County	18	4:15 p.m.	Short	Narrow	0	0	4	1	Tornado	Dipped at Fairview Community, near Dawson. 2 homes, 2 broiler houses, and several other buildings wrecked.
KENTUCKY Danville area, Boyle County	18	4:25-4:30 p.m.			0	0	4	5	Tornado	Tornado hit outskirts of Danville. 1 warehouse, containing tobacco, destroyed and another warehouse damaged. Roofs on about 12 houses damaged. Plate-glass windows, signs, trees, and smaller buildings smashed.
TENNESSEE Shirley, Armathwaite, and Mt. Helen, Fentress County	18	4:30-4:35 p.m.	15	220	0	2	4	1	Tornado	At Shirley, barn demolished, house almost entirely unroofed, building blown 20 feet off its foundation, and several large trees blown down. Back glass in automobile almost pulverized and buckled from inside out suggesting reduction of pressure outside. At Armathwaite, barn destroyed and home partly blown away, the remainder catching fire and burning. Home and nearby car total losses. At Mt. Helen community, 2 broiler houses demolished; 1 contained 5,000 3-week old chickens, many of which were killed or died

See footnotes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TENNESSEE (Cont'd.)										of exposure. 2 men slightly injured; 1 from flying debris, the other from a fall. Roof blown off 1 house and another damaged. Tornado moved northeastward.
ALABAMA Alexander City, Tallapoosa County	18	4:35 p.m.	Short	Narrow	0	0	4	1	Tornado	In Spring Hill subdivision 2 houses and 1 trailer and other buildings damaged. Trees strewn "like match sticks".
ALABAMA Heflin (near), Clebourne County	18	5:15 p.m.			0	0	4	1	Tornado	In Macedonia area. A number of broiler houses destroyed, scattered roof damage, porches damaged, and trailer destroyed.
GEORGIA Gore, Chattooga County	18	5:45 p.m.	12	500	0	1	5	2	Tornado	3 houses destroyed or heavily damaged and several barns and chickenhouses demolished. Property damage included $3,500 losses in livestock. Man injured when his car was blown off road and overturned several times. Tornado moved northeastward.
ALABAMA Lawrence and Morgan Counties	18	Late afternoon			0	0	3	1	Tornado (suspected) funnel aloft	Witnesses saw funnel cloud form southwest of Decatur and pass over City. It may have caused damage reported in southeastern Lawrence County which was not heavy. Storm moved northeastward.
ALABAMA Blount and Marshall Counties	18	Late afternoon	30	100	3	12	5	3	Tornado	Northeastward from Rosa, near Oneonta, Blount County passed Snead, Horton, and finally just northwest of Albertville. Pilot reported path straight as an arrow and with only one lift which was Short Creek and Town Creek.
ALABAMA Ashland (near), Clay County	18	Late afternoon			0	0	4	1	Tornado	1 building unroofed, several houses' roofs damaged, 1 house moved off pillars, 3 other buildings badly damaged. Porches removed from several houses.
TENNESSEE Spring City Rhea County	18	6 p.m.					6	1	Rain and wind	Wall of water descended on Spring City as result of 3-day downpour west of city; several homes twisted from their foundations and moved 50 to 75 feet; downtown businesses wrecked; 8 homes destroyed, 92 buildings sustained major damage, and 150 buildings received minor damage. 247 families affected, about 75 of which were evacuated.
GEORGIA Atlanta (Westend and southwest sections) Fulton County	18	7:15 p.m.					5	1	Wind	At least 10 business buildings and many more residences suffered varying degrees of roof and structural damage. Some smaller buildings destroyed completely. 100 or more trees uprooted or broken off and extensive damage to utility lines.
GEORGIA Crandall, Murray County	18	Early evening			0	0	4	1	Tornado (suspected)	1 church and 3 houses severely damaged and chickenhouses and barns destroyed. Tornado moved northeastward.
TENNESSEE Tracy City, Grundy County	18	9 p.m.						1	Rain	New broiler house flooded, killing 1,500 baby chickens.
KENTUCKY Metcalfe County	18	P.m.			0	0	4	4	Wind and tornado (suspected)	Northern end of county buffeted by winds that leveled 3 tobacco barns containing tobacco, and severely damaged 3 houses. Several other homes received lesser damage.
TENNESSEE Rhea County	18	P.m.						1	Rain	23 homes flooded in Morgantown, south Dayton, and Frog Level areas, 2 of which damaged extensively; 10 farm buildings sustained minor damage and 2 other buildings major damage.
GEORGIA Northeast quarter	18	Night					4	1	Wind and electrical	In addition to the above localized storms, high winds caused widespread but mostly minor damage in several widely scattered areas. At Griffin, Spalding County, 3 houses damaged; in Troup County, roofs and utility lines heavily damaged; in Butts County 1 house destroyed and another damaged; at Adarisville, Bartow County, 1 house unroofed; at Bremen, Haralson County, several houses damaged; in Carroll County minor damage reported.
KENTUCKY Muhlenberg County	18				1				Electrical	Child killed when lightning leaped from electrical outlet into room where she was sleeping.
KENTUCKY Bourbon County	18						4	4	Electrical	Lightning destroyed barn, containing stripped tobacco, hay, straw, and farm machinery.
TENNESSEE Anderson County	18								Rain	15 to 20 families evacuated at Lake City; basements flooded at Norris; some homes surrounded by water at Clinton.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TENNESSEE Shelbyville and vicinity, Bedford County	18								Wind and rain	Duck River about 5.4 feet above flood level; about 12 families evacuated; several streets underwater; some water damage to residences and other buildings; heavy crop damages, especially to corn in fields. Station wagon and pickup truck heavily damaged by tree blown down by wind.
TENNESSEE Campbell County	18								Rain	Heavy rains washed out railroad tracks between Jellico and Caryville and between Caryville and Pioneer. At Newcomb, some streets inundated and water entered basements.
TENNESSEE Dyersburg, Dyer County	18							1	Rain	Heavy rains caused flooding of lowlands. 15 to 20 families evacuated, basements flooded, and some highways inundated.
TENNESSEE Buchanan (near), Henry County	18							1	Electrical	Lightning struck barn, containing 1,000 bales of hay, which burned to ground. Farm home also severely damaged by lightning.
TENNESSEE Hickman and Perry Counties	18								Wind and rain	Damage to TV antennas and farm outbuildings; rear of store near Linden damaged; corn in fields badly damaged by high winds and torrential rains.
TENNESSEE Memphis, Shelby County	18							1	Wind	Hay barn blown down, shingles blown off 7 or 8 houses, and trees and phone wires downed.
TENNESSEE Portland (near), Sumner County	18							1	Rain	Flash flood washed out railroad tracks at 2 points near Portland and inundated rails at third.
	18									Minor storms also reported at Arab, Ala.; near Clarendon, Ark.; at Lafayette, Ind.; at Kenner, La.; at Ripley, Miss.; and at Dunlap, Goodletsville, Hartsville, Henderson, Huntingdon, Martin, and McMinnville, Tenn.
MINNESOTA Southeastern half	18-19	A.m. 18th -a.m.19th			4	Many			Snow and wind	Snow began morning of 18th continued for 24 hours, with accumulation up to 16 inches in extreme southeast. Drifting snow halted traffic. Over 200 schools closed. 3 automobile deaths attributed to storm. 1 person died shoveling snow. Numerous injuries from falls on icy streets and walks. Loss of unharvested corn and soybeans expected to be heavy. At Twin Cities, 9.5 inches snowfall was third greatest 24-hour November snowfall of record; greatest was 16.2 inches on November 11-12, 1940.
ILLINOIS Entire state	19	Early morning							Wind	Southwest winds 30 to 40 m.p.h., behind deepening north-northeastward moving LOW center caused widely scattered light damage.
MICHIGAN Lower - All portions	19	Early a.m. - afternoon			1		4	1	Wind and snow	19 inches of snow in some areas in western Upper Michigan; fatality near Grand Rapids when tree fell on victim.
PENNSYLVANIA Palmyra area, Lebanon County	19	12:20 p.m.	2	14	0	0	4	1	Tornado	Tornado moving northeastward destroyed barn and garage, damaged automobile extensively, tore off porches and roofs from homes, ripped part of home in two, twisted off many TV antennas including one 60 feet high, and twisted off 11 utility poles.
PENNSYLVANIA Pottsville area, Schuylkill County	19	12:45 p.m.			0	0	5	1	Tornado and rain	Tornado moving northeastward smashed windows, leveled billboards, and ripped roof from drive-in theatre restaurant. Heavy rain accompanying storm did extensive damage to equipment inside restaurant. Factory roof also blown off, resulting in $5,000 damage.
PENNSYLVANIA Eastern half	19	Afternoon					4	1	Wind	Numerous utility lines and poles, trees and TV antennas downed by 40- to 70-m.p.h., winds. Many house roofs also suffered considerable damage. Storm moved eastward.
NEW JERSEY Washington, Warren County	19	3:03 p.m.	** 1300	150	0	0	5		Tornado	Small twister dipped through 2-block area in business district, moved aloft, and then struck 1-block area in housing development 1/2-mile away. Severe damage to framework of 1 store, roofs blown off, and many windows out, mainly in business area. Storm moved east-northeastward.
TENNESSEE Obion County	19								Rain	At Obion, water covered almost all southeast section of city adjoining Obion River; 64 families evacuated. At Union City, 21 families evacuated and some industrial buildings flooded. At Rives, several families evacuated. Considerable damage to crops still in fields.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
	19									Minor storm also reported at Rockwood, Tenn.
MAINE, MASSACHUSETTS, and NEW HAMPSHIRE	19-20	Afternoon -night			1	Some		1	Wind, rain, electrical	Damaging winds caused widespread, but minor damages in area. Falling limbs and trees broke powerlines in many towns. Lightning caused power failures by burning out power transformers in Springfield, Mass., where heavy rains also washed out a road. Rain blamed for 1 death in Springfield, Mass., when pedestrian struck by automobile. A number injured in automobile accidents attributed to storm.
MICHIGAN Detroit, Wayne County	20	5:50 p.m.	1-1/2	75-150	1	12	5	1	Tornado (suspected)	No funnel observed, but definite path and width of damage characteristic of tornado. Fatality and most of injuries caused by falling "chunks" of concrete in factory building. Tornado moved east-northeastward.
TENNESSEE Cumberland County	20								Rain	Several families evacuated at Crab Orchard; estimated 12 houses with 6 to 18 inches of water. considerable damage to county roads and at least 4 bridges washed out. Damage to some hay, grain, and corn in flooded barns.
TENNESSEE Fayetteville, Lincoln County	20								Rain	Several families evacuated; considerable crop damage in county.
INDIANA Hancock, Madison, and Marion Counties	21					1	3	1	Wind	Side of a house and many roofs, awnings, windows, television antennas, and lines damaged.
TENNESSEE Henderson County	21								Rain	Severe damage to corn in fields; some roads impassable.
TEXAS Northwestern portion	21				1	3			Snow	First snow of consequence in Texas this season varied from 4 to 8 inches. Near-blizzard conditions caused closing of schools in at least 7 South Plains towns. Visibility in some places not over 100 yards. Many accidents occurred, 1 death in collision blamed on storm.
	21									Minor storms also reported at Flagstaff and near Prescott, Ariz.
CALIFORNIA Southern mountains and coastal plains from Oxnard to San Diego	21-22					19	6		Wind, sand, and fire	Santa Ana winds blowing from Mojave Desert through mountain passes of south, with gusts reported reaching 90 m.p.h., caused widespread damage to trees, buildings, utility lines, signs, aircraft, and automobiles. 28,000-acre brush fire along 40-mile front west of Crystal Lake in San Gabriel Mountains started by warming fire in oil drum, used by road crew, overturned by wind. Blowing dust and sand reduced visibility to near zero in many areas, and along with other storm debris, presented major clean-up operation. In some urban areas, pedestrians ordered from streets because of danger from flying glass and other debris. Twelve of 33 passengers aboard Western Airlines plane flying over Ontario at 10,000 feet injured (four of them seriously) when plane severely jolted by downdraft in severe turbulence. Damage by communities follows: La Habra: Several small trees downed; powerline broken. Riverside: Tree-top fire destroyed 80 palm trees. El Monte: Minor wind damage from fallen trees and wires. San Juan Capistrano: Flower nursery damaged. Banning: Roof ripped from church; plate-glass window broken in automobile show room. Idyllwild: Falling trees damaged 7 automobiles, and more than a dozen cabins. Hemet: 4 persons injured when pickup truck overturned by wind; 2 persons injured in cars struck by falling trees; church roof damaged; 1 residence partially destroyed; 6 plate-glass windows broken. Altadena: Giant eucalyptus limbs broken; full-grown pine trees snapped like matches; several roofs partially or completely destroyed. San Jacinto: Huge tree uprooted, severely damaging home; many narrow escapes from flying debris. Sunland-Tujunga: 2 persons injured when tree fell on house trailer; 1 home ripped apart by wind; hundreds of trees uprooted, 1 tree 15 inches in diameter snapped in half; many plate-glass windows smashed; all homes unroofed in 2-block area in Sunland; warehouse blown over in Shadow Hills area. Glendora: 1 person injured by falling limb; 6 homes and 5 automobiles damaged by falling trees; many signs and billboards blown down; several buildings

See footnotes at end of table.

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
CALIFORNIA (Cont'd.)										unroofed. **Oxnard:** Heavy damage to young citrus groves; utility lines, television antennas, and window glass suffered most damage. **Camarillo:** dozens of TV antennas downed; trees and flagpoles snapped off; several signs demolished. **Fontana:** Over 60 trees downed; 2 house trailers and 2 furniture vans overturned by wind on expressway; heavy damage to utility wires and poles; 4 cars stalled in sandstorm had paint completely stripped off on windward side; heavy plate-glass window smashed in automobile show room. **Santa Ana:** Radio station off air when transmitter damaged by wind. **Pomona:** Hundreds of trees toppled; large limbs, cartons, and other debris littered streets; 2 homes, garage, and 1 parked automobile damaged by falling trees; 1 window broken. **Colton:** Many trees and utility lines downed; 2 automobiles damaged by falling trees. **Ontario-Upland:** Thousands of limbs torn from trees; several large trees uprooted or snapped by wind; 2 aircraft overturned by wind at Ontario International Airport; several automobiles damaged by falling limbs; many signs blown over, houses unroofed, and utility lines damaged. **Huntington Beach:** 7 steel oil derricks blown down across Coast Highway. **San Pedro:** Several boats damaged, and 4 boats blown ashore on Cabrillo Beach; 48-foot skin diving boat blown ashore on Catalina Island and destroyed by surf. **Whittier:** Many tree branches broken and powerlines downed, but only 1 small tree uprooted. **San Fernando:** Partially built apartment house suffered severe structural damage; roof of new house blown away; several tied-down planes at San Fernando Airport damaged; wing of 1 plane sliced off by hangar door which was torn loose by wind; many plate-glass windows shattered. **Los Angeles:** About 350 trees downed in city, mostly in northern and western areas; 2 homes slightly damaged by falling trees. **San Diego County:** Trees blown down in El Cajon, Pacific Beach, and San Diego; shingles blown from roofs in Ramona and Lakeside; powerlines downed in many places over County.
	22									Minor storms reported in Lawrence County and northern Black Hills, S. Dak.
MONTANA Conrad, Pondera County	22-23						3	1	Wind	Damage to roofs, TV antennas, storm doors, etc. Some soil blowing. Estimated peak wind speed 70 to 80 m.p.h.
NEW YORK Lake Erie area	22-23								Snow and wind	Snow squalls caused by advance of cold air across warm waters of Lake Erie brought up to 3 feet of snow in some areas to lee of Lake. 200 plows necessary to clear snow, and traffic severely tied up. Some damage to power- and communications lines. No damage estimates available, but costs mostly in wages for clearance of snow and restoration of downed lines. Injuries not important. Some squall activity also to lee of Lake Ontario, but to much less extent.
WASHINGTON Northwestern portion	25	Afternoon					4	1	Wind	High wind blew down trees in several localities in northern half of western Washington, damaging property and causing large number of power outages.
FLORIDA Alligator Reef, Monroe County	25	5 p.m.			0	0			Waterspouts and funnels aloft	4 waterspouts and 6 funnel clouds sighted off Alligator Reef.
IDAHO Kootenai and Shoshone Counties	25	Evening							Wind	Wind gusts estimated up to 50 m.p.h., at Kellogg, 40 m.p.h., at Coeur d'Alene. Utility poles toppled and trees blown across lines with disruption of power and telephone services. Some damage to roofs and windows, 1 automobile accident caused by tree blown across highway.
CALIFORNIA San Fernando Valley and San Bernardino and Los Angeles County	25						3		Wind and dust	Santa Ana winds breaking through mountain passes raised huge billows of dust, reducing visibility to zero at Ontario and causing 500 employees at aircraft overhaul and repair base to be sent home. 2 trees blown down at Chino, tree blown down at Sunland, and some powerlines whipped down in San Fernando Valley.
	25									Minor storm also reported at Whitefield, N. H.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

NOVEMBER 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
IDAHO Northern counties	27-28	Night							Snow and wind	Heavy snow which began evening of 27th caused much trouble on power- and telephone lines in Coeur d'Alene belt and Newport and Bonners Ferry's sectors. Crews worked 16 hours restoring service. At Lewiston WBAS, winds reached 57 m.p.h., at 4:50 a.m., of 28th.
TEXAS Kress, Swisher County	27-29							5	Wind	Damage heavy to maize crop.
KANSAS Cherokee County	29	8:45 a.m. - 4 p.m.							Wind, glaze, and snow	High winds estimated at 50 m.p.h., accompanied by some glaze and later by heavy snow caused damage to electric and telephone lines over county. Storm moved south-southeastward.
NEBRASKA Eastern portion	29	All day					2	6	Wind	Much additional milo or grain sorghum blown down, causing considerable grain to be lost. Many ears of corn also blown from stalks. Storm moved northeastward. If previous autumn weather had been normally dry, these crops would have been harvested, and damage from these storms minor.
OKLAHOMA Most of State	29	During day						3	Wind	Winds of up to 60 m.p.h., blew behind cold front across State. Widespread minor damage resulted to Christmas decorations, TV antennas, utilities, and unharvested sorghum crops. Several boat stalls damaged at Lake Tenkiller, Sequoyah County. Storm moved south-southeastward.
GEORGIA Alma (8 miles southeast of), Bacon County	29	2:45 p.m.	1	300	0	6	4	4	Tornado	1 house in which 12 persons were awaiting funeral was completely demolished. 2 persons hospitalized, others treated for minor injuries and released. Another house destroyed and 1 damaged. 3 cars wrecked after being carried several hundred yards. Losses include several head of livestock and chickens. Timber also destroyed. Tornado moved northeastward.
CALIFORNIA Berkeley and Oakland, Alameda County	29						3		Wind	Northerly gales aloft brushed surface in narrow band along Berkeley Hills, lasting for about 1-1/2 hours. 3 large plate-glass windows in furniture store shattered and window broken in printing shop. Branches blown from trees on University of California campus, and 2 large trees uprooted elsewhere in Berkeley.
CALIFORNIA San Gabriel Mountains, San Bernardino, Los Angeles, and Orange Counties	29-30					1	4		Wind	Santa Ana winds breaking through mountain passes caused new flare-up of the 28,000-acre brush fire in San Gabriel Mountains. Winds reaching reported peak of 80 m.p.h., at Fontana blew down trees and powerlines, and in Buena Park man injured when 60-foot eucalyptus tree fell across pickup truck. House trailer upset and demolished by wind while being towed on Devils Canyon road north of San Bernardino.
LOUISIANA New Orleans, Orleans Parish	30	4:30 a.m.					4	1	Wind	Squalls attending cold front uprooted trees, caused power failure and broke plate-glass windows, waves on Lake washed over seawall and damaged a few lakeside camps. Storm moved southeastward.

* Miles instead of yards.
** Yards instead of miles.
° Includes crop damage.
C Crop damage.
† Storm damages are placed in categories varying from 1 to 9 as follows:

1	Less than $50
2	$50 to $500
3	$500 to $5,000
4	$5,000 to $50,000
5	$50,000 to $500,000
6	$500,000 to $5,000,000
7	$5,000,000 to $50,000,000
8	$50,000,000 to $500,000,000
9	$500,000,000 to $5,000,000,000.

GENERAL SUMMARY OF RIVER AND FLOOD CONDITIONS

NOVEMBER 1957

Damaging floods occurred during the month in the Ohio Basin and in the East Gulf of Mexico Drainage. The flooding along the main stem of the Tennessee, though relatively minor under normal conditions, resulted in major agricultural losses to the unharvested corn and cotton crops in the western portion of the basin. A near record flood with heavy crop losses occurred on the Elk River in Tennessee. Severe flash floods were reported on the Piney River and Richland Creek in Tennessee. Severe flooding and heavy damage was reported on the Green and Barren Rivers in Kentucky and on the Upper Tombigbee in Mississippi.

ATLANTIC SLOPE DRAINAGE

Almost daily precipitation over eastern North Carolina and southern Virginia during the last half of November caused light to moderate flooding on the Dan, Neuse, and Cape Fear Rivers during the latter part of the month. A flash flood occurred on the Rocky River at Norwood, N. C., from about 2 inches of rain on the 23d. The crest stage of 22.4 feet was 6.4 feet above flood stage. Another heavy rain on the 25th caused another rise on the Rocky River to a stage of 22.55 feet. These were the highest crests on the Rocky River at Norwood since records were started in June 1956. Flooding along the Lumber River at Lumberton, N. C., from the 24th to about December 7 forced evacuation of about 150 people from 30 homes located in a low area called Moccasin Bottoms. These people were prevented from returning to their homes for about 2 weeks. The town of Lumberton was not affected by the high water. This flood was probably 4 to 5 feet less than previous big floods. The high water interfered with logging operations along the Roanoke River and shipping on the Cape Fear. Some fields of grain were covered with water along the Rocky River.

The heavy frequent rainfall during the latter half of the month caused the Pee Dee River at Cheraw, S. C., to rise above flood stage on the 24th and remain above flood stage for 5 days. Further downstream at Peedee, S. C., the stream continued in flood into December.

River levels on the Pee Dee, Broad, and Congaree crested at the highest stages since January 1954. Damage from the overflows was relatively insignificant.

There was a series of minor rises in the Savannah, Ogeechee, and Ocmulgee Drainage basins in Georgia during November and early December. Overflows were limited to lowland areas and were due to frequent heavy rains. No damages were reported.

EAST GULF OF MEXICO DRAINAGE

The flooding in the Apalachicola River at Blountstown, Fla., from the 22d to the 30th was due to heavy rains (2.5 to 5 inches) during the period from the 14th through the 18th. Additional heavy rains (1.5 inches) occurred during the 3-day period from the 22d to the 24th.

Heavy rainfall caused minor floods in the upper Oostanaula at Resaca, Ga., and in the upper Coosa at Gadsden, Ala., from the 20th to the 22d. Flood damages were confined to rural areas and included damages to agriculture and public transportation systems.

Heavy rain (2.5 to 3 inches) on the 14th followed by occasional showers during the rest of the month caused flooding on the Black Warrior and Tombigbee Rivers in Alabama and Mississippi, respectively. The heaviest flooding and damage occurred on the upper Tombigbee in the areas around Amory, Aberdeen, and Columbus, Miss. Approximately 45,000 acres of land and 150 homes were reported under water. At Columbus, Miss., approximately 200 families were evacuated from their homes. From reports received, total damage exceeded a million dollars. Stages on the Warrior were not unusually high but came at an unfortunate time when construction of a new Lock and Dam near Eutaw, Ala., was at a critical stage. A large Coffer dam had to be flooded to prevent complete destruction.

The heavy rain from the 12th to the 18th caused general flooding on the Pearl River at and below Jackson, Miss., beginning on the 14th at Jackson, Miss. Rainfall during the period ranged from 4 to 6 inches over the upper Pearl and from 6 to 8 inches over the middle and lower Pearl. Some of the rainfall was intense for short periods, producing more intensive tributary flooding for brief periods than was reflected at the gaging stations. Rapid rises resulted in the Pearl River from the mouth of the Yockanookany River to the Gulf Coast and on the Bogue Chitto below Franklinton, La., to the junction with the Pearl River. Lesser rises to below flood stage was measured on the Leaf, Chickasawhay, and Pascagoula Rivers. Damages are estimated to have exceeded 1/4 million dollars and was confined mostly to agriculture.

MISSISSIPPI SYSTEM

Ohio Basin.--Minor flooding occurred along the Salt River in Kentucky between the 18th and 22d from the heavy rain (3 to 4 inches) on the 18th and 19th. No damage resulted due to previous harvest of all crops on lowlands and operation of flood protection facilities at Taylorsville, Ky.

This same storm caused rapid rises on the Barren, Rough, and Green Rivers in Kentucky to above flood stage. The rainfall during this period averaged between 4.5 and 5 inches and was particularly heavy over parts of the Green River Basin, especially in the area from near Hopkinsville east and northeast to the vicinity of Munfordville, Ky. The heaviest rainfall in this general area was at Brownsville, Ky., with 8.42 inches reported in a 48-hour period. Preliminary estimates of the total acreage flooded is around 150,000 acres, and losses to grains in the field is estimated between 2-1/2 and 3 million dollars.

The only flooding along the White River occurred at Edwardsport, Ind., between the 16th and 22d. This rise resulted from a concentration of rainfall over the lower White on the 13th-15th and 17th-19th which averaged over 2 inches during each rise. The overflow at Edwardsport, Ind., was slight as the area is protected by levees.

Heavy rain in the Cumberland Basin from the 15th to the 19th caused flooding in the headwaters at Williamsburg, Ky., from the 18th to the 21st and in the lower reach of the main stem at, and below, Clarksville, Tenn., between the 19th and 24th. The rainfall averaged 4.5 inches above Wolf Creek Dam and 4.6 inches below. There was some inconvenience due to flooding of country roads, otherwise damage was minor as most crops in the lowland areas had been gathered.

The flooding which resulted in heavy agricultural losses in the Tennessee River Basin was due to moderate to heavy rainfall over the central and western portions of the Tennessee Valley. Total accumulation over the area below Chattanooga, Tenn., averaged 7.8 inches during the 6 days. In the area above Chattanooga, the cumulative total averaged 4.8 inches. Runoff was high, as the month preceding the storm was one of the wettest on record. High discharges had to be maintained at all of the main river dams from Chickamauga through Kentucky Dam. Lowlands below each dam were flooded to depths of 5 to 8 feet. Under normal conditions such flooding results in very little damage; however, due to the long period of rainy weather preceding this storm, harvesting of corn and cotton on the western portion of the watershed had been retarded and these crops were lost. As a result major agricultural losses resulted from this minor flood. The flood on the Duck River at Shelbyville, Tenn., was 0.4 foot higher than the flood of February 1957 and among the highest of record for so early in the season. The flood on the Elk River was slightly below the flood of February 2, 1957, and only 2.2 feet below the record flood of January 5, 1949. Moderate to heavy crop damages occurred in this area. The flood on First Creek at Knoxville, Tenn., has been equaled or exceeded five times in the last 10 years. At Mineral Springs, the crest was the second highest of record, 8.9 feet (record 10.0 feet, September 1944). The area in the vicinity is largely undeveloped and not subject to much damage. Torrential rains of about 2-hours duration over the Piney River watershed during the afternoon and evening of the 18th caused a record flash flood with major damage at Spring City, Tenn. Rainfall during the 2-hour period ranged from 3 to 8 inches. This heavy rain produced record high stages in Spring City, with the water striking as a wall with savage force. There were no casualties, but property damage was very heavy. This same storm caused a severe flash-flood on the Richland Creek at Dayton, Tenn., where about 40 homes and one business were flooded up to 3 feet of water.

Flooding along the main stem of the Ohio was confined to the reach below the Cumberland and Tennessee Rivers. The flooding was minor as to the amount of land covered by overflow, but the crop losses were heavy due to unharvested crops, mainly soybeans and corn.

White and Arkansas Basins.--Heavy rains on the 12th and 13th caused flooding on the Black River at Black Rock, Ark., and the Little Red River at Heber Springs and Judsonia, Ark. Additional heavy rain on the 17th and 18th caused flooding on the Black River at Pocahontas, Ark., a second flood on the Little Red River and flooding on the White River at Augusta, Ark., and below.

This same storm caused light flooding in the Arkansas Basin on the Poteau River at Poteau, Okla., on the 18th and on the Petit Jean at Danville, Ark., on the 19th.

Red Basin.--The flooding on the Saline and Ouachita Rivers was due to heavy rain (4 to 6 inches) on the 12th and 13th. The greatest storm total reported was 7.6 inches at Arkadelphia, Ark.

A record stage of 45.6 feet was observed on the Sulphur River at Hagansport, Tex., on the 9th. This was 0.3 foot higher than the previous record stage of 45.3 feet in November 1946. The crest downstream at Naples, Tex., was considerably less than the record crest of 37.7 feet in 1945. Flooding along the Cypress River was light to moderate. Flood damage in the Sulphur and Cypress Rivers will be small, since most of the land is devoted to grazing land.

Lower Mississippi Basin.--A series of heavy rains between the 8th and 19th caused flooding in tributary streams of the lower Mississippi in Missouri, Tennessee, Arkansas, and Mississippi between the 14th and the end of the month.

In the St. Francis Basin, the reservoir above Wappapello Dam rose to a crest of about 16.3 feet on the 20th, and the resulting discharge caused a crest at Fisk, Mo., of 23.5 feet on the 21st-22d. It was above flood stage at Fisk for about 9 days, and the crest was 0.8 foot below the April 1957 crest. Very little damage occurred in this area, as levees protected lowlands. Further downstream at St. Francis, Ark., there were three crests. The crest at Parkin, Ark., of 31.2 feet from November 29 to December 1 was the second highest since 1937 when it reached a stage of 34.2 feet. Severe flooding occurred on some of the tributary streams of the Mississippi in central and northern portions of west Tennessee after the heavy rains from the 17th to the 19th. The heaviest flooding occurred on the Obion, Forked Deer, and Hatchie Rivers and minor flooding on the Loosahatchie and Wolf Rivers. The flood delayed planting of low areas. The high water ruined almost all unharvested crops and winter pastures in lowland areas.

WEST GULF OF MEXICO DRAINAGE

The month began with all streams about normal but falling slowly. The rainfall for November was well above normal with heavy rain falling frequently throughout the month. Heavy rains at the end of the first week caused 2- to 5-foot rises on most of the streams. The flooding on the Nezpique Bayou and Calcasieu River in Louisiana was light and on the Sabine light to moderate.

Flooding began on the Trinity River at Rosser, Tex., on the 6th. Flooding advanced downstream to Liberty, Tex., on the 14th and was still in progress at this point when the month ended. This flooding was due to heavy rain from the 3d to the 8th, with the greatest fall occurring on the 4th and 5th. Rainfall ranged from 3 to 6 inches during this period, with several stations reporting a total of 8 to 10 inches during the month. No appreciable damage was reported.

Flooding on the Navidad, Lavaca, and Guadalupe Rivers in Texas was due to heavy rains on the 21st and 22d. Runoff was heavy due to previous heavy rains from the 10th to the 12th. Damage from this flood was minor.

GULF OF CALIFORNIA DRAINAGE

Colorado Basin.--Heavy rains and snows from the 2d to the 6th caused flooding on the Freemont and Muddy Rivers and other smaller streams in east-central Utah. There was considerable damage by covered and washed out roads and bridges. The ferry on the Colorado River at Hita, Utah, was also washed away.

PACIFIC SLOPE DRAINAGE

The flooding on the Sacramento River at Tisdale Weir, Calif., on the 15th and 16th was due to heavy rains which lasted from 12 to 18 hours. Overflow depth was less than 1 foot and only the barrow pits and lowest portions of the bypass were filled.

Heavy rain on the 12th and 13th caused sharp rises in coastal streams of northern California. Only minor flooding was reported at the mouth of the Eel River during high tide. At Fernbridge, Calif., a stage of 15.9 feet was reported on the 14th. This was 1.6 feet below flood stage.

FLOOD STAGE DATA

(All dates in November unless otherwise specified)

River and station	Flood stage	Above flood stages -dates		Crest *	
		From–	To–	Stage	Date
ATLANTIC SLOPE DRAINAGE	Ft.			Ft.	
Dan: Danville, Va.	11	20	20	12.0	20
Neuse:					
Neuse, N. C.	14	26	30	#16.0	28
Smithfield, N. C.	13	25	Dec. 4	18.05	28
Goldsboro, N. C.	14	28	Dec. 9	19.2	Dec. 3
Kinston, N. C.	14	Dec. 2	Dec. 11	16.4	Dec. 7
Cape Fear:					
Moncure, N. C.	20	26	26	21.4	26
Fayetteville, N. C.	35	25	29	#44.1	27
Lock #2, Elizabethtown, N. C.	20	25	Dec. 5	#31.7	28
Rocky: Norwood, N. C.	A16	23 25	24 27	22.4 22.55	23 26
Pee Dee:					
Cheraw, S. C.	30	24	29	34.3 37.0	24 26
Pedee, S. C.	19	22	1/	24.6	Dec. 1-2
Saluda:					
Pelzer, S. C.	6	19	22	8.0	19
Chappell, S. C.	13	20 23	21 28	19.1 17.6 17.2	20 23 25
Broad:					
Gaffney, S. C.	10	19	19	12.2	19
Blair, S. C.	14	18	28	22.8 18.5 19.0	20 24 26
Congaree: Columbia, S. C.	19	21	21	19.5	21
Catawba: Catawba, N. C.	8	25	27	10.3	25
Wateree: Camden, S. C.	23	26	28	25.0	27
Savannah:					
Carlton Bridge, Ga.	15	19	19	15.1	19
Clyo, Ga.	11	30	1/	13.1	Dec. 8-9
Ogeechee: Dover, Ga.	7	27	Dec. 9	7.8 7.3	30 Dec. 6
Ocmulgee: Abbeville, Ga.	12	29	Dec. 5	---	--
EAST GULF OF MEXICO DRAINAGE					
Apalachicola: Blountstown, Fla.	15	22	30	17.0	27, 28, 29
Oostanaula: Resaca, Ga.	22	20	22	24.0	21
Coosa: Gadsden, Ala.	20	20	22	20.4	21
Black Warrior: Tuscaloosa Lock and Dam, Ala.	47	19	21	53.8	20
Tombigbee:					
Fulton, Miss.	A16	15	22	18.6 18.0 18.0	16 18 20
Tupelo, Miss.	A21	14	16	24.2	14
Amory, Miss.	A20	15	27	30.3 23.1	19 25
Tibbie, Miss.	A23	16 27	23 28	27.0 23.7	18 28
Aberdeen, Miss.	34	16	27	42.45	19
Columbus, Miss.	29	20	27	35.3	22
Gainesville, Ala.	36	22	Dec. 5	46.5	29
Lock No. 4, Demopolis, Ala.	42	18	Dec. 7	57.5	27
Lock No. 3, Whitfield, Ala.	33	16	Dec. 14	55.9	28
Lock No. 2, Pennington, Ala.	46	20	Dec. 8	56.8	28, 30
Lock No. 1, Jackson, Ala.	31	20	Dec. 13	37.8	Dec. 3
Pearl:					
Jackson, Miss.	18	14	1/	29.1	26
Monticello, Miss.	19	19	1/	21.85	26
Columbia, Miss.	17	25	1/	17.4	28
Bogalusa, La.	15	14	1/	19.05	30
Pearl River, La.	12	16	1/	14.9	27
MISSISSIPPI SYSTEM Ohio Basin					
Salt:					
Boston, Ky.	40	19	22	#45.7	21
Taylorsville, Ky.	20	18	19	29.2	19
MISSISSIPPI SYSTEM (Cont'd.) Ohio Basin (Cont'd.)	Ft.			Ft.	
Barren: Bowling Green, Ky.	28	19	21	34.5	20
Rough: Dundee, Ky.	25	15	25	28.8	20
Green:					
Munfordville, Ky.	28	19	23	39.35	21
Lock No. 6, Brownsville, Ky.	28	18	25	44.2	21
Lock No. 4, Woodbury, Ky.	33	18	27	47.6	22
Lock No. 2, Calhoun, Ky.	23	19	1/	31.1	27
White: Edwardsport, Ind.	12	16	22	15.8	20
Skillet Fork: Wayne City, Ill.	15	18	22	17.6	19
Cumberland:					
Williamsburg, Ky.	21	18	21	#24.8	20
Clarksville, Tenn.	46	19	20	47.2	20
Lock F, Eddyville, Ky.	50	19	24	54.6	22
First Creek:					
Knoxville (Fifth Ave.), Tenn.	5	16	18	7.5	18
Knoxville (Mineral Springs), Tenn.	6	16	18	8.9	18
Emory: Oakdale, Tenn.	23	18	19	26.9	19
Elk:					
Fayetteville (W.B.), Tenn.	659	17	22	667.3	18
Fayetteville (G.S.), Tenn.	18	17	22	25.2	18
Duck:					
Shelbyville (W.B.), Tenn.	719	17	20	725.8	19
Shelbyville (G.S.), Tenn.	21	17	20	27.0	19
Columbia, Tenn.	32	19	21	33.5	20
South Chickamauga:					
Chickamauga, Tenn.	10	16	21	15.9	19
Tennessee:					
Florence, Ala.	419	17	28	E425.8	22
Whitesburg, Ala.	560	16	29	571.6	20
Savannah, Tenn.	380	18	28	286.4	21
Ohio:					
Dam No. 52, Brookport, Ill.	37	21	26	39.2	23-24
Dam No. 53, Mound City, Ill.	42	22	26	43.0	24
White Basin					
Black:					
Pocahontas, Ark.	17	18	28	19.4	22
Black Rock, Ark.	14	14	14	20.9	14
Little Red:					
Heber Springs, Ark.	24	14 18	14 19	32.4 33.2	14 18
Judsonia, Ark.	30	14 18	16 21	35.6 37.1	15 20
White:					
Augusta, Ark.	32	20	25	32.6	21
Georgetown, Ark.	21	17	30	24.5	22
Des Arc, Ark.	24	18	30	27.8	23
Clarendon, Ark.	26	17	1/	30.1	25
St. Charles, Ark.	25	21	1/	28.0	29
Arkansas Basin					
Poteau: Poteau, Okla.	24	18	18	#25.0	18
Petit Jean: Danville, Ark.	20	19	19	21.2	18
Red Basin					
Saline: Benton, Ark.	20	14	14	20.6	14
Ouachita:					
Arkadelphia, Ark.	17	13	15	22.75	14
Camden, Ark.	26	15	25	34.6	19
Sulphur:					
Hagansport, Tex.	38	5	17	45.6	9
Naples, Tex.	22	6	24	32.95	9
Cypress: Jefferson, Tex.	18	14 17	15 23	18.05 18.65	14 19
Lower Mississippi Basin					
St. Francis:					
Fisk, Mo.	20	18	26	23.5	21-22

FLOOD STAGE DATA

(All dates in November unless otherwise specified)

River and station	Flood stage	Above flood stages -dates		Crest*	
		From—	To—	Stage	Date
MISSISSIPPI SYSTEM (Cont'd.)	Ft.			Ft.	
Lower Mississippi Basin (Cont'd.)					
St. Francis (Cont'd.):					
St. Francis, Ark.	18	14	1/	18.9	15
				20.6	19
				20.8	24
Parkin, Ark.	28	23	1/	31.2	29-Dec. 1
Coldwater:					
Sarah, Miss.	18	14	14	19.8	14
		18	18	19.7	18
Tallahatchie: Swan Lake, Miss.	26	16	30	29.0	21
Yazoo: Yazoo City, Miss.	29	22	30	31.85	7
Big Black:					
Bovina, Miss.	28	18	1/	38.5	25
Pickens, Miss.	16	14	1/	19.7	20
WEST GULF OF MEXICO DRAINAGE					
Nezpique Bayou: Basile, La.	22	18	20	22.3	19
Calcasieu:					
Oakdale, La.	12	13	15	14.4	14
		20	20	12.1	20
		22	24	12.3	24
Kinder, La.	16	10	20	20.4	17
		23	29	17.9	26
Hecker, La.	8	14	20	11.0	18
		24	29	8.6	28
Old Town Bay, La.	4	13	30	8.1	18
Sabine:					
Mineola, Tex.	14	8	19	18.9	10
Gladewater, Tex.	26	13	26	34.3	15
Quitman, Tex.	16	7	10	18.45	8
Logansport, La.	25	21	1/	29.1	26
WEST GULF OF MEXICO DRAINAGE (Cont'd.)	Ft.			Ft	
Sabine (Cont'd.):					
Bon Wier, Tex.	17	22	1/	19.3	26
Deweyville, Tex.	14	11	1/	15.6	26
Trinity:					
Rosser, Tex.	26	6	9	29.2	8
Trinidad, Tex.	28	7	16	33.6	11
Long Lake, Tex.	40	14	19	#41.2	16
Liberty, Tex.	24	14	1/	#28.0	27
Navidad: Genado, Tex.	21	23	27	27.1	25
Lavaca: Edna, Tex.	21	24	25	22.9	25
Guadalupe: Victoria, Tex.	21	24	28	22.5	28
PACIFIC SLOPE DRAINAGE					
Sacramento:					
Tisdale Weir, Calif.	45.5	15	16	56.1	16

* Provisional
# Highest observed stage
1/ Continued at the end of month
Ā Tentative
E Estimated

RAWINSONDE DATA

Average monthly values

NOVEMBER 1957

ALBANY, N Y. (1006 MB)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	86	2.0	82	231	2.3
1,000	30	131			260	3.7
950	30	546	2.6	68	270	9.3
900	30	984	1.1	67	275	14.6
850	30	1,444	- .2	64	279	19.0
800	30	1,928	- 2.2	61	277	21.0
750	30	2,437	- 4.2	57	272	23.5
700	30	2,981	- 6.3	50	270	26.6
650	30	3,555	- 8.7	40	267	30.9
600	30	4,176	-11.9	37	265	34.6
550	30	4,829	-16.2	40	265	37.7
500	30	5,549	-20.9	39	265	40.2
450	30	6,311	-26.4	37	265	41.8
400	30	7,161	-32.0	37	266	48.4
350	30	8,092	-38 4		263	54.2
300	30	9,139	-44.5		261	62.8
250	30	10,341	-51.3		262	64.1
200	30	11,772	-56.8		265	63.3
175	30	12,617	-57.3		268	59.3
150	28	13,588	-58.3		268	50.5
125	27	14,733	-58.9		267	43.5
100	25	16,137	-59.6		265	39.4
80	24	17,531	-59 8		265	36.9
60	21	19,346	-58.5		265	31 7
50	20	20,494	-58.2		264	30.7
40	17	21,917	-56.7		270	29.1
30	13	23,740	-55.7		277	32.8
25	7	24,901	-54.3			
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ALBUQUERQUE, N. MEX. (838 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	1,619	1.2	71	33	1.7
1,000	30	175				
950	30	595				
900	30	1,041				
850	30	1,505				
800	30	1,994	1.3	61	313	4.3
750	30	2,512	- 1.1	60	302	8.9
700	30	3,060	- 3.9	57	299	12.4
650	30	3,639	- 7.0	50	300	17.1
600	30	4,263	-10.6	43	294	18.7
550	30	4,921	-14.2	37	295	17.7
500	30	5,645	-18.8	32	299	16.3
450	30	6,421	-24.2		303	15.9
400	30	7,273	-30.4		313	17.7
350	30	8,210	-36.9		317	16.7
300	30	9,260	-43.8		305	25.6
250	30	10,469	-49.9			
200	29	11,916	-54.7			
175	29	12,765	-57.4			
150	29	13,732	-60.9			
125	28	14,857	-63.5			
100	28	16,222	-64.3			
80	26	17,596	-64.3			
60	26	19,357	-63.6			
50	26	20,483	-61.1			
40	26	21,874	-59.3			
30	24	23,695	-55.6			
25	19	24,858	-54.6			
20	12	26,296	-53.6			
15						

AMARILLO, TEX. (892 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	1,095	1.9	82	291	2.9
1,000	30	164				
950	30	581				
900	30	1,025				
850	30	1,489	3.3	59	300	7.0
800	30	1,980	2.3	54	298	7.6
750	30	2,497	.0	49	284	10.5
700	30	3,050	- 2.7	45	271	14.0
650	30	3,627	- 5.9	41	268	17.1
600	30	4,257	- 9.2	36	265	22.5
550	30	4,918	-13.4		266	24.3
500	30	5,645	-18.2		265	28.6
450	30	6,415	-23.6		265	32.8
400	30	7,275	-29.8		263	36.5
350	30	8,214	-36.2		257	41.2
300	29	9,260	-43.1		258	50.7
250	29	10,472	-49.4		258	58.3
200	29	11,916	-54.8		262	63.0
175	29	12,766	-57.2		261	57.5
150	28	13,729	-59.9		266	50.7
125	28	14,859	-62.9		260	49.7
100	25	16,230	-64.2		264	35.2
80	20	17,605	-64.0		268	28.2
60	16	19,369	-62.4		263	18.1
50	14	20,495	-60.9		262	15.0
40	11	21,901	-58.8		255	18.3
30	7	23,718	-55.4			
25	5	24,907	-52.3			
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ANCHORAGE, ALASKA (996 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	30	0.4	85	81	0.6
1,000	30	1			164	3.3
950	30	415	1.9	65	152	5.4
900	30	847	.4	64	151	11.3
850	30	1,303	- 2.7	67	149	15.2
800	30	1,781	- 5.8	69	159	18.3
750	30	2,283	- 8.9	69	177	19.4
700	30	2,816	-12.3	66	178	21.0
650	30	3,374	-16.1	66	181	20.6
600	30	3,976	-20.3	65	181	21.4
550	30	4,607	-25.0	62	182	21.4
500	30	5,300	-29.9	60	184	22.9
450	30	6,032	-35.1	59	183	24.1
400	30	6,855	-40.8		185	21.0
350	30	7,753	-46.6		201	20.0
300	30	8,761	-53.0		201	24.3
250	30	9,926	-56.1		215	25.1
200	30	11,349	-54.2		229	24.1
175	29	12,207	-53.1		233	27.2
150	28	13,200	-52.7		242	28.2
125	28	14,377	-52.9		248	25.6
100	27	15,813	-53.0		257	26.0
80	26	17,249	-53.3		259	25.8
60	26	19,098	-54.4		269	29.9
50	26	20,266	-55.0		277	31.7
40	25	21,684	-55.8		288	37.5
30	18	23,542	-56.1		298	40.4
25	7	24,795	-53.5			
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ANNETTE, ALASKA (1010 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	37	5.9	87	141	8.7
1,000	30	118	5.8	85	154	7.6
950	30	537	3.7	84	168	11.7
900	30	974	1.6	82	199	12.4
850	30	1,433	- .9	77	228	10.9
800	30	1,915	- 3.3	72	239	12.4
750	30	2,420	- 6.2	68	239	13.4
700	30	2,961	- 9.3	65	247	14.8
650	30	3,526	-12.7	57	264	15.3
600	30	4,137	-16.7	53	273	17.1
550	30	4,781	-20.9	51	269	18.1
500	30	5,485	-25.3	49	269	19.8
450	30	6,235	-30.8	48	276	25.1
400	30	7,069	-37.0	44	276	27.4
350	30	7,980	-43.6		276	29.5
300	30	9,001	-50.2		285	27.4
250	28	10,187	-56.4			
200	27	11,585	-57.5			
175	26	12,427	-57.2			
150	26	13,404	-56.4			
125	25	14,567	-56.3			
100	24	15,975	-56.4			
80	24	17,390	-56.8			
60	24	19,209	-57.5			
50	24	20,358	-58.1			
40	23	21,755	-58.8			
30	21	23,567	-59.4			
25	19	24,697	-59.8			
20	16	26,134	-59.2			
15	10	27,971	-58.8			

ATHENS, GA. (990 MB)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	29	246	8.4	89	2	1.9
1,000	29	160				
950	29	592	10.7	66	3	4.5
900	29	1,038	9.4	63	277	4.3
850	29	1,511	8.2	55	264	13.4
800	29	2,012	7.0	48	260	17.5
750	29	2,543	4.8	42	262	20.2
700	29	3,101	2.1	41	262	22.0
650	29	3,693	- 1.0	42	270	26.2
600	29	4,332	- 4.5	38	269	30.3
550	29	5,005	- 8.5	33	274	33.0
500	29	5,745	-13.2		275	35.6
450	29	6,533	-18.5		276	41.6
400	29	7,408	-25.0		283	47.4
350	29	8,366	-31.8	37	290	53.0
300	28	9,441	-39.6			
250	28	10,664	-48.7			
200	28	12,102	-56.9			
175	26	12,939	-60.9			
150	25	13,888	-64.1			
125	25	14,995	-67.2			
100	24	16,340	-67.9			
80	24	17,685	-66.4			
60	24	19,449	-61.5			
50	22	20,586	-59.6			
40	21	21,993	-56.5			
30	19	23,832	-53.8			
25	11	25,041	-50.8			
20	5	26,518	-50.7			
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BARROW, ALASKA (1019 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	8	-20.4	77	52	13.8
1,000	30	148	-19.9	75	62	15.2
950	30	531	-17.3	73	73	21.0
900	30	937	-15.5	68	76	20.6
850	30	1,369	-14.9	62	79	19.6
800	30	1,827	-15.7	54	80	16.3
750	30	2,308	-17.7	48	72	12.2
700	30	2,826	-20.3	44	68	9.5
650	30	3,368	-23.4	43	82	5.4
600	30	3,954	-27.0	41	61	7.8
550	30	4,570	-31.0	39	65	1.6
500	30	5,247	-35.5	38	247	6.6
450	30	5,968	-40.5		238	9.1
400	30	6,768	-46.1		248	13.4
350	30	7,646	-51.7		256	16.7
300	30	8,634	-56.7		250	14.8
250	30	9,785	-57.8		249	14.8
200	29	11,199	-55.2		259	14.6
175	28	12,057	-54.6		260	16.3
150	28	13,043	-54.8		254	18.5
125	28	14,208	-55.4		264	17.7
100	27	15,628	-55.6		255	23.1
80	25	17,040	-56.6		262	25.8
60	25	18,856	-58.6		265	34.4
50	25	19,998	-59.8		275	36.1
40	22	21,380	-61.2		273	43.3
30	20	23,185	-61.4		280	49.9
25	20	24,312	-62.2		283	56.2
20	18	25,696	-62.4		285	50.5
15	12	27,567	-63.2			

BARTER IS., ALASKA (1015 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	15	-19.8	71	81	11.1
1,000	30	124	-19.7	73	84	15.2
950	30	507	-17.0	77	98	20.4
900	30	915	-13.6	66	99	16.7
850	30	1,350	-13.0	57	96	13.6
800	30	1,811	-14.3	56	97	9.7
750	30	2,296	-16.3	51	87	7.0
700	30	2,816	-18.6	50	39	2.1
650	30	3,356	-21.5	48	316	3.7
600	30	3,952	-24.9	45	293	8.5
550	30	4,570	-29.0	43	287	14.0
500	30	5,256	-33.7	43	281	20.2
450	30	5,978	-38.6		281	23.7
400	30	6,790	-43.9		278	27.4
350	30	7,675	-49.6		279	32.8
300	30	8,672	-55.0		275	32.8
250	30	9,831	-56.6		277	28.2
200	30	11,254	-54.2		277	26.4
175	29	12,106	-53.6		278	25.1
150	28	13,100	-53.7		276	25.5
125	28	14,272	-54.1		279	24.1
100	27	15,700	-54.8		275	26.0
80	27	17,126	-55.3		277	29.3
60	27	18,954	-57.4		280	34.0
50	23	20,107	-58.5		288	37.7
40	21	21,521	-59.4		290	38.5
30	19	23,323	-60.5		290	45.1
25	12	24,531	-59.2			
20	8	25,942	-59.5			
15	5	27,709	-62.6			

BETHEL, ALASKA (995 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	4	- 3.4	90	63	3.3
1,000	30	40				
950	30	369	- 1.3	80	137	8.2
900	30	798	- 2.6	79	163	9.7
850	30	1,250	- 4.8	76	172	12.0
800	30	1,724	- 7.6	76	170	12.0
750	30	2,225	-10.6	71	169	12.4
700	30	2,752	-13.7	68	166	11.3
650	30	3,310	-17.5	67	157	12.2
600	30	3,907	-21.5	64	170	13.2
550	30	4,542	-25.9	59	169	15.9
500	30	5,228	-31.0	56	173	15.9
450	30	5,965	-36.3	57	166	22.2
400	30	6,776	-42.3		179	24.1
350	30	7,668	-48.0		182	26.4
300	30	8,673	-53.1		182	20.6
250	30	9,844	-53.9		199	20.2
200	30	11,284	-51.8		214	23.5
175	30	12,151	-51.3		227	23.1
150	29	13,156	-51.4		226	18.3
125	29	14,341	-51.2		235	22.5
100	28	15,789	-51.3		240	20.6
80	26	17,254	-51.5		254	18.5
60	25	19,113	-52.1		254	23.9
50	25	20,292	-52.5		266	25.3
40	24	21,735	-52.8		275	27.4
30	19	23,627	-53.8			
25	8	24,802	-54.1			
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BISMARCK, N. DAK. (956 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	505	- 3.3	83	302	2.3
1,000	30	143				
950	30	552			311	4.5
900	30	983	- 1.2	70	311	9.7
850	30	1,438	- 2.1	62	310	12.2
800	30	1,919	- 4.4	61	306	13.6
750	30	2,422	- 7.0	61	302	15.9
700	30	2,961	- 9.8	58	301	17.9
650	30	3,524	-12.9	52	301	19.4
600	30	4,136	-16.4	48	294	17.9
550	30	4,781	-20.4	49	282	15.3
500	30	5,486	-25.1	46	276	17.3
450	30	6,236	-30.3	43	267	19.6
400	30	7,073	-36.7		256	21.0
350	30	7,985	-43.6		250	19.2
300	30	9,005	-50.4		245	20.6
250	30	10,179	-56.0		252	22.9
200	29	11,594	-56.7		256	22.7
175	29	12,442	-55.4		257	23.3
150	29	13,424	-56.0		261	23.9
125	29	14,582	-56.7		265	23.3
100	29	15,995	-57.4		263	23.7
80	29	17,403	-58.0		267	20.6
60	29	19,209	-58.9		271	16.7
50	29	20,352	-59.3		273	15.3
40	29	21,746	-60.0		263	19.0
30	29	23,537	-60.7		279	19.6
25	23	24,685	-60.6		275	18.8
20	19	26,077	-60.3		283	25.6
15	9	27,894	-59.0			

BOISE, IDAHO (921 MB)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	868	- 0.7	77	150	5 6
1,000	30	202				
950	30	619				
900	30	1,051	2.2	62	148	3.3
850	30	1,513	1.1	54	299	2.5
800	30	1,999	- 1.6	55	305	7.8
750	30	2,509	- 4.2	53	306	10.9
700	30	3,052	- 7.0	54	312	11.7
650	30	3,624	- 9.9	50	317	15.3
600	30	4,241	-13.4	46	318	20.2
550	30	4,892	-17.5	42	329	25.5
500	30	5,606	-22.4	35	323	22.0
450	30	6,363	-27.5		315	21.6
400	30	7,211	-33.6		308	29.7
350	30	8,136	-40.0		333	25.5
300	30	9,173	-46.8		316	19.2
250	29	10,376	-52.9			
200	29	11,801	-57.1			
175	28	12,644	-57.7			
150	28	13,616	-58.4			
125	28	14,758	-60.2			
100	27	16,157	-61.2			
80	27	17,544	-60.4			
60	26	19,331	-60.9			
50	25	20,471	-60.2			
40	24	21,870	-59.9			
30	22	23,679	-58.8			
25	17	24,837	-58.3			
20	5	26,257	-57 8			
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BROWNSVILLE, TEX (1015 MB)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	7	16.3	91	1	0.8
1,000	30	132	17.1	84	123	7.2
950	30	570	16.3	79	153	12.8
900	30	1,031	14.9	71	164	11.1
850	30	1,515	14.2	55	166	9.7
800	30	2,027	13.2	45	182	9.7
750	30	2,565	10.7	44	219	9.9
700	30	3,141	8.0	44	235	12.2
650	30	3,740	3.9	44	247	17.9
600	30	4,394	- .6	44	251	20.2
550	30	5,076	- 4.7	36	246	23.7
500	30	5,830	- 9.3		247	29.3
450	30	6,634	-14.8		250	29.9
400	30	7,519	-21.3	32	250	33.6
350	30	8,492	-28.1		252	37.7
300	30	9,580	-36.3		249	41.8
250	30	10,820	-46.1		255	46.4
200	30	12,269	-56.9			
175	30	13,103	-62.8			
150	29	14,037	-68.3			
125	28	15,118	-72.2			
100	24	16,428	-74.1			
80	24	17,726	-73.9			
60	23	19,432	-67.5			
50	23	20,541	-63.5			
40	23	21,928	-58.7			
30	23	23,757	-53.7			
25	16	24,935	-50.4			
20	3	26,384	-47.7			
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BUFFALO, N Y. (993 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	182	4.2	77	245	9.9
1,000	30	124				
950	30	541	3.3	73	245	14.6
900	30	978	1.1	72	250	20.2
850	30	1,436	- 1.0	71	251	22.3
800	30	1,918	- 3.1	67	252	23.3
750	30	2,427	- 5.2	60	251	25.8
700	30	2,967	- 7.6	55	257	28.2
650	30	3,540	-10.0	54	260	31.3
600	30	4,155	-13.5	50	261	33.8
550	30	4,810	-17.7	48	261	36.3
500	30	5,519	-22.5	45	262	37.5
450	30	6,280	-27.7	44	261	41.6
400	30	7,123	-33.2		261	44.1
350	30	8,050	-39.5		265	47.8
300	30	9,091	-45.8		263	49.2
250	30	10,289	-52.0		267	55.0
200	30	11,719	-56.6		263	59.1
175	29	12,561	-56.7		267	57.1
150	26	13,535	-57.1		268	51.7
125	25	14,684	-58.6		265	43.9
100	24	16,084	-59.9		262	38.1
80	23	17,476	-60.6		263	32.4
60	21	19,281	-59.3		265	28.2
50	21	20,422	-59.6		265	25.6
40	20	21,820	-59.2		266	22.2
30	15	23,652	-57.9		265	23.1
25	13	24,838	-57.6		262	26.0
20	11	26,259	-56.1		266	28.8
15	9	28,104	-55.1			

BURRWOOD, LA. (1017 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	28	3	17.4	87	89	3.3
1,000	28	147	18.3	83	100	3.3
950	28	586	16.6	78	169	4.7
900	28	1,046	14.9	70	211	7.0
850	28	1,529	12.8	66	223	9.1
800	28	2,037	10.9	59	238	12.4
750	28	2,573	9.1	51	244	17.3
700	28	3,143	6.5	44	247	20.8
650	28	3,742	3.0	46	251	24.5
600	28	4,392	- 1.0	43	254	26.2
550	28	5,073	- 5.2	33	258	27.6
500	28	5,822	-10.3	34	255	31.3
450	28	6,622	-15.7	37	259	34.8
400	28	7,504	-21.9		261	41.4
350	28	8,474	-28.9	35	269	45.3
300	28	9,558	-37.3		271	50.9
250	28	10,793	-46.6		275	56.7
200	27	12,238	-57.2		269	73.3
175	27	13,073	-62.1			
150	26	14,015	-66.7			
125	26	15,107	-70.0			
100	25	16,430	-71.6			
80	24	17,751	-70.7			
60	24	19,481	-64.8			
50	22	20,602	-61.2			
40	22	22,000	-57.6			
30	22	23,837	-53.4			
25	19	25,017	-50.9			
20	11	26,495	-47.0			
15						

CAPE HATTERAS, N. C. (1018 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	4	13.4	83	334	2.7
1,000	30	152	13.8	76	321	2.9
950	30	579	11.6	71	297	4.3
900	30	1,035	9.5	64	257	7.8
850	30	1,508	7.5	58	256	12.8
800	30	2,006	5.5	58	255	17.3
750	30	2,531	3.9	47	255	21.0
700	30	3,091	1.3	45	257	23.3
650	30	3,679	- 1.5	38	259	26.2
600	30	4,319	- 4.7		261	31.3
550	30	4,988	- 9.0		259	33.6
500	30	5,730	-13.8	37	261	37.3
450	30	6,515	-19.2		260	39.8
400	30	7,390	-25.3		261	43.9
350	30	8,345	-32.6		264	47.2
300	30	9,415	-40.2		265	52.8
250	30	10,638	-48.4		266	57.5
200	30	12,081	-56.3		268	60.8
175	29	12,925	-60.0		268	61.0
150	27	13,881	-62.9		268	54.6
125	27	14,997	-65.7		268	46.2
100	27	16,348	-66.7		264	39.1
80	27	17,703	-65.1		266	27.4
60	26	19,475	-61.3		265	18.8
50	26	20,612	-58.8		264	14.2
40	26	22,022	-56.1		268	15.9
30	24	23,864	-53.0		273	16.5
25	19	25,038	-51.3		275	22.3
20	12	26,509	-49.7			
15						

These average values for standard pressure surfaces were obtained by rawinsondes, dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

RAWINSONDE DATA

Average monthly values

NOVEMBER 1957

Standard pressure surface (mb.)	1/ CARIBOU, ME. (991 MB.)					
					Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	30	191	0.3	87	245	2.5
1,000--	30	120				
950----	30	530	- .3	80	248	5.8
900----	30	963	- 1.8	81	278	13.0
850----	30	1,418	- 2.7	83	279	14.6
800----	30	1,897	- 4.6	78	276	15.7
750----	30	2,406	- 6.8	74	274	16.7
700----	30	2,941	- 9.1	68	270	22.2
650----	30	3,510	-11.8	61	267	26.2
600----	30	4,122	-15.0	53	266	31.9
550----	30	4,773	-19.0	47	266	34.8
500----	30	5,480	-23.3	47	267	40.4
450----	30	6,240	-28.6	44	267	44.7
400----	30	7,080	-34.0	43	266	48.0
350----	29	8,010	-40.5		270	53.4
300----	29	9,045	-47.2		268	61.8
250----	29	10,239	-52.0		269	65.9
200----	28	11,671	-55.4		272	63.5
175----	27	12,518	-56.5		271	62.6
150----	25	13,506	-56.5		267	56.3
125----	25	14,661	-56.9		270	49.4
100----	24	16,075	-57.8		269	43.3
80-----	24	17,480	-58.2		270	35.2
60-----	24	19,291	-58.9		268	30.3
50-----	24	20,435	-59.1		274	28.8
40-----	23	21,829	-59.6		271	33.8
30-----	23	23,627	-60.3		274	30.9
25-----	20	24,759	-60.8		272	37.3
20-----	19	26,150	-60.4		271	42.4
15-----	19	27,991	-59.9		271	53.2

Standard pressure surface (mb.)	CHARLESTON, S. C. (1018 MB.)					
					Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	30	13	10.9	90	298	1.2
1,000--	30	160	13.7	78	315	.6
950----	30	592	13.7	68	233	4.3
900----	30	1,048	11.9	63	240	10.7
850----	30	1,525	9.8	62	244	14.6
800----	30	2,028	8.3	53	252	17.7
750----	30	2,559	5.8	49	255	20.8
700----	30	3,122	3.2	46	257	23.7
650----	30	3,717	.1	40	257	27.2
600----	30	4,358	- 3.2		257	32.4
550----	30	5,035	- 7.4		261	36.5
500----	30	5,778	-12.1		260	40.6
450----	30	6,570	-17.6		261	44.9
400----	30	7,449	-24.0		265	48.2
350----	30	8,410	-31.0		267	55.8
300----	30	9,486	-38.8		270	63.1
250----	30	10,714	-47.7		273	67.4
200----	30	12,158	-56.5		273	68.8
175----	30	12,997	-60.8		272	71.7
150----	30	13,946	-65.0		273	69.6
125----	29	15,048	-67.7		270	58.7
100----	29	16,387	-69.1		269	43.3
80-----	29	17,723	-68.2		264	32.6
60-----	29	19,476	-62.7		269	16.7
50-----	29	20,608	-59.8		263	14.4
40-----	29	22,016	-55.9		267	10.5
30-----	28	23,865	-52.2		278	9.9
25-----	20	25,054	-49.9		265	11.3
20-----	6	26,517	-47.3			
15-----						

Standard pressure surface (mb.)	COLD BAY, ALASKA (990 MB)					
					Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	30	27	3.2	86	218	4.1
1,000--	30	56				
950----	30	361	2.3	81	229	5.4
900----	30	795	- .7	81	236	6.8
850----	30	1,250	- 3.5	77	237	8.0
800----	30	1,727	- 6.4	70	230	8.5
750----	30	2,227	- 9.5	67	236	9.5
700----	30	2,758	-12.6	60	218	7.2
650----	30	3,313	-16.3	56	210	9.1
600----	30	3,918	-20.4	56	227	13.0
550----	30	4,550	-24.9	55	223	13.2
500----	30	5,242	-29.8	51	208	15.7
450----	30	5,978	-35.4	48	214	12.0
400----	30	6,795	-41.4		198	13.4
350----	30	7,690	-46.9		190	20.8
300----	30	8,701	-51.2		193	17.9
250----	30	9,882	-51.9		211	15.0
200----	30	11,335	-50.0		230	20.6
175----	30	12,210	-49.5		240	18.8
150----	30	13,219	-50.0		233	21.2
125----	29	14,406	-49.9		240	12.2
100----	29	15,865	-50.2		238	24.3
80-----	29	17,323	-50.4		254	24.1
60-----	27	19,217	-50.5		252	20.8
50-----	27	20,406	-50.7		256	19.2
40-----	23	21,878	-50.9		266	16.3
30-----	15	23,817	-49.2			
25-----	10	25,025	-50.0			
20-----						
15-----						

Standard pressure surface (mb.)	COLUMBIA, MO. (989 MB.)					
					Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	30	238	2.6	82	230	3.3
1,000--	30	146				
950----	30	564	3.4	70	254	8.5
900----	30	1,001	3.2	63	277	13.8
850----	30	1,464	2.0	58	278	17.3
800----	30	1,952	.1	53	274	18.7
750----	30	2,465	- 2.1	48	275	21.2
700----	30	3,013	- 4.8	46	274	23.5
650----	30	3,587	- 7.7	39	271	26.6
600----	30	4,212	-11.0	36	267	32.1
550----	30	4,870	-14.8		263	35.2
500----	30	5,592	-19.2		264	35.2
450----	30	6,359	-24.7		262	42.6
400----	30	7,216	-31.1		261	47.0
350----	30	8,150	-37.6		263	50.3
300----	30	9,198	-44.7		259	59.5
250----	30	10,402	-50.7		257	63.0
200----	30	11,837	-56.1		260	71.9
175----	30	12,682	-57.5		261	70.5
150----	30	13,653	-58.9		263	63.1
125----	29	14,798	-61.1		263	53.0
100----	29	16,181	-61.8		263	40.0
80-----	29	17,562	-62.2		263	31.1
60-----	29	19,347	-61.0		267	23.5
50-----	26	20,485	-60.1		265	19.8
40-----	24	21,882	-58.6		267	18.3
30-----	17	23,688	-56.9		272	27.0
25-----	14	24,850	-55.3		272	34.4
20-----	7	26,261	-55.4			
15-----						

Standard pressure surface (mb.)	DAYTON, OHIO (983 MB.)					
					Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	30	297	2.6	77	206	3.5
1,000--	30	155				
950----	30	569	3.4	71	231	10.5
900----	30	1,011	2.0	65	246	15.9
850----	30	1,472	.8	61	247	19.0
800----	30	1,958	- .5	56	254	22.9
750----	30	2,467	- 3.0	52	259	25.3
700----	30	3,017	- 5.5	48	261	27.8
650----	30	3,586	- 8.0		260	31.1
600----	30	4,214	-11.3		259	35.0
550----	30	4,870	-15.2		261	39.1
500----	30	5,592	-19.7		262	41.8
450----	30	6,359	-24.8		260	49.5
400----	30	7,214	-30.7		260	57.5
350----	30	8,149	-37.2		257	63.3
300----	30	9,199	-44.3		256	70.1
250----	30	10,403	-51.0		256	78.5
200----	29	11,832	-56.4		257	80.8
175----	29	12,676	-58.4		260	77.3
150----	29	13,645	-59.0		262	69.6
125----	28	14,785	-60.5		263	56.3
100----	26	16,161	-62.1		263	41.6
80-----	23	17,540	-61.4		260	31.9
60-----	23	19,328	-60.7		267	27.2
50-----	22	20,468	-59.7		264	23.5
40-----	20	21,864	-58.2		260	24.5
30-----	18	23,685	-56.5		265	26.4
25-----	11	24,869	-55.6			
20-----						
15-----						

Standard pressure surface (mb.)	DENVER, COLO. (837 MB.)					
					Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	30	1,611	- 2.3	76	202	1.9
1,000--	30	180				
950----	30	597				
900----	30	1,033				
850----	30	1,491				
800----	30	1,978	.2	54	301	2.7
750----	30	2,489	- 2.3	52	307	6.8
700----	30	3,038	- 5.4	52	310	11.5
650----	30	3,613	- 8.9	52	307	15.3
600----	30	4,232	-12.7	48	304	18.1
550----	30	4,887	-17.0	43	301	20.8
500----	30	5,600	-22.0	42	302	22.0
450----	30	6,361	-27.7	41	299	24.7
400----	30	7,205	-33.8		297	28.0
350----	30	8,129	-40.5		296	31.7
300----	30	9,164	-47.3		291	37.1
250----	30	10,356	-52.2		290	43.1
200----	30	11,789	-55.4		284	45.3
175----	30	12,639	-56.2		285	47.6
150----	30	13,616	-57.6		281	45.9
125----	30	14,764	-59.4		281	38.1
100----	29	16,160	-60.7		283	30.3
80-----	28	17,549	-61.3		279	24.3
60-----	28	19,336	-61.2		276	15.2
50-----	28	20,470	-60.5		281	13.8
40-----	27	21,867	-59.0		277	15.5
30-----	23	23,679	-57.8		276	19.8
25-----	15	24,832	-56.5		282	23.5
20-----	8	26,251	-56.0			
15-----						

Standard pressure surface (mb.)	DODGE CITY, KANS (926 MB.)					
					Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	30	792	1.0	85	308	4.3
1,000--	30	164				
950----	30	584				
900----	30	1,018	3.7	68	319	8.7
850----	30	1,481	2.4	60	313	10.9
800----	30	1,971	1.4	51	300	13.4
750----	30	2,488	- 1.0	47	290	15.5
700----	30	3,036	- 3.9	46	287	17.5
650----	30	3,614	- 7.0	41	277	20.8
600----	30	4,238	-10.9	41	267	22.9
550----	30	4,897	-14.9	38	263	26.4
500----	30	5,617	-19.7		268	29.3
450----	30	6,383	-24.9		271	34.8
400----	30	7,239	-31.4		264	36.1
350----	30	8,171	-38.0		259	38.3
300----	29	9,227	-45.0		262	39.1
250----	29	10,429	-51.0		270	34.2
200----	29	11,867	-55.2		263	43.9
175----	29	12,716	-57.0		261	39.2
150----	29	13,688	-58.8			
125----	28	14,828	-60.9			
100----	28	16,211	-61.9			
80-----	28	17,592	-61.8			
60-----	27	19,376	-61.2			
50-----	26	20,510	-60.1			
40-----	24	21,912	-58.5			
30-----	20	23,735	-56.0			
25-----	12	24,889	-55.7			
20-----						
15-----						

Standard pressure surface (mb.)	EL PASO, TEX. (882 MB.)					
					Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	30	1,197	5.3	71	356	1.9
1,000--	30	157				
950----	30	585				
900----	30	1,034				
850----	30	1,504	7.5	53	317	3.1
800----	30	2,001	5.5	50	283	8.0
750----	30	2,527	3.4	51	275	12.2
700----	30	3,084	.3	47	268	16.1
650----	30	3,672	- 3.0		260	19.8
600----	30	4,306	- 6.1		259	22.3
550----	30	4,977	- 9.9		260	25.1
500----	30	5,712	-14.7		268	24.1
450----	30	6,496	-20.3		270	18.7
400----	30	7,365	-26.7		259	27.6
350----	30	8,316	-33.4		263	29.3
300----	30	9,384	-40.2			
250----	29	10,617	-47.7			
200----	29	12,065	-55.2			
175----	29	12,910	-58.9			
150----	29	13,869	-62.8			
125----	29	14,982	-66.5			
100----	28	16,332	-67.9			
80-----	24	17,668	-67.4			
60-----	22	19,410	-64.2			
50-----	22	20,534	-61.6			
40-----	19	21,932	-58.6			
30-----	19	23,756	-55.5			
25-----	16	24,921	-53.7			
20-----	10	26,367	-51.5			
15-----						

Standard pressure surface (mb.)	ELY, NEV (810 MB.)					
					Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	30	1,908	- 6.5	83	182	3.1
1,000--	30	225				
950----	30	641				
900----	30	1,071				
850----	30	1,525				
800----	30	2,003	- 3.2	72	182	2.1
750----	30	2,518	- 2.4	58	340	2.7
700----	30	3,062	- 4.9	52	324	9.1
650----	30	3,639	- 7.4	50	324	13.0
600----	30	4,262	-11.2	47	311	17.3
550----	30	4,924	-15.1	43	311	22.5
500----	30	5,639	-19.7	43	307	19.6
450----	29	6,406	-25.1	38	306	19.0
400----	29	7,258	-31.3	36	305	15.3
350----	29	8,190	-38.5		301	12.6
300----	29	9,235	-45.0		277	18.8
250----	29	10,438	-50.8		277	19.6
200----	29	11,875	-55.0		270	20.6
175----	28	12,732	-57.5		253	24.5
150----	28	13,702	-59.4			
125----	28	14,838	-61.4			
100----	28	16,220	-62.4			
80-----	28	17,598	-62.3			
60-----	28	19,378	-61.2			
50-----	26	20,506	-61.0			
40-----	26	21,897	-59.8			
30-----	23	23,711	-57.6			
25-----	17	24,862	-56.1			
20-----	10	26,309	-55.0			
15-----						

Standard pressure surface (mb.)	FAIRBANKS, ALASKA (988 MB.)					
					Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	30	135	- 9.3	74	16	2.5
1,000--	30	38				
950----	30	441	- 5.1	65	84	6.6
900----	30	864	- 4.4	65	123	8.7
850----	30	1,314	- 4.9	63	140	8.2
800----	30	1,789	- 6.6	62	170	7.6
750----	30	2,289	- 9.4	59	195	10.3
700----	30	2,821	-12.6	56	209	12.2
650----	30	3,378	-16.4	54	218	14.0
600----	30	3,979	-20.8	56	225	15.2
550----	30	4,611	-25.4	56	226	16.1
500----	30	5,301	-30.3	56	231	17.9
450----	30	6,036	-36.0	61	230	16.9
400----	30	6,849	-42.2		225	16.3
350----	30	7,739	-48.9		227	21.4
300----	30	8,736	-55.9		224	15.9
250----	30	9,884	-59.4		228	15.0
200----	28	11,285	-56.4		234	17.7
175----	27	12,133	-54.9		238	21.2
150----	27	13,118	-54.9		245	20.8
125----	25	14,293	-54.8		242	16.9
100----	25	15,722	-54.9		253	20.4
80-----	25	17,149	-55.5		261	28.8
60-----	22	18,983	-56.6		259	32.3
50-----	22	20,138	-57.5		264	32.6
40-----	20	21,571	-57.8			
30-----	15	23,360	-59.4			
25-----	13	24,572	-59.8			
20-----	7	26,063	-58.5			
15-----	5	27,906	-59.3			

Standard pressure surface (mb.)	FLINT, MICH. (986 MB.)					
					Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	30	234	1.9	84	217	4.7
1,000--	30	123				
950----	30	537	2.0	77	239	10.1
900----	30	973	.4	69	249	16.1
850----	30	1,430	- 1.3	67	256	19.2
800----	30	1,912	- 2.6	63	254	20.4
750----	30	2,423	- 4.6	56	256	23.7
700----	30	2,964	- 7.1	50	257	27.0
650----	30	3,536	- 9.9	45	256	29.1
600----	30	4,153	-13.2	42	258	30.7
550----	30	4,807	-17.1	41	259	32.6
500----	30	5,520	-21.7	38	262	36.9
450----	30	6,284	-27.0	38	261	41.4
400----	30	7,129	-33.2		264	45.3
350----	30	8,056	-39.3		262	51.9
300----	29	9,092	-45.7		261	53.2
250----	29	10,291	-51.7		258	63.3
200----	28	11,719	-55.4		254	60.2
175----	27	12,573	-55.7		256	62.4
150----	27	13,554	-56.1		260	51.7
125----	24	14,708	-57.4		262	46.6
100----	23	16,121	-58.5		261	41.4
80-----	23	17,520	-59.5		261	33.4
60-----	22	19,316	-59.1		262	30.5
50-----	20	20,465	-59.4		264	25.3
40-----	18	21,877	-58.0		266	24.5
30-----	11	23,692	-56.0			
25-----	7	24,900	-54.8			
20-----						
15-----						

Standard pressure surface (mb.)	FORT WORTH, TEX (997 MB.)					
					Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	29	180	8.2	87	348	1.7
1,000--	29	153			17	5.1
950----	29	577	9.1	71	237	1.9
900----	29	1,026	8.9	64	236	4.9
850----	29	1,499	7.7	63	251	7.2
800----	29	1,998	5.6	60	262	9.9
750----	29	2,522	3.6	52	261	15.0
700----	29	3,082	1.1	50	255	20.8
650----	29	3,672	- 2.0	49	251	25.3
600----	29	4,308	- 5.7	45	252	29.1
550----	28	4,984	- 9.9	40	253	37.9
500----	28	5,718	-15.0		253	42.4
450----	28	6,501	-20.3		253	49.4
400----	28	7,370	-26.5		253	53.6
350----	28	8,321	-33.7		252	61.2
300----	28	9,385	-40.9		254	69.0
250----	28	10,604	-48.5		256	79.7
200----	28	12,045	-56.6		257	78.5
175----	27	12,890	-60.4		256	73.6
150----	27	13,844	-63.3		255	71.3
125----	27	14,957	-66.5		257	61.0
100----	26	16,297	-67.9		256	48.8
80-----	26	17,642	-66.4		255	34.8
60-----	24	19,394	-63.5		258	22.0
50-----	24	20,520	-61.4		258	16.9
40-----	21	21,917	-58.5		257	15.3
30-----	19	23,736	-55.6		260	17.9
25-----	15	24,908	-53.8		261	19.6
20-----	11	26,353	-51.1			
15-----	5	28,232	-49.0			

Standard pressure surface (mb.)	GLASGOW, MONT. (934 MB.)					
					Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	30	696	- 2.6	84	294	0.8
1,000--	30	147				
950----	30	558				
900----	30	989	.1	71	284	10.5
850----	30	1,446	- 1.0	62	296	18.3
800----	30	1,929	- 2.9	58	301	19.0
750----	30	2,434	- 5.9	56	301	18.7
700----	30	2,975	- 9.1	52	301	18.3
650----	30	3,538	-12.6	51	301	18.5
600----	30	4,151	-16.4	50	303	19.2
550----	30	4,797	-20.7	50	303	19.6
500----	30	5,499	-25.5	48	305	18.3
450----	30	6,248	-30.7	45	289	20.6
400----	30	7,082	-36.7		286	17.7
350----	30	7,994	-43.5		287	19.8
300----	30	9,014	-50.7		275	16.7
250----	30	10,187	-55.7		282	17.3
200----	30	11,604	-56.9		283	21.4
175----	30	12,451	-56.3		287	17.1
150----	30	13,431	-56.2		276	18.7
125----	30	14,589	-56.3		274	19.6
100----	29	16,002	-57.0		276	17.7
80-----	29	17,413	-57.4		279	17.3
60-----	28	19,230	-58.3		288	15.2
50-----	27	20,375	-58.9		285	13.8
40-----	21	21,778	-58.9			
30-----	17	23,596	-59.1			
25-----	14	24,775	-58.8			
20-----	5	26,194	-60.6			
15-----						

Standard pressure surface (mb.)	GRAND JUNCTION, COLO (854 MB)					
					Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	30	1,474	- 0.1	77	116	5.1
1,000--	30	187				
950----	30	601				
900----	30	1,042				
850----	30	1,507			118	5.2
800----	30	1,994	- .6	61	145	4.3
750----	30	2,507	- 3.2	62	213	2.5
700----	30	3,051	- 6.2	62	267	6.8
650----	30	3,625	- 9.1	56	284	9.9
600----	30	4,243	-12.8	50	296	14.6
550----	30	4,896	-17.1	44	293	18.7
500----	30	5,611	-21.8	43	291	20.3
450----	30	6,371	-27.0	39	284	21.2
400----	30	7,219	-32.8		287	23.3
350----	30	8,146	-39.5		286	23.5
300----	30	9,186	-46.5		285	30.1
250----	30	10,379	-52.5		284	29.9
200----	30	11,809	-55.6			
175----	29	12,661	-56.6			
150----	29	13,635	-58.4			
125----	29	14,775	-60.7			
100----	29	16,158	-62.2			
80-----	29	17,540	-61.9			
60-----	29	19,324	-61.3			
50-----	29	20,459	-60.6			
40-----	27	21,852	-60.0			
30-----	20	23,661	-57.9			
25-----	12	24,796	-57.1			
20-----						
15-----						

Standard pressure surface (mb.)	GREAT FALLS, MONT. (887 MB.)					
					Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	30	1,123	0.3	65	227	13.6
1,000--	30	153				
950----	30	569				
900----	30	1,009				
850----	30	1,467	.4	52	253	20.0
800----	30	1,951	- 2.4	51	276	17.1
750----	30	2,459	- 5.5	51	290	19.0
700----	30	3,000	- 8.3	48	300	20.8
650----	30	3,565	-11.7	46	302	21.0
600----	30	4,180	-15.4	45	308	22.5
550----	30	4,826	-19.5	42	313	24.1
500----	30	5,535	-24.4	43	316	23.7
450----	30	6,285	-29.9	40	312	28.0
400----	30	7,124	-36.2		309	29.9
350----	30	8,038	-43.0		311	32.4
300----	30	9,061	-49.9		309	36.7
250----	30	10,238	-55.1		311	36.5
200----	30	11,655	-57.3		308	36.5
175----	30	12,499	-57.0		306	37.5
150----	30	13,477	-56.2		305	36.7
125----	30	14,633	-57.5		303	30.7
100----	29	16,038	-57.8		301	28.6
80-----	29	17,444	-58.1		297	23.7
60-----	29	19,252	-58.9		299	23.5
50-----	27	20,395	-58.9		294	16.7
40-----	26	21,797	-59.7		296	15.2
30-----	22	23,609	-59.1		298	18.5
25-----	18	24,758	[illegible]		293	18.3
20-----	10	26,152	-58.9			
15-----						

These average values for standard pressure surfaces were obtained by rawinsondes, dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

1/ 10 mb., 13 obs , 30,514 m., -57.2 C.

RAWINSONDE DATA

Average monthly values

NOVEMBER 1957

GREEN BAY, WIS. (987 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	210	0.5	83	280	4.5
1,000	30	104				
950	30	516	- .4	76	272	10.5
900	30	947	- 2.0	74	266	12.4
850	30	1,401	- 3.1	72	266	14.8
800	30	1,880	- 4.3	66	266	16.5
750	30	2,387	- 5.8	60	270	19.2
700	30	2,926	- 8.2	57	266	20.6
650	30	3,494	-11.2	54	269	22.7
600	30	4,109	-14.6	52	267	26.6
550	30	4,757	-18.7	48	255	25.3
500	30	5,467	-23.5	44	248	30.5
450	30	6,223	-29.0	44	248	29.3
400	30	7,061	-34.9	40	241	34.0
350	30	7,980	-41.3		231	33.8
300	30	9,013	-47.3		246	29.5
250	30	10,202	-53.1		254	33.8
200	30	11,628	-56.0		257	36.5
175	30	12,477	-56.1			
150	30	13,457	-56.4			
125	30	14,614	-57.0			
100	30	16,021	-58.4			
80	29	17,429	-58.8			
60	29	19,236	-59.1			
50	28	20,376	-59.3			
40	26	21,778	-58.9			
30	20	23,605	-57.9			
25	15	24,767	-56.5			
20						
15						

GREENSBORO, N. C. (988 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	273	6.8	88	272	1.0
1,000	30	168				
950	30	592	9.4	66	274	3.9
900	30	1,040	7.8	63	285	5.4
850	30	1,511	6.5	58	268	10.7
800	30	2,007	4.9	51	259	16.1
750	30	2,529	2.9	50	259	20.6
700	29	3,091	.3	51	260	23.3
650	29	3,678	- 2.4	44	268	27.8
600	29	4,315	- 5.7	39	270	30.1
550	29	4,987	- 9.6	38	268	30.3
500	29	5,723	-14.5		271	31.9
450	29	6,508	-19.9	38	275	34.6
400	29	7,379	-25.9	38	280	35.4
350	29	8,332	-33.0		280	34.0
300	29	9,399	-40.8		276	44.1
250	29	10,619	-48.7			
200	29	12,060	-56.3			
175	29	12,902	-59.5			
150	29	13,861	-61.8			
125	29	14,985	-63.7			
100	28	16,351	-65.4			
80	26	17,715	-63.8			
60	26	19,496	-60.2			
50	24	20,634	-58.9			
40	23	22,042	-56.7			
30	21	23,872	-54.2			
25	13	25,053	-52.7			
20	7	26,521	-51.7			
15						

INTERNAT. FALLS, MINN. (969 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	360	- 3.6	74	278	3.7
1,000	30	108				
950	30	513	- 4.3	74	290	5.1
900	30	940	- 5.6	75	306	11.1
850	30	1,387	- 6.5	67	313	13.0
800	30	1,861	- 7.3	63	312	16.3
750	30	2,363	- 9.0	54	310	19.4
700	30	2,894	-11.4	50	302	21.4
650	30	3,455	-14.0	48	296	23.5
600	30	4,064	-17.5	44	296	24.7
550	30	4,703	-21.4	42	292	26.6
500	30	5,408	-26.0	41	288	27.6
450	30	6,159	-31.1	44	286	31.1
400	30	6,990	-36.9		283	32.8
350	30	7,903	-43.2		281	37.3
300	30	8,925	-50.3		278	38.9
250	30	10,099	-55.8		276	40.8
200	30	11,517	-55.7		275	39.6
175	30	12,368	-55.1		275	39.2
150	30	13,353	-55.2		272	39.1
125	29	14,507	-55.4		277	36.9
100	26	15,932	-56.4		274	33.0
80	25	17,349	-57.1		276	29.5
60	25	19,165	-58.4		276	26.8
50	24	20,300	-59.0		280	26.0
40	23	21,696	-60.0		280	27.0
30	15	23,512	-60.3		276	26.8
25	9	24,635	-61.2			
20	5	25,984	-62.7			
15						

JACKSON, MISS. (1007 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	101	10.6	86	20	0.6
1,000	30	160	10.4	81	70	2.1
950	30	591	10.7	72	214	4.5
900	30	1,040	9.9	67	242	7.8
850	30	1,515	8.5	64	255	11.3
800	30	2,015	6.2	60	251	15.5
750	30	2,541	3.9	56	253	19.8
700	30	3,102	1.8	46	254	24.3
650	30	3,694	- 1.0	46	253	29.1
600	30	4,332	- 4.3	43	255	33.8
550	30	5,007	- 8.4		257	38.9
500	30	5,747	-13.1	40	254	43.1
450	30	6,535	-18.3		254	48.6
400	30	7,413	-24.3		253	56.3
350	30	8,373	-31.1		253	63.0
300	30	9,449	-38.8		253	68.6
250	30	10,678	-47.5		257	75.0
200	30	12,124	-56.1		261	76.2
175	30	12,964	-60.4		260	76.7
150	30	13,915	-64.8		257	70.9
125	30	15,018	-68.5		259	58.9
100	30	16,352	-69.7		261	47.8
80	28	17,688	-68.5		257	29.1
60	28	19,435	-63.3		259	18.7
50	28	20,565	-60.1		277	9.3
40	26	21,971	-57.0		256	11.9
30	22	23,811	-52.9		248	14.4
25	19	25,001	-50.9			
20	12	26,491	-48.0			
15	5	28,407	-44.6			

JACKSONVILLE, FLA. (1019 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	6	14.4	92	319	1.9
1,000	30	168	16.3	83	319	1.0
950	30	602	15.8	75	179	3.9
900	30	1,064	13.6	71	218	6.6
850	30	1,545	11.9	63	236	9.7
800	30	2,051	9.8	53	246	13.0
750	30	2,579	7.8	47	250	17.1
700	30	3,152	5.0	45	257	19.6
650	30	3,746	2.1	39	258	21.8
600	30	4,396	- 1.4	40	260	27.8
550	30	5,074	- 5.5		261	30.9
500	30	5,827	-10.3	35	260	32.8
450	30	6,622	-15.8	36	263	38.5
400	30	7,509	-22.2	38	264	43.5
350	30	8,477	-29.2	39	268	48.8
300	30	9,561	-37.1	39	268	56.7
250	30	10,797	-46.6		270	63.1
200	29	12,246	-56.7		268	67.8
175	29	13,082	-61.6		269	70.3
150	29	14,028	-65.6		268	68.0
125	29	15,126	-69.7		268	61.2
100	29	16,450	-71.6		266	50.5
80	28	17,773	-70.9		261	39.1
60	27	19,502	-65.4		258	22.7
50	25	20,622	-62.0		259	8.7
40	25	22,017	-58.3		248	7.0
30	22	23,849	-54.2		263	4.9
25	21	25,030	-51.8		263	7.2
20	7	26,470	-49.9			
15						

KING SALMON, ALASKA (995 MB.)[1]

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	15	1.1	86	126	5.1
1,000	30	29				
950	30	386	1.8	81	158	9.9
900	30	820	- .7	80	168	13.2
850	30	1,275	- 3.7	81	174	15.3
800	30	1,752	- 6.2	77	180	15.0
750	30	2,253	- 9.2	68	185	13.8
700	30	2,785	-12.5	63	188	14.8
650	30	3,343	-16.4	58	183	15.7
600	30	3,945	-20.2	56	185	17.9
550	30	4,579	-24.9	55	187	20.2
500	30	5,271	-30.1	57	183	20.8
450	30	6,007	-35.5	61	182	21.8
400	30	6,825	-41.4		186	25.8
350	30	7,720	-47.6		190	27.4
300	29	8,734	-52.3		193	31.1
250	29	9,909	-53.5		204	28.8
200	29	11,350	-51.8		217	27.4
175	29	12,218	-50.7		223	27.4
150	28	13,218	-50.7		223	26.0
125	27	14,407	-50.4		231	24.3
100	27	15,862	-50.4		235	24.9
80	27	17,316	-51.1		246	25.5
60	27	19,189	-50.9		256	25.3
50	26	20,372	-52.0		254	27.6
40	26	21,817	-52.9		266	29.7
30	25	23,674	-52.8		275	35.4
25	24	24,859	-52.4		282	38.3
20	21	26,303	-53.8		285	42.7
15	19	28,115	-54.8		286	54.4

KOTZEBUE, ALASKA (1004 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	5	- 8.4	77	69	8.5
1,000	30	35			64	8.7
950	30	434	- 7.3	64	93	13.0
900	30	856	- 7.7	65	99	12.6
850	30	1,300	- 9.1	67	105	11.3
800	30	1,768	-10.9	68	120	12.2
750	30	2,263	-12.7	64	133	9.1
700	30	2,787	-15.3	57	152	8.5
650	30	3,343	-18.8	52	156	8.7
600	30	3,937	-22.8	50	156	9.3
550	30	4,565	-27.2	49	168	9.5
500	29	5,251	-32.1	49	181	10.1
450	29	5,983	-37.7	50	175	11.7
400	29	6,790	-43.8		185	14.8
350	29	7,676	-50.1		192	18.8
300	29	8,669	-55.8		202	21.2
250	29	9,824	-57.4		204	16.9
200	27	11,243	-54.7		220	14.0
175	27	12,099	-54.0		222	15.7
150	26	13,090	-53.9		224	18.1
125	25	14,260	-54.1		225	14.8
100	24	15,690	-54.1		234	19.2
80	23	17,113	-55.0		241	22.2
60	23	18,947	-56.2		243	28.0
50	23	20,103	-57.2		245	32.4
40	22	21,524	-57.8		261	37.1
30	18	23,435	-56.4		263	40.0
25	15	24,575	-57.1		274	42.4
20	6	26,039	-58.3			
15						

LAKE CHARLES, LA. (1017 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	5	13.8	87	68	2.1
1,000	30	146	14.4	82	109	4.1
950	30	582	13.4	77	180	6.0
900	30	1,034	12.5	72	221	6.2
850	30	1,513	10.6	66	245	7.8
800	30	2,017	8.4	60	249	9.1
750	30	2,548	6.0	51	262	15.2
700	30	3,111	4.0	45	261	19.8
650	30	3,705	1.0	43	255	25.3
600	30	4,350	- 3.2		258	31.1
550	30	5,028	- 7.5		264	27.4
500	30	5,769	-11.9		269	34.2
450	30	6,560	-17.3		264	35.4
400	30	7,441	-23.5		263	40.2
350	30	8,404	-30.4			
300	30	9,482	-38.4			
250	29	10,711	-47.4			
200	29	12,157	-56.2			
175	28	12,994	-60.7			
150	28	13,943	-65.3			
125	28	15,043	-68.2			
100	27	16,376	-70.1			
80	26	17,695	-69.0			
60	25	19,436	-63.5			
50	25	20,566	-60.0			
40	25	21,971	-56.6			
30	23	23,826	-52.0			
25	18	25,005	-49.6			
20	8	26,485	-47.4			
15						

LANDER, WYO. (829 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	1,696	- 6.8	77	242	1.0
1,000	30	206				
950	30	613				
900	30	1,045				
850	30	1,498				
800	30	1,975	- 2.3	60	331	.8
750	30	2,481	- 3.8	54	318	5.1
700	30	3,029	- 6.7	54	308	9.5
650	30	3,594	-10.4	54	304	12.4
600	30	4,216	-14.2	49	295	15.0
550	30	4,865	-18.4	42	291	19.0
500	30	5,576	-23.5	40	294	21.2
450	30	6,330	-28.8	38	292	20.2
400	30	7,173	-34.8		302	18.3
350	30	8,092	-41.6		302	16.1
300	30	9,121	-49.0		283	22.7
250	30	10,301	-54.9		267	26.6
200	29	11,720	-57.0		261	24.7
175	29	12,565	-57.3		262	24.1
150	29	13,539	-57.8		270	23.7
125	29	14,686	-59.0		265	22.5
100	29	16,083	-60.2		263	21.0
80	27	17,463	-60.4		273	22.9
60	25	19,258	-60.0			
50	24	20,392	-60.4			
40	22	21,784	-60.1			
30	19	23,572	-60.1			
25	10	24,731	-59.0			
20						
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LAS VEGAS, NEV. (942 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	660	5.9	62	299	2.5
1,000	30	163				
950	30	585				
900	30	1,034	8.5	44	350	5.1
850	30	1,504	6.1	45	342	7.0
800	30	1,999	3.7	44	329	7.8
750	30	2,517	1.2	45	324	7.0
700	30	3,074	- 1.5	41	316	10.1
650	30	3,657	- 4.5	37	310	14.2
600	30	4,287	- 8.0	32	308	19.6
550	30	4,950	-12.3	35	309	24.7
500	30	5,680	-17.5	36	306	27.8
450	30	6,452	-23.2		302	30.1
400	30	7,313	-29.3		298	31.5
350	30	8,253	-36.2		296	36.7
300	30	9,309	-42.9		295	40.2
250	29	10,523	-49.9		299	43.3
200	29	11,964	-55.4		291	44.5
175	29	12,812	-57.7		288	48.0
150	28	13,779	-60.4		288	44.1
125	28	14,908	-63.1		287	38.5
100	28	16,276	-64.3		285	29.3
80	28	17,641	-64.3		290	20.0
60	27	19,406	-62.5		297	13.0
50	26	20,535	-61.2		286	8.9
40	24	21,922	-59.6		279	14.0
30	21	23,739	-56.7		270	16.3
25	14	24,884	-55.0			
20						
15						

LITTLE ROCK, ARK. (1009 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	79	8.3	83	327	1.0
1,000	30	154	8.1	75	351	1.7
950	30	582	8.7	65	247	4.7
900	30	1,026	7.3	61	262	9.5
850	30	1,496	6.4	56	267	12.4
800	30	1,992	4.3	59	271	16.1
750	30	2,516	2.0	56	261	18.3
700	30	3,071	- .6	49	257	21.4
650	29	3,661	- 3.4	43	261	25.1
600	29	4,292	- 6.9	40	261	29.3
550	29	4,962	-11.0	37	263	37.1
500	29	5,693	-15.7	37	265	42.7
450	29	6,473	-21.3		265	42.9
400	29	7,340	-27.4			
350	29	8,289	-34.1			
300	29	9,353	-41.4			
250	29	10,571	-48.9			
200	28	12,013	-55.6			
175	27	12,859	-58.9			
150	24	13,826	-62.1			
125	20	14,964	-66.2			
100	17	16,318	-66.8			
80	15	17,665	-66.7			
60	14	19,424	-62.8			
50	13	20,555	-60.3			
40	13	21,958	-57.6			
30	13	23,788	-54.4			
25	11	24,963	-53.0			
20						

McGRATH, ALASKA (989 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	103	- 8.8	88	84	1.0
1,000	30	14				
950	30	413	- 7.0	80	111	8.5
900	30	836	- 5.4	80	139	10.3
850	30	1,287	- 3.6	71	161	10.5
800	30	1,765	- 5.7	68	175	9.3
750	30	2,264	- 8.7	67	173	12.8
700	30	2,800	-12.2	67	175	16.3
650	30	3,358	-16.0	67	174	17.5
600	30	3,961	-20.3	65	174	20.4
550	30	4,592	-24.8	61	175	22.3
500	30	5,287	-29.9	60	178	20.6
450	30	6,021	-35.5	58	176	22.0
400	30	6,839	-41.6		179	23.7
350	30	7,733	-48.0		181	24.1
300	30	8,735	-54.2		185	23.3
250	30	9,894	-56.5		195	21.2
200	30	11,318	-54.0		221	20.0
175	29	12,172	-52.7		228	20.4
150	29	13,169	-52.6		238	21.6
125	29	14,347	-52.4		240	22.3
100	29	15,790	-52.5		248	25.3
80	27	17,232	-52.7		259	25.6
60	21	19,096	-53.0		267	33.0
50	20	20,269	-53.6		281	36.1
40	16	21,711	-54.2		287	40.0
30	11	23,540	-55.1			
25	5	24,759	-51.2			
20						

MEDFORD, OREG. (975 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	401	1.1	94	324	0.6
1,000	30	196				
950	30	613	3.6	78	337	1.7
900	30	1,052	4.7	67	138	4.1
850	30	1,518	3.7	59	190	3.7
800	30	2,009	1.9	51	261	4.5
750	30	2,527	- .3	46	301	5.4
700	30	3,078	- 3.3	41	310	8.5
650	30	3,659	- 6.4	36	312	13.6
600	29	4,286	-10.3	29	319	18.1
550	29	4,946	-14.5		317	21.2
500	29	5,668	-19.2	33	330	22.7
450	29	6,438	-24.4	36	321	25.8
400	29	7,293	-30.6	38	303	28.4
350	29	8,228	-37.6		303	31.5
300	28	9,278	-45.3		291	30.9
250	28	10,475	-52.7			
200	28	11,896	-58.0			
175	28	12,736	-59.3			
150	28	13,698	-60.6			
125	28	14,829	-62.5			
100	28	16,202	-63.7			
80	28	17,576	-62.4			
60	28	19,357	-61.5			
50	28	20,489	-61.2			
40	26	21,876	-59.9			
30	25	23,675	-58.8			
25	20	24,843	-58.7			
20	7	26,274	-57.3			

MIAMI, FLA. (1018 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	4	21.2	89	69	2.5
1,000	30	155	21.7	81	86	4.9
950	30	600	19.5	77	117	7.6
900	30	1,064	16.6	77	125	6.8
850	30	1,550	14.3	69	141	2.7
800	30	2,061	12.5	58	239	2.7
750	30	2,597	10.4	45	246	3.7
700	30	3,173	7.7	40	262	6.0
650	30	3,781	4.7	31	264	8.5
600	30	4,429	1.1	28	267	10.9
550	30	5,117	- 3.0		267	13.6
500	30	5,874	- 7.8		271	16.7
450	30	6,679	-13.4		266	18.7
400	30	7,572	-20.2		270	22.9
350	30	8,548	-27.3		270	25.8
300	30	9,639	-35.9		268	31.7
250	30	10,880	-45.8		273	36.9
200	30	12,330	-56.9		274	45.3
175	30	13,165	-62.4		273	45.7
150	30	14,104	-67.9		277	44.1
125	29	15,186	-72.0		275	40.4
100	28	16,493	-74.5		272	31.3
80	28	17,789	-74.3		274	17.5
60	28	19,491	-67.1		312	1.6
50	27	20,603	-62.5		18	2.1
40	27	21,991	-58.7		86	6.2
30	24	23,823	-53.6		75	10.7
25	20	25,005	-50.9		72	11.5
20	8	26,455	-48.6			

MIDLAND, TEX. (918 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	871	5.1	85	304	1.4
1,000	30	163				
950	30	583				
900	30	1,031	7.1	68	316	3.3
850	30	1,501	7.0	55	278	5.4
800	30	1,999	6.0	50	262	9.9
750	30	2,523	3.2	49	254	11.7
700	30	3,083	.7	46	256	16.9
650	30	3,671	- 2.4	40	258	21.8
600	30	4,308	- 5.6	31	255	28.2
550	30	4,978	-10.2		253	31.5
500	30	5,713	-15.3		252	35.4
450	30	6,496	-20.5		250	44.7
400	30	7,364	-26.4		251	52.5
350	30	8,316	-33.3			
300	30	9,384	-40.2			
250	30	10,608	-47.6			
200	28	12,061	-55.1			
175	27	12,910	-58.5			
150	27	13,872	-62.2			
125	27	14,990	-65.4			
100	26	16,344	-66.8			
80	26	17,693	-66.8			
60	26	19,449	-63.2			
50	26	20,579	-60.7			
40	25	21,977	-57.8			
30	22	23,812	-54.4			
25	21	24,980	-53.0			
20	6	26,409	-50.6			

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

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[1] 10 mb., 12 obs., 30,661 m., -56.0°C., 297 dir., 58.9 speed
7 mb., 7 obs., 32,965 m., -53.6°C.

RAWINSONDE DATA

Average monthly values

NOVEMBER 1957

MONTGOMERY, ALA. (1012 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	61	10.7	85	316	0.6
1,000	30	161	11.5	76	30	1.4
950	30	593	11.3	65	185	1.6
900	30	1,042	10.6	63	252	7.8
850	30	1,516	9.4	61	253	15.5
800	30	2,018	7.3	53	258	20.0
750	30	2,552	5.3	48	258	25.3
700	30	3,110	2.8	44	255	29.3
650	30	3,706	.0	40	255	34.4
600	30	4,344	- 3.2	39	249	41.0
550	30	5,025	- 7.2		250	42.4
500	30	5,765	-12.2		251	47.4
450	30	6,562	-17.9	39	254	50.9
400	30	7,436	-23.9	42	254	58.3
350	30	8,398	-30.5	40	253	65.9
300	30	9,476	-38.7		261	69.2
250	29	10,704	-48.0		259	80.2
200	28	12,149	-56.9		262	79.5
175	28	12,987	-61.2		262	75.4
150	26	13,931	-65.6		261	71.9
125	27	15,030	-68.7		259	63.9
100	25	16,362	-70.3		263	49.9
80	24	17,693	-68.7		261	33.0
60	23	19,438	-63.3		257	18.1
50	20	20,571	-60.1		255	10.7
40	19	21,976	-57.0		254	7.8
30	19	23,817	-52.7		261	10.1
25	16	25,005	-50.2		267	13.4
20	6	26,491	-47.7			

NANTUCKET, MASS. (1015 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	14	7.5	76	280	3.1
1,000	30	139	8.2	76	282	5.2
950	30	560	6.6	74	263	9.5
900	30	1,005	4.6	68	265	13.2
850	30	1,470	2.4	62	261	15.9
800	30	1,959	.9	57	266	19.4
750	30	2,476	- 1.4	55	270	23.7
700	30	3,025	- 3.6	51	273	24.9
650	30	3,605	- 6.3	45	267	23.7
600	30	4,231	- 9.8		264	26.2
550	30	4,890	-13.7	35	261	22.0
500	30	5,617	-18.5	36	267	20.2
450	30	6,386	-23.9	36	263	23.7
400	30	7,247	-29.8	38	263	28.0
350	30	8,186	-36.5			
300	30	9,239	-43.5			
250	30	10,447	-50.7			
200	29	11,875	-57.3			
175	28	12,722	-58.8			
150	27	13,684	-60.0			
125	26	14,822	-60.9			
100	24	16,207	-61.9			
80	24	17,591	-60.9			
60	24	19,382	-60.1			
50	22	20,525	-59.5			
40	21	21,918	-58.6			
30	16	23,739	-57.6			
25	12	24,894	-57.0			
20	8	26,300	-57.5			

NASHVILLE, TENN. (998 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	177	6.2	89	225	1.9
1,000	30	155				.0
950	30	578	7.4	70	225	5.8
900	30	1,023	6.6	61	263	10.3
850	30	1,491	5.1	53	266	13.2
800	30	1,984	3.0	53	266	17.5
750	30	2,501	.7	48	266	20.2
700	30	3,058	- 1.5	44	270	24.5
650	30	3,638	- 4.3	43	268	26.0
600	30	4,272	- 7.8	44	265	26.2
550	30	4,938	-11.8	44	266	31.5
500	30	5,668	-16.3	36	268	34.4
450	30	6,444	-21.8		282	32.6
400	30	7,310	-27.6	40	282	41.8
350	30	8,259	-34.3	41		
300	30	9,320	-42.0			
250	30	10,535	-49.4			
200	29	11,972	-56.6			
175	27	12,817	-60.0			
150	25	13,784	-62.8			
125	23	14,892	-64.7			
100	22	16,257	-65.4			
80	17	17,629	-64.6			
60	12	19,399	-61.6			
50	12	20,533	-60.3			
40	12	21,934	-57.6			
30	9	23,740	-54.6			
25	8	24,901	-53.2			
20	5	26,381	-51.8			

N. Y. INT. AP, IDLEWILD (1017 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	28	5	7.4	74	277	4.7
1,000	28	144	7.3	68	290	7.2
950	28	567	5.7	62	290	10.7
900	28	1,006	3.9	59	280	12.8
850	28	1,470	2.5	52	271	14.8
800	28	1,958	.1	58	263	18.1
750	28	2,475	- 2.0	53	259	23.3
700	28	3,020	- 4.4	48	259	26.8
650	28	3,602	- 6.4	39	262	30.5
600	28	4,222	-10.2	41	260	33.0
550	28	4,888	-14.2	44	254	36.9
500	27	5,611	-18.8	42	257	42.2
450	27	6,384	-23.5		260	46.4
400	26	7,242	-29.6		257	48.6
350	26	8,182	-36.1		259	49.2
300	26	9,235	-44.1		259	56.3
250	26	10,438	-51.1		260	59.3
200	24	11,873	-57.0		266	60.8
175	23	12,711	-58.6		268	64.7
150	22	13,679	-60.3		265	56.2
125	18	14,812	-61.3		273	38.7
100	14	16,190	-61.1			
80	12	17,588	-61.4			
60	12	19,379	-60.4			
50	11	20,522	-59.6			
40	8	21,942	-57.5			
30	5	23,789	-55.5			
25						
20						

NOME, ALASKA (999 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	7	- 4.9	85	66	6.8
1,000	30	1			64	6.8
950	30	398	- 4.9	77	89	9.7
900	30	827	- 6.6	77	102	9.9
850	30	1,273	- 7.6	76	110	8.9
800	30	1,744	- 8.8	72	127	7.2
750	30	2,239	-11.1	67	137	8.5
700	30	2,770	-14.1	60	138	10.5
650	30	3,320	-17.9	58	139	11.5
600	30	3,922	-22.2	58	143	13.2
550	30	4,547	-26.7	55	151	13.8
500	30	5,237	-31.7	53	161	15.0
450	30	5,968	-37.2	52	167	16.5
400	30	6,779	-42.9		175	18.5
350	30	7,668	-48.8		177	19.0
300	30	8,667	-54.3		180	17.9
250	30	9,831	-55.6		183	15.7
200	30	11,262	-52.9		216	13.6
175	30	12,126	-52.1		216	15.0
150	30	13,124	-52.1		228	15.5
125	30	14,305	-52.3		248	14.6
100	27	15,779	-51.8		247	17.1
80	25	17,231	-52.0		255	20.6
60	19	19,112	-52.0		262	22.2
50	14	20,309	-51.4		255	24.5
40	8	21,806	-50.9			
30						
25						
20						

NORFOLK, VA. (1018 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	9	9.8	83	311	2.5
1,000	30	157	10.8	75	321	3.3
950	30	580	9.3	70	305	6.0
900	30	1,031	7.3	65	283	8.7
850	30	1,501	5.8	59	269	12.8
800	30	1,996	4.0	51	265	17.3
750	30	2,520	1.9	45	265	23.5
700	30	3,073	- .5	42	263	27.4
650	30	3,660	- 3.3	43	259	34.0
600	29	4,295	- 6.7	40	258	39.1
550	29	4,962	-10.9		260	41.6
500	29	5,696	-15.8	41	259	46.2
450	29	6,477	-20.9		259	53.0
400	29	7,345	-26.9	39	260	57.1
350	28	8,296	-34.3		262	63.5
300	28	9,356	-42.4		263	68.6
250	28	10,569	-49.7		265	75.6
200	27	12,010	-57.0		266	79.1
175	27	12,850	-60.2		266	79.5
150	26	13,805	-62.3		267	72.3
125	23	14,917	-64.3		264	59.1
100	21	16,280	-65.8		265	47.4
80	16	17,641	-63.7		266	34.2
60	12	19,406	-60.7		264	27.8
50	12	20,545	-59.1		255	18.8
40	12	21,951	-57.2		264	17.7
30	12	23,784	-54.4		267	22.3
25	9	24,957	-52.9			
20	8	26,397	-52.4			
15						

NORTH PLATTE, NEB. (918 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	848	- 1.8	85	312	3.7
1,000	30	159				
950	30	572				
900	30	1,004	- .2	77	312	6.0
850	30	1,463	.5	63	315	9.9
800	30	1,948	- 1.0	55	315	11.7
750	30	2,459	- 3.3	50	312	12.8
700	30	3,005	- 6.3	46	309	13.4
650	30	3,575	- 9.8	46	297	15.7
600	30	4,195	-13.2	41	288	15.7
550	30	4,848	-17.4	38	283	18.5
500	30	5,561	-22.4	38	275	19.0
450	30	6,320	-27.7	35	273	19.0
400	29	7,167	-34.1		266	22.2
350	29	8,088	-41.0		259	25.6
300	29	9,121	-47.5		265	31.9
250	29	10,310	-53.4		260	26.4
200	29	11,738	-55.4		259	36.3
175	29	12,589	-55.9		260	35.0
150	29	13,569	-56.3		258	34.4
125	29	14,722	-58.5		266	31.5
100	29	16,119	-60.1		264	28.0
80	28	17,509	-59.7		270	28.0
60	27	19,302	-60.0		261	24.5
50	27	20,440	-60.0		258	21.6
40	27	21,835	-59.4		276	19.8
30	21	23,639	-58.2		271	21.2
25	17	24,782	-57.8			
20	9	26,158	-57.5			
15						

OAKLAND, CALIF. (1019 MB.) 1/

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	6	8.8	80	102	1.9
1,000	30	165	11.2	68	66	1.6
950	30	591	10.6	58	358	5.1
900	30	1,043	9.2	51	352	7.6
850	30	1,515	7.6	48	337	8.2
800	30	2,013	5.1	48	319	10.1
750	30	2,534	2.6	46	313	13.0
700	30	3,094	- .3	39	317	16.3
650	30	3,678	- 3.5	36	315	19.4
600	30	4,313	- 7.1	34	315	20.8
550	30	4,978	-11.2	31	313	26.0
500	30	5,712	-16.4	33	313	28.6
450	30	6,484	-22.3	34	312	32.8
400	30	7,352	-28.5		313	38.5
350	30	8,297	-35.2		316	44.3
300	30	9,355	-42.7		316	47.4
250	30	10,564	-50.8		319	53.0
200	28	12,015	-57.6		312	50.9
175	27	12,858	-60.1		308	50.5
150	27	13,814	-62.6		302	45.1
125	25	14,930	-64.7		304	39.1
100	22	16,290	-66.3		301	31.9
80	19	17,642	-65.6		307	23.9
60	19	19,396	-63.7		313	15.7
50	17	20,513	-62.0		316	11.9
40	17	21,898	-59.9		314	10.3
30	14	23,715	-57.6		294	9.5
25	14	24,871	-55.3		289	10.3
20	13	26,300	-53.6		294	15.0
15	13	28,156	-51.9		281	22.0

OKLAHOMA CITY, OKLA. (971 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	392	4.1	90	350	1.7
1,000	30	153				
950	30	573	6.4	68	337	1.6
900	30	1,016	6.0	57	292	4.7
850	30	1,485	5.5	51	283	7.8
800	30	1,979	3.7	53	269	10.3
750	30	2,499	1.1	56	263	15.5
700	30	3,053	- 1.9	55	267	17.1
650	30	3,636	- 5.2	49	258	23.5
600	30	4,264	- 8.6	45	255	31.1
550	30	4,931	-12.6		256	36.3
500	30	5,657	-16 7		251	39 8
450	30	6,432	-22.1		257	41.0
400	30	7,296	-28.6		256	44.9
350	30	8,238	-35.5		254	43.7
300	30	9,295	-42.6			
250	30	10,507	-49.4			
200	30	11,953	-54.9			
175	29	12,799	-57.7			
150	29	13,768	-59.8			
125	28	14,899	-62.4			
100	28	16,272	-63.9			
80	28	17,639	-64.2			
60	25	19,418	-61.8			
50	24	20,550	-60.3			
40	23	21,950	-58.0			
30	20	23,774	-54.7			
25	16	24,933	-53.7			
20	7	26,420	-50.8			
15						

OMAHA, NEBR. (968 MB) 2/

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	403	- 0.5	82	286	4.7
1,000	30	143				
950	30	555	8	76	292	8.2
900	30	990	.7	70	313	14.2
850	30	1,449	- .7	69	318	16.3
800	30	1,932	- 1 9	60	305	15.3
750	30	2,444	- 4.0	51	300	15.9
700	30	2,987	- 6.4	46	294	18.5
650	30	3,561	- 9.6	42	287	20.2
600	30	4,179	-13.1	41	285	24.3
550	30	4,832	-17.0	37	281	28.2
500	30	5,547	-21.6		277	29.1
450	30	6,307	-27.3		274	30.5
400	30	7,155	-33.5		274	35.9
350	30	8,080	-40.0		269	38.7
300	30	9,118	-46.8		261	45.1
250	29	10,306	-52.8		259	49.9
200	29	11,738	-55.4		262	56.0
175	29	12,588	-56.1		262	54.0
150	29	13,567	-56.9		265	49.0
125	29	14,717	-58.8		263	40.6
100	29	16,116	-59.4		264	35.4
80	29	17,512	-60.3		265	26.4
60	28	19,301	-60.1		268	24.1
50	28	20,442	-59.7		273	22.0
40	27	21,840	-58.9		270	21.4
30	25	23,650	-58.3		270	24.7
25	25	24,800	-57.5		271	31.9
20	23	26,211	-57.1		272	37.9
15	22	28,039	-55.3		274	44.5

PEORIA, ILL. (992 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	201	1.9	83	251	3.9
1,000	30	135				
950	30	549	2.0	71	255	10.3
900	30	985	1.5	64	265	16.1
850	30	1,445	.2	57	268	17.9
800	30	1,930	- 1.4	57	268	20.2
750	30	2,438	- 3.6	53	267	23.3
700	30	2,986	- 6.1	52	267	26.6
650	30	3,557	- 9.0	47	265	29.3
600	30	4,179	-11.9	39	267	34.4
550	30	4,836	-15.8		266	37.1
500	30	5,553	-20.7		264	39.6
450	30	6,314	-26.2		264	43.1
400	30	7,165	-32.4		261	50.7
350	30	8,095	-38.5		259	56.3
300	30	9,139	-45.2		256	62.4
250	30	10,340	-51.2		255	67.2
200	30	11,775	-55.7		255	69.9
175	30	12,622	-57.4		262	68.4
150	30	13,595	-57.9		260	63.1
125	30	14,741	-59.4		260	54.0
100	30	16,136	-60.2		263	41.8
80	30	17,526	-60.4		261	35.2
60	30	19,320	-60.3		268	26.2
50	30	20,459	-59.7		266	24.9
40	30	21,858	-58.4		264	22.2
30	24	23,690	-56.5		266	29.5
25	20	24,866	-55.1		264	33.0
20	13	26,313	-53.3			

PITTSBURGH, PA. (976 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	353	3.3	76	233	4.7
1,000	30	154				
950	30	572	4.3	69	230	7.8
900	30	1,011	2.2	71	246	16.7
850	30	1,472	.7	66	255	22.5
800	30	1,957	- 1.0	60	258	24.9
750	30	2,468	- 3.0	59	259	26.8
700	30	3,016	- 5.5	56	257	31.1
650	30	3,590	- 8.6	49	256	35.4
600	30	4,211	-11.5	41	257	37.3
550	30	4,867	-15.7	41	256	38.5
500	30	5,587	-20.1		259	45.7
450	30	6,354	-25.2		261	52.3
400	30	7,208	-30.7		258	55.0
350	30	8,143	-37.3		257	59 8
300	30	9,190	-44.8		259	62.4
250	29	10,397	-51.8		260	58.5
200	28	11,825	-57.1		268	60.0
175	23	12,658	-58.9		266	57.5
150	19	13,597	-59.9			
125	14	14,748	-60.3			
100	11	16,146	-60.9			
80	7	17,511	-60.8			
60	7	19,301	-60.9			
50	7	20,436	-60.6			
40						
30						
25						
20						

PORTLAND, ME (1014 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	20	2.8	87	269	3.1
1,000	30	130	4.8	75	268	4.5
950	30	550	3.9	70	262	8.0
900	30	987	2.2	69	263	11.1
850	30	1,447	3	68	262	16.1
800	30	1,933	- 1.0	58	265	19.8
750	30	2,446	- 3.6	59	262	22.7
700	30	2,989	- 5.8	49	256	28.8
650	30	3,561	- 8.3	44	258	31.3
600	30	4,184	-11.7	41	259	35.8
550	30	4,838	-16.0	41	259	39.6
500	30	5,558	-20.5	41	256	42.9
450	30	6,319	-25.9		256	46.2
400	30	7,173	-31.9		258	51.5
350	30	8,104	-38.5		256	61.0
300	30	9,150	-44.8		255	64.1
250	30	10,353	-51.0		255	66.6
200	30	11,787	-56.1		257	64.7
175	30	12,635	-57.0		259	63.3
150	30	13,608	-58.0		259	50.7
125	29	14,757	-58.9		255	46.0
100	28	16,157	-59.6		257	40.4
80	28	17,553	-59.7		262	31.3
60	25	19,336	-58.9		257	25.1
50	22	20,475	-58.7		257	25.3
40	22	21,879	-58.3		261	28.6
30	20	23,696	-57.2		263	37.7
25	13	24,842	-57.2			
20	5	26,207	-55.4			

RAPID CITY, S. DAK. (904 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	966	- 1.4	69	320	4.5
1,000	30	156				
950	30	567				
900	30	1,003			322	5.4
850	30	1,461	- .3	60	316	12.4
800	30	1,944	- 2.5	59	321	16.1
750	30	2,452	- 5.3	59	318	17.1
700	30	2,993	- 8.4	60	311	19.6
650	30	3,556	-11.7	58	311	20.8
600	30	4,174	-15.3	51	302	20.3
550	30	4,820	-19.4	48	298	23.7
500	30	5,528	-24.2	46	294	24.3
450	30	6,282	-29.7	44	298	26.6
400	29	7,116	-36.0	43	298	30.9
350	29	8,030	-43.2		298	32.6
300	29	9,052	-50.2		297	35.6
250	29	10,227	-55.6		301	37.1
200	27	11,631	-57.0		292	38.7
175	25	12,473	-57.0		293	44.1
150	22	13,442	-57.3		293	42.4
125	18	14,600	-57.6		296	45.3
100	9	15,992	-58.3			
80						
60						
50						
40						
30						
25						
20						

ST. CLOUD, MINN (976 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	316	- 1.4	82	289	3.7
1,000	30	118				
950	30	530	- 2.2	80	292	5.8
900	30	958	- 2.4	76	307	10.5
850	30	1,411	- 3.1	67	313	12.6
800	30	1,890	- 4.3	59	305	14.4
750	30	2,399	- 6.0	55	291	15.7
700	30	2,936	- 8.5	48	288	16.9
650	30	3,506	-11.6	48	287	18.8
600	30	4,118	-15.3	47	286	20.2
550	30	4,768	-19.2	45	280	19.8
500	30	5,474	-23.9	44	279	20.0
450	30	6,234	-29.2	46	276	22.3
400	30	7,067	-35.3	46	259	22.9
350	30	7,985	-42.2		242	24.5
300	30	9,012	-49.3		242	30.5
250	30	10,193	-54.2		238	34.0
200	30	11,616	-55.8		251	33.2
175	30	12,468	-55.4		254	32.1
150	30	13,451	-55.9		252	32.1
125	30	14,610	-56.7		252	31.3
100	30	16,022	-57.7		260	29.3
80	30	17,428	-58.2		253	25.5
60	29	19,239	-59.0		269	19.4
50	28	20,382	-59.3		268	17.5
40	24	21,784	-59.4		268	19.4
30	20	23,600	-58.8			
25	13	24,742	-59.0			
20	7	26,212	-57 0			

These average values for standard pressure surfaces were obtained by rawinsondes, dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

1/ 10 mb., 6 obs., 30,750 m., -50.6°C.

2/ 10 mb., 17 obs., 30,656 m., -51.2°C.

RAWINSONDE DATA

Average monthly values

1/ ST. PAUL IS., ALASKA (992 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	10	1.5	83	328	6.2
1,000	30	54				
950	30	357	- .1	81	328	5.4
900	30	790	- 3.2	82	300	5.2
850	30	1,240	- 6.1	79	294	5.1
800	30	1,712	- 8.4	68	278	6.2
750	30	2,209	-11.2	62	271	6.8
700	30	2,737	-14.4	58	273	6.4
650	30	3,290	-18.0	52	271	7.2
600	30	3,889	-22.0	49	261	6.8
550	30	4,519	-26.5	46	245	6.4
500	30	5,206	-31.6	47	227	4.7
450	30	5,936	-37.1	46	224	5.8
400	30	6,748	-43.2		254	3.7
350	29	7,633	-48.9		229	8.2
300	29	8,636	-52.4		222	8.4
250	29	9,815	-51.9		238	7.4
200	29	11,270	-49.7		240	15.2
175	29	12,145	-49.4		237	13.0
150	29	13,155	-49.6		234	17.3
125	29	14,349	-49.3		237	17.9
100	28	15,809	-49.3		241	19.8
80	27	17,272	-49.5		243	22.5
60	27	19,156	-49.6		245	20.6
50	26	20,351	-49.5		255	20.6
40	25	21,817	-50.0		251	27.0
30	23	23,690	-50.5		269	27.6
25	22	24,901	-50.6		276	29.9
20	18	26,359	-50.9		275	30.7
15	12	28,258	-50.7			

SALEM, OREG. (1015 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	61	2.3	94	189	2.7
1,000	30	179	5.1	76	169	1.9
950	30	597	6.9	61	226	3.3
900	30	1,043	5.5	54	238	5.8
850	30	1,509	3.0	52	249	5.8
800	30	1,998	.9	49	269	5.1
750	30	2,511	- 1.9	47	293	7.8
700	30	3,059	- 5.0	41	296	10.3
650	30	3,636	- 8.0	38	300	14.8
600	30	4,258	-11.2	36	301	19.4
550	30	4,917	-15.2	35	302	24.3
500	30	5,635	-19.7		304	27.2
450	30	6,400	-25.3		305	32.3
400	30	7,254	-31.7	39	303	37.5
350	30	8,186	-38.4		304	43.1
300	30	9,229	-46.0		309	46.0
250	30	10,422	-53.6		312	47.0
200	30	11,839	-58.1		309	54.4
175	30	12,679	-58.8		308	46.6
150	30	13,644	-59.9		303	45.3
125	30	14,782	-60.9		304	39.1
100	30	16,166	-61.4		303	32.8
80	30	17,552	-60.9		307	25.3
60	29	19,347	-60.0		312	18.5
50	29	20,487	-60.0		308	13.6
40	28	21,890	-59.6		321	13.4
30	24	23,699	-58.4		302	13.4
25	16	24,878	-58.1		306	15.2
20	7	26,355	-55.3			
15						

SALT LAKE CITY, UTAH (875 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	1,288	- 1.0	78	153	4.3
1,000	30	205				
950	30	614				
900	30	1,051				
850	30	1,515	.4	61	183	3.7
800	30	2,001	- 1.4	55	228	3.7
750	30	2,510	- 3.9	57	276	5.6
700	30	3,055	- 6.9	57	292	10.3
650	30	3,624	-10.0	50	291	12.0
600	30	4,244	-13.4	42	299	14.0
550	30	4,895	-17.5	40	301	17.3
500	30	5,609	-22.1	42	298	21.6
450	30	6,368	-27.2	42	306	23.7
400	30	7,217	-32.8		308	28.6
350	30	8,144	-39.4		306	28.2
300	30	9,184	-46.7		304	34.8
250	30	10,376	-52.9		303	38.1
200	30	11,804	-56.3		307	39.6
175	30	12,652	-56.7		300	37.7
150	30	13,626	-58.2		298	36.9
125	24	14,787	-60.1		302	32.1
100	22	16,183	-61.7		296	23.9
80	22	17,567	-61.5		287	18.7
60	22	19,351	-61.4		290	15.9
50	22	20,484	-60.4		288	14.0
40	21	21,876	-59.6		288	12.6
30	19	23,682	-58.4		288	12.8
25	17	24,832	-57.4		287	15.5
20	11	26,272	-55.8			
15						

SAN ANTONIO, TEX. (989 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	243	10.9	85	16	3.7
1,000	30	147				
950	30	577	11.7	76	61	4.9
900	30	1,028	11.1	70	163	3.9
850	30	1,505	10.6	60	187	6.4
800	30	2,008	9.2	55	228	10.7
750	30	2,543	7.0	47	245	15.3
700	30	3,107	4.9	39	255	20.0
650	30	3,707	1.1	39	254	25.8
600	30	4,347	- 3.1	39	250	28.0
550	30	5,030	- 7.4	34	250	32.3
500	30	5,766	-12.2		246	34.8
450	30	6,560	-17.7		249	41.8
400	30	7,436	-23.9	34	249	48.8
350	30	8,398	-30.5		252	52.3
300	30	9,477	-38.0			
250	30	10,710	-46.5			
200	30	12,162	-55.8			
175	29	13,004	-60.4			
150	29	13,954	-65.1			
125	29	15,056	-68.3			
100	27	16,387	-70.5			
80	25	17,714	-70.0			
60	23	19,445	-65.3			
50	23	20,566	-61.8			
40	23	21,961	-58.1			
30	22	23,789	-54.5			
25	18	24,968	-52.0			
20	[illegible]	26,446	-48.4			
15						

2/ SAN DIEGO, CALIF. (1002 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	124	9.5	82	25	1.7
1,000	30	143			42	2.3
950	30	574	13.0	53	1	2.5
900	30	1,027	11.2	44	355	4.5
850	30	1,502	8.5	42	345	5.6
800	30	2,001	6.1	36	336	6.6
750	30	2,524	4.4		330	9.7
700	30	3,087	1.8		329	12.4
650	30	3,677	- 1.1		320	15.9
600	30	4,316	- 4.9		310	22.2
550	30	4,987	- 9.5		306	23.7
500	30	5,725	-14.6		304	28.4
450	30	6,504	-20.3		302	32.6
400	30	7,377	-26.7		302	34.8
350	30	8,327	-33.7		299	39.8
300	30	9,393	-40.8		298	43.3
250	30	10,613	-48.7		298	44.3
200	30	12,056	-55.8		289	48.4
175	30	12,899	-59.9		285	49.0
150	29	13,856	-63.6		289	46.8
125	29	14,968	-66.5		287	38.1
100	29	16,311	-68.7		292	31.3
80	28	17,650	-67.3		293	21.2
60	28	19,396	-64.3		291	12.2
50	28	20,519	-61.9		284	9.1
40	28	21,908	-58.8		275	12.4
30	28	23,731	-54.8		259	13.8
25	28	24,901	-53.3		254	17.7
20	22	26,349	-51.6		261	26.0
15	22	28,223	-49.7		264	35.4

3/ SAN JUAN, P. R. (1014 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	6	24.7	86	140	2.9
1,000	30	131	24.1	84	107	8.9
950	30	582	21.4	81	74	15.0
900	30	1,048	18.5	80	74	14.6
850	30	1,537	15.7	77	70	13.4
800	30	2,051	13.2	70	76	11.1
750	30	2,595	11.6	41	72	9.7
700	30	3,168	9.6	30	68	8.0
650	30	3,778	6.5		70	7.8
600	30	4,432	2.6		67	8.5
550	30	5,121	- 1.6		52	7.8
500	30	5,882	- 6.5		60	7.2
450	30	6,687	-12.2		63	5.6
400	30	7,587	-18.6		31	3.9
350	30	8,568	-26.1		2	3.1
300	30	9,665	-34.6		302	7.4
250	30	10,913	-44.4		310	12.4
200	30	12,372	-55.5		302	16.5
175	30	13,212	-61.3		289	17.9
150	29	14,155	-67.4		285	22.2
125	29	15,238	-72.8		299	20.6
100	29	16,535	-76.5		304	15.0
80	29	17,817	-76.9		334	9.1
60	27	19,501	-68.4		21	5.1
50	26	20,611	-63.0		74	5.4
40	25	21,999	-58.7		72	7.8
30	25	23,829	-53.5		86	12.0
25	24	25,011	-50.2		92	16.3
20	24	26,478	-47.5		90	21.4
15	19	28,388	-43.8		93	24.7

SANTA MARIA, CALIF. (1010 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	74	10.8	78	10	0.8
1,000	30	155	10.7	68	23	2.1
950	30	586	12.8	52	28	6.8
900	30	1,040	11.0	48	354	7.6
850	30	1,515	9.1	42	337	9.5
800	30	2,015	6.5	38	332	11.3
750	30	2,545	4.4	30	331	14.6
700	30	3,103	1.8	28	324	16.1
650	30	3,695	- 1.5		322	18.7
600	30	4,331	- 5.3		321	23.5
550	30	5,002	- 9.4		316	24.9
500	30	5,740	-14.3		317	26.0
450	30	6,522	-20.4		314	24.7
400	30	7,392	-27.2		308	28.4
350	30	8,341	-34.4		303	27.0
300	30	9,402	-41.9		306	27.6
250	30	10,618	-49.4		298	38.1
200	30	12,056	-56.3		296	35.2
175	30	12,898	-59.7		284	28.8
150	30	13,854	-63.1		290	31.3
125	30	14,969	-65.8		298	24.7
100	29	16,325	-67.3		303	22.5
80	28	17,675	-66.3		329	16.7
60	28	19,429	-63.8		335	8.4
50	28	20,552	-62.2		352	7.2
40	27	21,946	-59.7		353	6.0
30	24	23,755	-56.1			
25	21	24,918	-54.5			
20	8	26,338	-53.6			
15						

4/ SANTA MONICA, CALIF. (1014 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	38	11.9	64	34	3.9
1,000	30	153	14.1	56	33	4.1
950	30	586	13.2	47	17	3.7
900	30	1,039	11.4	45	353	3.1
850	30	1,515	9.0	42	321	3.5
800	30	2,015	6.6	38	324	6.4
750	30	2,542	4.3	34	332	10.9
700	30	3,103	1.7	29	325	13.6
650	30	3,692	- 2.0	28	316	17.3
600	30	4,330	- 5.9	28	312	22.9
550	30	4,996	- 9.8		310	25.5
500	30	5,737	-15.0		312	28.2
450	30	6,516	-20.9		309	32.8
400	30	7,387	-27.4		307	35.6
350	30	8,334	-35.0		304	38.3
300	30	9,394	-41.8		304	41.4
250	30	10,609	-49.2		305	47.2
200	30	12,050	-56.1		301	46.2
175	30	12,893	-59.5		296	45.7
150	29	13,855	-63.4		295	44.3
125	29	14,969	-65.8		295	39.8
100	28	16,310	-67.8		291	32.1
80	28	17,657	-66.6		302	24.9
60	26	19,408	-63.7		300	13.6
50	26	20,532	-61.7		295	9.1
40	26	21,921	-59.5		281	9.5
30	24	23,734	-55.1		259	14.4
25	24	24,905	-53.3		256	19.2
20	24	26,349	-51.2		265	24.7
15	17	28,223	-49.2		257	39.1

S. STE. MARIE, MICH. (985 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	221	0.3	87	255	2.9
1,000	30	98				
950	30	510	- .2	79	257	8.0
900	30	941	- 2.4	79	264	14.0
850	30	1,393	- 4.3	77	272	15.3
800	30	1,870	- 5.7	68	267	16.9
750	30	2,374	- 7.1	65	263	19.4
700	30	2,911	- 9.2	65	263	21.8
650	30	3,479	-12.0	56	262	23.7
600	30	4,091	-15.3	50	264	26.0
550	30	4,740	-19.0	51	262	28.2
500	30	5,448	-23.8	56	261	31.1
450	30	6,206	-29.1	57	260	33.2
400	30	7,043	-35.0	58	264	34.6
350	30	7,962	-41.5		263	39.4
300	30	8,993	-48.1		259	44.7
250	30	10,180	-53.5		259	48.0
200	29	11,604	-55.5		255	52.5
175	28	12,456	-55.6		258	49.7
150	28	13,439	-55.5		256	42.0
125	26	14,608	-56.1		259	40.2
100	26	16,023	-56.9		260	37.7
80	26	17,436	-57.3		257	31.5
60	23	19,267	-58.1		259	27.2
50	22	20,411	-58.7		259	24.5
40	22	21,813	-58.9		264	23.1
30	19	23,632	-59.2		269	22.2
25	19	24,775	-59.2		273	22.5
20	12	26,212	-57.0		269	25.8
15	8	28,067	-55.1			

SEATTLE, WASH. (1006 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	125	4.3	90	135	3.7
1,000	30	171			133	4.1
950	30	589	6.0	66	198	7.6
900	30	1,033	4.3	64	228	9.9
850	30	1,496	2.2	61	249	9.7
800	30	1,983	- .5	59	265	8.5
750	30	2,492	- 3.3	53	273	10.9
700	30	3,040	- 6.4	48	282	13.2
650	30	3,612	- 9.6	42	284	15.7
600	30	4,230	-13.2	38	293	19.8
550	30	4,883	-17.5	36	299	20.8
500	30	5,595	-22.5		304	23.7
450	30	6,353	-27.9		305	28.6
400	30	7,198	-33.8		306	35.9
350	30	8,122	-40.6		305	42.4
300	29	9,165	-47.9		305	47.6
250	29	10,350	-54.6		305	51.3
200	29	11,763	-58.6		304	49.7
175	29	12,601	-59.2		302	48.4
150	29	13,567	-59.4		302	47.6
125	28	14,704	-60.3		301	42.6
100	26	16,086	-60.3		302	38.1
80	25	17,485	-59.3		299	29.5
60	22	19,285	-59.6		305	22.2
50	22	20,429	-59.1		306	18.7
40	22	21,826	-59.8		313	18.8
30	20	23,637	-58.1		309	17.5
25	19	24,785	-58.4		313	17.3
20	16	26,201	-58.2		318	21.2
15	15	28,031	-57.3		314	29.0

SHREVEPORT, LA. (1008 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	76	9.9	88	50	1.4
1,000	30	144	9.8	80	60	3.3
950	30	571	10.1	71	208	1.4
900	30	1,021	9.0	69	247	7.0
850	30	1,494	7.5	66	249	10.9
800	30	1,993	5.6	59	251	15.3
750	30	2,517	3.4	56	249	19.2
700	29	3,078	1.0	52	254	22.9
650	29	3,667	- 1.9	47	257	27.8
600	29	4,304	- 5.4	43	257	31.5
550	29	4,976	- 9.6		257	36.5
500	29	5,712	-14.7		255	41.8
450	29	6,498	-19.8		256	48.8
400	29	7,369	-25.9		256	52.5
350	29	8,322	-32.9		254	61.2
300	29	9,390	-40.6		253	69.9
250	29	10,611	-48.7		256	78.5
200	29	12,051	-56.9		257	83.7
175	28	12,888	-60.9		256	83.2
150	28	13,837	-65.1		258	74.2
125	28	14,940	-67.5		257	62.2
100	27	16,276	-69.5		259	46.0
80	27	17,613	-67.9		258	32.8
60	26	19,361	-63.7		262	20.0
50	26	20,487	-61.2		260	15.0
40	26	21,884	-58.1		254	11.5
30	25	23,713	-54.4		267	15.0
25	22	24,891	-51.9		267	18.7
20	10	26,337	-48.7			
15						

SPOKANE, WASH. (935 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	722	- 0.4	84	185	3.1
1,000	30	183				
950	30	597				
900	30	1,032	2.0	68	201	3.9
850	30	1,493	.4	61	236	7.0
800	30	1,977	- 1.9	59	260	9.1
750	30	2,488	- 4.5	56	275	10.5
700	30	3,029	- 7.3	51	291	13.4
650	30	3,600	-10.6	50	299	16.7
600	30	4,215	-14.2	50	304	19.4
550	30	4,864	-18.7	50	305	21.6
500	30	5,573	-23.8	49	306	23.3
450	30	6,324	-29.5	49	309	25.3
400	30	7,165	-35.6		312	28.2
350	30	8,081	-41.9		310	33.8
300	30	9,110	-48.4		310	38.1
250	30	10,294	-54.1		311	45.5
200	30	11,714	-57.3		307	48.0
175	30	12,558	-57.4		307	45.1
150	30	13,533	-57.0		307	43.3
125	30	14,686	-57.7		304	33.6
100	30	16,090	-58.9		303	30.9
80	29	17,490	-58.4		300	27.0
60	24	19,301	-58.1		301	19.6
50	20	20,461	-58.3		309	16.1
40	15	21,881	-58.2		317	13.0
30	12	23,742	-56.2		323	10.1
25	10	24,920	-55.9			
20	7	26,373	-54.3			
15						

TAMPA, FLA. (1018 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	8	17.0	90	77	2.7
1,000	30	160	18.2	84	96	5.2
950	30	603	17.3	78	144	7.0
900	30	1,061	15.3	71	182	6.4
850	30	1,545	13.2	64	229	5.4
800	30	2,053	11.0	54	243	8.7
750	30	2,591	8.9	47	256	10.1
700	30	3,159	6.4	44	264	12.8
650	30	3,763	3.1	39	268	15.5
600	30	4,408	- .5	34	267	19.6
550	30	5,092	- 4.5	32	268	20.4
500	30	5,843	- 9.5	31	269	24.3
450	30	6,645	-15.3	29	266	27.8
400	30	7,529	-21.8	36	267	34.6
350	30	8,499	-28.7	38	269	41.2
300	30	9,586	-36.6		270	46.2
250	30	10,825	-45.9		275	51.5
200	30	12,276	-56.4		273	55.2
175	29	13,113	-61.5		274	64.7
150	29	14,058	-66.4		274	55.2
125	28	15,154	-69.7		272	47.2
100	28	16,475	-72.3		274	41.8
80	28	17,789	-71.4		271	22.0
60	27	19,514	-65.3		258	5.4
50	27	20,633	-61.5		296	4.1
40	27	22,030	-57.6		87	4.5
30	27	23,865	-53.0		81	3.9
25	27	25,049	-50.4		71	4.9
20	19	26,519	-48.5			
15						

TATOOSH IS., WASH. (1016 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	31	8.6	82	92	8.0
1,000	30	159			109	7.8
950	30	581	6.5	67	187	4.9
900	30	1,024	4.1	65	234	6.8
850	30	1,489	1.8	63	256	9.7
800	30	1,976	- .6	61	259	10.5
750	30	2,488	- 3.4	52	270	15.2
700	30	3,034	- 6.2	41	271	15.9
650	30	3,606	- 9.3	38	277	17.9
600	30	4,226	-13.1		283	21.6
550	30	4,879	-17.1		288	26.4
500	30	5,595	-21.6		294	29.5
450	30	6,352	-27.1		286	33.4
400	30	7,203	-33.2	43	285	35.6
350	30	8,128	-40.1		282	37.1
300	30	9,163	-47.7		287	45.3
250	30	10,349	-54.2		293	54.4
200	30	11,763	-58.8		290	52.3
175	30	12,602	-58.5		283	48.8
150	30	13,572	-58.5		285	45.9
125	30	14,717	-58.8		285	39.1
100	29	16,111	-59.6		286	33.2
80	29	17,507	-59.0		286	26.6
60	29	19,313	-58.9		290	19.0
50	29	20,458	-58.9		294	15.9
40	29	21,859	-58.8		296	13.8
30	29	23,664	-59.0		289	14.8
25	28	24,801	-59.1		294	17.5
20	23	26,186	-59.7		298	17.9
15	18	27,992	-59.3		298	25.8

TOPEKA, KANS. (986 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	269	2.6	81	267	2.5
1,000	30	153				
950	30	567	3.4	73	277	6.0
900	30	1,008	2.3	69	286	10.5
850	30	1,470	1.3	66	282	13.8
800	30	1,957	- .2	58	286	17.5
750	30	2,469	- 2.3	50	282	17.7
700	30	3,017	- 5.2	44	278	20.6
650	30	3,593	- 8.2	37	279	25.1
600	30	4,214	-11.7	35	275	29.3
550	30	4,871	-15.7	37	272	31.5
500	30	5,590	-20.1		268	35.9
450	30	6,354	-25.5		265	40.8
400	30	7,208	-31.6		265	45.3
350	30	8,140	-38.5		263	49.9
300	30	9,182	-46.2		262	54.8
250	30	10,377	-52.0		260	64.3
200	30	11,811	-55.7		260	64.9
175	30	12,658	-57.4		259	65.9
150	30	13,629	-58.9		264	59.1
125	30	14,769	-60.4		265	45.7
100	28	16,154	-61.6		263	36.9
80	27	17,537	-61.8		262	26.8
60	27	19,322	-60.7		268	22.2
50	26	20,461	-59.8		263	17.3
40	24	21,863	-58.6		263	18.7
30	20	23,689	-56.6		265	19.0
25	10	24,865	-55.1			
20						
15						

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

1/ 10 mb., 10 obs., 30,890 m., -51.7°C.
2/ 10 mb., 13 obs., 30,896 m., -48.2°C.
3/ 10 mb., 14 obs., 31,139 m., -40.1°C.
4/ 10 mb., 9 obs., 30,880 m., -46.2°C.

RAWINSONDE DATA

Average monthly values

Standard pressure surface (mb.)	TUCSON, ARIZ. (927 MB.)						WASHINGTON, D. C. (1009 MB.)					
					Wind						Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	30	781	7.0	67	142	4.9	30	88	6.8	80	286	1.9
1,000--	30	147					30	158	7.1	72	277	3.9
950----	30	572					30	576	6.6	66	271	10.7
900----	30	1,024	10.5	45	111	5.8	30	1,023	4.8	59	263	15.7
850----	30	1,499	8.6	42	126	3.3	30	1,488	3.1	54	267	16.5
800----	30	1,998	5.7	43	200	3.3	30	1,979	1.5	54	263	19.2
750----	30	2,520	3.0	40	258	4.9	30	2,497	- .8	48	261	23.5
700----	30	3,080	.5		286	9.3	30	3,046	- 3.5	48	257	25.8
650----	30	3,670	- 2.3		292	14.0	30	3,625	- 5.7	48	259	30.3
600----	30	4,305	- 5.6		292	18.7	30	4,254	- 9.2	43	261	36.1
550----	30	4,973	-10.0		289	22.7	30	4,917	-13.2	40	265	39.8
500----	30	5,711	-14.9		285	26.0	30	5,642	-17.8	38	266	45.5
450----	29	6,495	-20.3		284	29.1	30	6,414	-23.0		265	47.6
400----	29	7,367	-26.6		283	34.4	30	7,276	-28.8	39	263	46.0
350----	29	8,319	-33.2		282	38.7	30	8,218	-35.7		259	46.4
300----	29	9,387	-40.1		278	45.9	30	9,273	-43.3		258	56.5
250----	29	10,611	-48.0		278	50.9	30	10,479	-51.3		275	50.5
200----	29	12,059	-55.0		275	56.7	29	11,904	-56.8		281	60.4
175----	29	12,906	-58.4		276	55.6	29	12,746	-58.8		286	48.6
150----	29	13,868	-62.0		272	51.5	28	13,716	-60.9		283	46.4
125----	29	14,986	-65.3		277	45.3	28	14,843	-63.2		276	37.9
100----	27	16,337	-67.3		272	38.3	25	16,208	-63.7		272	33.0
80-----	27	17,681	-67.2		274	28.4	24	17,584	-62.5		274	23.1
60-----	27	19,431	-63.7		271	16.5	24	19,369	-60.3		270	19.2
50-----	27	20,555	-61.9		262	11.7	24	20,508	-59.3		262	14.0
40-----	26	21,945	-58.9		260	14.6	24	21,912	-57.3		262	15.7
30-----	26	23,765	-55.4		266	15.7	24	23,742	-55.0		273	22.9
25-----	26	24,933	-53.8		259	18.7	23	24,906	-53.7		273	24.3
20-----	16	26,381	-52.6		261	26.6	22	26,343	-52.6		275	33.2
15-----							12	28,259	-50.3			

Standard pressure surface (mb.)	WINNEMUCCA, NEV. (873 MB.)						1/ YAKUTAT, ALASKA (1006 MB.)					
					Wind						Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	29	1,310	- 3.4	81	23	0.8	29	12	3.4	90	97	5.6
1,000--	29	221					29	56			101	6.2
950----	29	631					29	472	3.6	81	131	8.7
900----	29	1,068					29	912	.7	81	157	7.4
850----	29	1,522	.9	59	71	1.7	29	1,369	- 2.0	80	177	8.4
800----	29	2,008	- .3	49	303	2.1	29	1,849	- 4.8	75	188	10 5
750----	29	2,520	- 2.9	48	318	6.0	29	2,352	- 7.9	71	208	10.5
700----	29	3,067	- 5.1	47	322	10.7	29	2,888	-11.3	66	215	13.0
650----	29	3,643	- 8.0	48	320	14.2	29	3,447	-15.1	60	222	15.5
600----	29	4,265	-11.8	44	317	17.7	29	4,053	-19.3	59	227	16.9
550----	29	4,924	-15.4	40	314	21.8	29	4,692	-23.7	57	232	18.7
500----	29	5,641	-20.1		316	27.4	29	5,385	-28.7	58	229	20.4
450----	29	6,408	-25.5		311	31.5	29	6,128	-33.8	59	232	23.3
400----	29	7,260	-31.6		313	33.6	29	6,949	-39.7		241	24.3
350----	29	8,192	-38.3		315	38.5	29	7,849	-45.9		244	21.6
300----	29	9,237	-45.7		316	37.1	29	8,863	-51.7		247	18.7
250----	29	10,434	-51.9		315	36.5	28	10,031	-56.3		255	23.9
200----	28	11,863	-56.3		307	39.2	27	11,451	-55.8		252	30.7
175----	28	12,708	-57.6		310	41.2	25	12,311	-54.9		252	31.1
150----	28	13,677	-59.5		306	37.9	22	13,276	-54.1			
125----	28	14,815	-60.8		304	31.7	21	14,442	-54.5			
100----	27	16,200	-62.3		300	27.4	21	15,872	-54.3			
80-----	24	17,579	-62.1		308	20.2	21	17,300	-55.5			
60-----	24	19,359	-61.5		303	15.3	20	19,134	-55.8			
50-----	23	20,488	-60.9		309	11.3	20	20,293	-56.9			
40-----	22	21,880	-59.9		310	11.9	19	21,697	-58.1			
30-----	17	23,689	-57.9		295	11.9	18	23,491	-59.7			
25-----	15	24,837	-56.7				16	24,599	-61.4			
20-----	7	26,258	-55.1				14	26,057	-61.0			
15-----							11	27,918	-60.4			

Standard pressure surface (mb.)	YUCCA FLAT, NEV. (883 MB.)					
					Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	30	1,196	0.4	72	337	2.9
1,000--	30	187				
950----	30	603				
900----	30	1,044				
850----	30	1,508	4.7	50	360	6.2
800----	30	2,001	2.8	46	355	4.3
750----	30	2,518	.6	43	338	6.4
700----	30	3,074	- 1.9	40	310	9.7
650----	30	3,658	- 5.0	40	315	13.8
600----	30	4,287	- 8.8	38	319	17.1
550----	30	4,952	-12.8	36	317	22.5
500----	30	5,678	-18.0	39	313	25.5
450----	30	6,449	-23.6		309	27.4
400----	30	7,310	-29.6		307	32.4
350----	30	8,250	-36.4		306	35.9
300----	30	9,304	-42.9		305	42.0
250----	30	10,515	-49.8		298	44.1
200----	30	11,957	-55.3		296	46.8
175----	30	12,804	-57.9		293	48.4
150----	30	13,771	-60.7		294	43.7
125----	25	14,921	-63.2		296	36.3
100----	20	16,301	-65.0		296	28.2
80-----	18	17,671	-64.6		299	19.6
60-----	18	19,435	-62.7		304	9.9
50-----	16	20,563	-61.4		315	8.5
40-----	16	21,953	-59.4		305	5.6
30-----	14	23,769	-56.4		307	12.2
25-----	10	24,920	-54.9		271	15.5
20-----	6	26,372	-53.1			
15-----						

1/ 10 mb., 6 obs., 30,639 m., -58.1°C.

Note: All observations scheduled at 1200, G.C.T. "Number of observations" refers to those of dynamic height only. Temperature, humidity or wind data may be missing for one or more pressure surfaces of some observations. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Relative humidity data are not published for standard pressure surfaces having less than 16 actual observations.

Relative humidity data beginning with October 1, 1948, were computed and expressed in these tables on the basis of vapor-pressure over water. Upper air values of relative humidity at levels with temperatures less than 0°C, have formerly been computed and expressed on the basis of the vapor-pressure over ice. All relative humidity observations are obtained by electric hygrometer and have been adjusted to compensate for the value occurring below the operating range of the humidity element

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

SOLAR RADIATION DATA

Solar radiation intensities, tabulated in langleys per minute on a surface normal to the direction of the sun. **NOVEMBER 1957**

MADISON, WIS.

Date	Sun's zenith distance								
	A. M.				*	P. M.			
	78.7°	75.7°	70.7°	60.0°	*	60.0°	70.7°	75.7°	78.7°
	Air mass								
	4.84	3.87	2.90	1.94	*	1.94	2.90	3.87	4.84
Nov.									
6------	S0.94	S1.04	S1.17			Ci			
9------			Clouds				S1.29	S1.14	S1.06
10-----	S.94	K	S1.18	----	S1.35	----	S1.16	S1.02	S.94
11-----	S.88	S.99	S1.11	----	M1.28	----	S1.05	S.93	S.81
22-----		Sc		----	----	----	----	S1.14	S1.05
24-----		Sc		----	S1.44	----	S1.34	S1.21	S1.12
27-----	S.74	S.82	Sc	----	----	----	----	----	----
30-----	S1.03	S1.12	----	----	----	----	----	----	----
Averages	.91	.99	1.15	----	1.36	----	1.21	1.09	1.00

WASHINGTON, D. C. (WBCO)

Date	Sun's zenith distance								
	A. M.				*	P. M.			
	78.7°	75.7°	70.7°	60.0°	*	60.0°	70.7°	75.7°	78.7°
	Air mass								
	5.00	4.00	3.00	2.00	*	2.00	3.00	4.00	5.00
Nov.									
6------	0.82	0.88	0.96	----	1.33	1.08	----	----	----
21-----	----	.89	1.04	1.28	----	----	----	----	----
24-----	----	----	----	----	1.28	1.26	1.09	0.99	0.90
26-----	----	----	----	----	----	----	----	.64	MH.56
29-----	----	----	----	----	----	----	----	.98	.87
Averages	.82	.88	1.00	1.28	1.30	1.17	1.09	.87	.78

TUCSON, ARIZONA

Date	Sun's zenith distance								
	A. M.				*	P. M.			
	78.7°	75.7°	70.7°	60.0°	*	60.0°	70.7°	75.7°	78.7°
	Air mass								
	4.56	3.65	2.74	1.83	*	1.83	2.74	3.65	4.56
Nov.									
1------	----	----	----	1.32	1.42	----	----	----	----
2------	----	----	----	1.31	1.41	----	----	----	----
19-----	0.97	1.09	1.19	1.36	1.43	1.33	1.19	1.07	0.96
22-----	----	----	----	----	----	1.37	1.21	1.10	1.02
24-----	1.06	1.14	1.24	1.37	1.44	1.38	1.25	1.16	1.03
25-----	1.06	1.17	1.27	1.42	1.46	1.40	1.25	1.13	1.04
26-----	1.02	1.13	1.23	1.37	1.40	----	----	----	----
28-----	1.03	1.13	1.24	1.38	1.42	1.20	1.17	1.04	.95
30-----	.99	1.09	1.25	1.42	1.46	1.40	1.26	1.23	1.03
Averages	1.02	1.12	1.23	1.36	1.43	1.34	1.22	.92	1.00

* Values corresponding to true solar noon
K Smoke
MH Moderate haze
S Slight haze - indeterminable
M Moderate haze - indeterminable
I Intense haze - indeterminable

BLUE HILL, MASS.

Date	Sun's zenith distance								
	A. M.				*	P. M.			
	78.7°	75.7°	70.7°	60.0°	*	60.0°	70.7°	75.7°	78.7°
	Air mass								
	4.89	3.92	2.94	1.96	*	1.96	2.94	3.92	4.89
Nov.									
7-----	0.96	1.06	1.16	1.30	1.32	1.27	1.09	.97	.90
10----	.96	1.06	1.19	----	----	----	----	----	----
11----	1.03	1.12	1.24	1.33	1.34	1.33	1.21	1.11	1.05
12----	.78	.91	1.04	1.22	1.22	1.21	1.03	.89	.83
13----	.73	.85	1.00	1.18	1.17	1.16	----	----	----
27----	1.03	1.12	1.25	----	1.35	----	1.19	----	----
Averages	.91	1.02	1.15	1.26	1.28	1.24	1.13	.99	.93

LINCOLN, NEBRASKA

Date	Sun's zenith distance								
	A. M.				*	P. M.			
	78.7°	75.7°	70.7°	60.0°	*	60.0°	70.7°	75.7°	78.7°
	Air mass								
	4.80	3.84	2.88	1.92	*	1.92	2.88	3.84	4.80
Nov.									
9-----	0.92	1.00	1.10	1.22	1.22	1.21	1.05	0.92	0.84
24----	.92	1.01	1.13	----	1.24	----	1.10	.99	.89
26----	----	----	----	----	----	----	1.14	1.01	.91
28----	1.06	1.15	1.25	----	1.34	----	----	----	----
29----	----	----	----	----	1.35	----	1.21	1.09	----
30----	1.02	1.12	1.21	----	----	----	----	----	----
Averages	.98	1.07	1.17	1.22	1.29	1.21	1.13	1.00	.88

OMAHA, NEBRASKA

Date	Sun's zenith distance								
	A. M.				*	P. M.			
	78.7°	75.7°	70.7°	60.0°	*	60.0°	70.7°	75.7°	78.7°
	Air mass								
	4.78	3.82	2.87	1.91	*	1.91	2.87	3.82	4.78
Nov.									
1-4---					Clouds				
5-----			Clouds			S1.18		Clouds	
6-8---					Clouds				
9-----	S1.00	S1.10	S1.21	S1.36	S1.37	S1.36	S1.18	S1.08	S0.98
10----		Clouds		I1.13	I1.15	I1.14	I1.06	I.82	I.73
11----	S.82	S.91	M1.03	M1.19	M1.21		Clouds		
12-18-					Clouds				
19----		Clouds		----	S1.28	----		Clouds	
20----	S.95	S1.07	S1.19	----	Clouds	----		Clouds	
21----					Clouds				
22----	Clouds	S1.09	S1.19	----	S1.33	----	S1.19	S1.04	S.95
23----		Clouds		----	Clouds	----		Clouds	
24----	M.97	M1.05	M1.19	----	M1.29	----	M1.17	M.98	Clouds
25-27-		Clouds		----	Clouds	----		Clouds	
28----	S1.01	S1.10	S1.21	----	S1.32	----	S1.17	Clouds	
29----		Clouds		----	Clouds	----	1.18	1.05	Clouds
30----	S.98	Clouds		----	Clouds	----		Clouds	
Averages	.96	1.05	1.17	1.23	1.28	1.23	1.16	.99	.89

Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station listed above appears in the February 1957 issue, Vol. 8, No. 2, page 63, of this publication.

SOLAR RADIATION DATA

NOVEMBER 1957

Daily totals and average daily totals by weeks of solar and sky radiation, plus the radiation reflected from the ground, as received on a vertical surface facing south at Blue Hill, Mass. during the month

								Avg								Avg								Avg
Date-----------	5	6	7	8	9	10	11		12	13	14	15	16	17	18		19	20	21	22	23	24	25	
Langleys-------	76	532	581	97	358	311	614	367	544	454	292	328	469	431	339	408	10	522	492	374	66	60	202	247
Date-----------	26	27	28	29	30	1	2																	
Langleys-------	424	569	246	183	10	583	349	338																

Daily totals and average daily totals by weeks of diffuse (sky) radiation as received on a horizontal surface at Blue Hill, Mass. during the month

								Avg								Avg								Avg
Date-----------	5	6	7	8	9	10	11		12	13	14	15	16	17	18		19	20	21	22	23	24	25	
Langleys-------	86	71	41	104	91	94	38	75	47	57	86	86	59	63	84	69	27	44	52	72	84	63	103	64
Date-----------	26	27	28	29	30	1	2																	
Langleys-------	63	37	77	63	27	36	58	51																

Note: **Langley is the unit used to denote one gram calorie per square centimeter.**

NET RADIATION

Net radiation in langleys per day (midnight to midnight) at Raleigh, N. C., during the month **NOVEMBER 1957**

Date.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**Avg.**
Langleys. . .	*6	51	89	80	67	63	81	*-13	68	32	**	59	74	86	*7	*-13	95	15	*-20	38	28	*-29	*-14	44	*-56	75	63	*-11	*2	*-11		33

* Estimated values owing to occurrence of rain during period. While rain is falling, radiation is assumed to be zero.

** Radiometer inoperative.

The measurement is made with a Beckman and Whitley net exchange radiometer over a plot of Bermuda grass. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the North Carolina State College at Raleigh. The instrument with which they were measured has not been checked by the Weather Bureau.

SOLAR RADIATION DATA

Daily totals and weekly averages of solar radiation (direct and diffuse) received on a horizontal surface, tabulated in langleys.

NOVEMBER 1957

1957	Aklavik, MacKenzie	Albuquerque, N.Mex.	Annette, Alaska	Apalachicola, Fla.	Astoria, Oreg.	Atlanta, Ga.	Barrow, Alaska	Bethel, Alaska	Bismarck, N. Dak.	Blue Hill, Mass.	Boise, Idaho	Boston, Mass.	Canton Island Pacific Area	Cape Hatteras, N.C.
Nov. 5----	16	352	126	402	242	231	4	31	247	104	284	89	631	349
Nov. 6----	13	253	174	414	212	391	7	37	262	277	286	245	216	438
Nov. 7----	10	(280)	167	359	168	236	7	51	63	280	253	266	540	426
Nov. 8----	11	---	42	157	165	142	25	21	142	110	259	87	557	215
Nov. 9----	18	387	58	361	145	423	18	17	263	215	259	211	651	338
Nov. 10----	13	381	74	235	48	363	15	36	227	172	69	132	532	426
Nov. 11----	6	263	76	251	26	366	13	23	243	283	244	---	650	346
Average------	12	(319)	102	311	144	307	13	31	207	206	236	172	539	363
Nov. 12----	6	278	77	363	63	230	11	27	191	255	82	228	(583)	350
Nov. 13----	9	327	43	223	97	103	3	24	213	221	57	215	680	357
Nov. 14----	7	258	60	67	116	151	2	46	27	182	42	158	662	129
Nov. 15----	6	248	131	383	122	256	---	63	29	188	190	165	628	269
Nov. 16----	4	146	85	---	203	180	(2)	30	79	227	251	208	637	207
Nov. 17----	3	222	127	---	26	96	---	45	40	222	226	213	589	328
Nov. 18----	2	376	126	293	94	140	(1)	52	83	184	80	182	190	83
Average------	5	265	93	266	103	165	(4)	41	95	211	133	196	(567)	246
Nov. 19----	2	346	61	181	84	305	*	21	90	48	170	15	184	137
Nov. 20----	3	348	156	409	206	371	---	21	81	227	195	213	442	364
Nov. 21----	3	---	32	390	82	48	---	42	189	225	273	213	376	365
Nov. 22----	5	372	10	75	179	55	---	22	117	184	185	193	279	255
Nov. 23----	7	352	0	353	193	65	---	16	108	94	---	84	112	76
Nov. 24----	1	344	25	66	39	114	---	18	89	65	216	63	426	187
Nov. 25----	3	343	58	343	97	150	---	9	185	139	214	138	268	23
Average------	3	351	49	260	126	158	---	21	123	140	209	131	298	201
Nov. 26----	4	344	44	383	133	343	---	(34)	98	207	198	154	442	342
Nov. 27----	2	295	74	349	68	298	---	52	144	247	203	214	298	303
Nov. 28----	0	345	76	85	143	102	---	26	57	152	153	141	472	193
Nov. 29----	0	344	4	156	140	104	---	11	208	108	220	106	563	149
Nov. 30----	0	345	94	227	37	199	---	11	142	28	205	24	604	79
Dec. 1----	---	345	67	401	53	354	---	26	186	248	157	219	371	365
Dec. 2----	---	239	106	383	69	341	---	17	72	171	185	174	96	354
Average------	1	322	66	283	92	249	---	(25)	130	166	189	148	407	255

1957	Caribou, Me.	Charleston, S. C.	Cleveland, Ohio	Columbia, Mo.	Corvallis, Oreg.	Davis, Calif.	Dodge City, Kans.	E. Lansing, Mich.	Edmonton, Alberta	El Paso, Tex.	Ely, Nev.	Fairbanks, Alaska	Ft. Worth, Tex.
Nov. 5----	120	356	80	342	265	337	41	135	85	411	267	22	23
Nov. 6----	164	381	285	136	250	323	98	290	127	368	209	14	53
Nov. 7----	105	356	271	53	146	200	126	82	80	441	347	32	115
Nov. 8----	103	114	48	204	209	275	---	28	141	425	248	56	390
Nov. 9----	72	407	157	348	75	254	291	172	126	423	333	18	392
Nov. 10----	136	341	101	291	76	171	326	248	58	310	291	18	180
Nov. 11----	239	334	235	310	42	259	79	237	83	332	229	20	234
Average------	134	327	168	241	152	260	160	170	100	387	275	26	198
Nov. 12----	143	325	233	100	70	73	108	264	33	400	221	32	41
Nov. 13----	188	264	95	60	96	162	140	33	19	413	61	28	119
Nov. 14----	76	92	74	86	122	291	220	25	54	350	113	16	290
Nov. 15----	16	(255)	171	156	210	296	314	131	84	377	272	28	288
Nov. 16----	26	142	181	94	199	281	105	60	92	282	206	17	250
Nov. 17----	27	161	110	51	50	151	23	80	139	188	326	15	168
Nov. 18----	71	258	60	---	120	64	268	31	76	412	118	18	149
Average------	78	(214)	132	91	124	188	168	89	71	346	188	22	186
Nov. 19----	14	100	54	292	131	224	339	93	(75)	395	219	15	364
Nov. 20----	55	369	181	260	181	276	328	143	131	390	229	10	367
Nov. 21----	95	333	122	247	177	298	155	137	104	377	321	12	268
Nov. 22----	155	196	181	195	177	269	336	175	81	364	295	12	42
Nov. 23----	179	58	195	283	203	263	304	135	71	(401)	293	23	160
Nov. 24----	55	189	123	279	165	259	308	130	58	384	285	31	82
Nov. 25----	142	110	151	263	65	256	310	63	88	376	283	21	347
Average------	99	193	144	260	157	263	297	125	(87)	(384)	275	18	233
Nov. 26----	195	341	119	254	197	272	310	156	104	384	235	8	350
Nov. 27----	188	308	160	137	152	266	237	196	99	376	297	8	279
Nov. 28----	23	163	55	201	198	266	(304)	26	66	396	273	---	344
Nov. 29----	22	114	99	167	171	267	307	59	97	389	290	8	309
Nov. 30----	36	69	33	272	36	260	313	135	105	396	260	12	357
Dec. 1----	103	352	175	258	99	218	305	147	72	397	264	6	363
Dec. 2----	148	342	142	119	162	267	229	226	98	232	277	7	313
Average------	102	241	112	201	145	260	(286)	135	92	367	271	8	331

1957	Fresno, Calif.	Glasgow, Mont.	Grand Junction, Colo.	Grand Lake, Colo.	Great Falls, Mont.	Greensboro, N. C.	Griffin, Ga.	Indianapolis, Ind.	Inyokern, Calif.	Ithaca, New York	Lake Charles, La.	Las Vegas, Nev.
Nov. 5----	303	258	268	121	254	298	277	---	232	68	217	118
Nov. 6----	320	159	137	208	179	345	353	---	408	222	70	405
Nov. 7----	284	73	226	38	60	312	227	---	399	266	137	396
Nov. 8----	274	155	308	169	261	51	126	---	414	65	391	337
Nov. 9----	(285)	211	326	208	201	334	396	---	424	226	440	391
Nov. 10----	259	178	316	188	123	337	326	---	433	171	177	364
Nov. 11----	288	144	151	118	179	330	327	---	421	282	276	340
Average------	(288)	168	247	150	179	287	290	---	390	186	244	336
Nov. 12----	273	194	181	101	101	305	198	---	398	244	174	345
Nov. 13----	165	192	121	35	36	153	130	---	213	184	122	306
Nov. 14----	146	76	80	26	145	76	150	---	299	101	360	238
Nov. 15----	273	32	315	71	93	253	230	---	309	102	224	276
Nov. 16----	223	48	103	58	162	106	170	---	356	182	319	218
Nov. 17----	237	91	134	53	208	222	163	---	398	56	111	363
Nov. 18----	152	202	255	60	104	38	157	---	377	102	145	310
Average------	210	119	170	58	121	165	171	---	336	139	208	294
Nov. 19----	128	93	136	49	56	227	349	---	375	43	408	333
Nov. 20----	229	78	274	64	51	294	354	---	378	188	381	328
Nov. 21----	168	207	296	153	202	154	99	---	385	170	74	349
Nov. 22----	264	70	264	95	42	61	88	---	382	94	37	336
Nov. 23----	263	100	283	149	105	62	79	---	364	235	69	330
Nov. 24----	272	118	265	113	79	96	142	---	370	53	106	324
Nov. 25----	264	150	266	113	41	40	124	---	369	73	347	324
Average------	227	117	255	105	82	134	177	---	375	122	203	332
Nov. 26----	247	81	277	145	---	272	329	---	364	71	372	320
Nov. 27----	228	180	280	135	---	235	255	---	372	211	189	337
Nov. 28----	239	73	151	15	---	49	132	---	363	57	246	319
Nov. 29----	252	132	270	137	---	125	121	109	374	40	341	334
Nov. 30----	265	143	256	56	---	110	214	221	383	36	400	325
Dec. 1----	224	120	252	154	---	277	337	250	351	156	389	310
Dec. 2----	260	93	257	81	---	263	322	167	367	109	345	320
Average------	245	117	249	103	---	190	244	187	368	97	326	324

Note.--Langley is the unit used to denote one gram calorie per square centimeter.
Values in parentheses are interpolated.
* Sun below horizon

SOLAR RADIATION DATA

Daily totals and weekly averages of solar radiation (direct and diffuse) received on a horizontal surface, tabulated in langleys. - Continued

1957	Lincoln, Nebr.	Little Rock, Ark.	Los Angeles, Calif. (urban)	Los Angeles, Calif.	Madison, Wis.	Matanuska, Alaska	Medford, Oreg.	Miami, Fla.	Moosonee, Ontario	Nashville, Tenn.	Newport, R. I.	New York, N. Y.	Normandin, Que.	North Omaha, Nebr.	Oak Ridge, Tenn.	Oklahoma City, Okla.	Ottawa, Ontario	Phoenix, Ariz.	Portland, Me.	Raleigh, N. C.	Rapid City, S.Dak.	Riverside, Calif.	St. Cloud, Minn.	San Antonio, Tex.	Santa Maria, Calif.	S. Ste. Marie, Mich.	Sayville, New York	Schenectady, N. Y.	Seattle-Tacoma, Wash	Shreveport, La.	Spokane, Wash.	State College, Pa.	Swan Island, W. I.	Tampa, Fla.	Toronto, Ontario	Tucson, Ariz.	Wake Island Pacific Area	Washington, D. C. (Silver Hill Obs.)	Winnipeg, Manitoba
Nov. 5----	76	72	289	285	198	---	283	460	88	187	174	205	---	230	247	38	73	---	168	290	276	271	205	220	393	152	139	11	205	26	239	41	537	453	110	---	564	265	198
Nov. 6----	81	163	380	364	283	---	260	436	38	387	272	224	---	76	381	65	246	390	141	374	308	427	140	80	391	222	356	20	155	40	173	209	531	442	267	334	439	331	107
Nov. 7----	59	16	349	314	12	38	106	399	38	183	297	278	---	50	233	193	174	393	247	368	183	403	32	117	342	29	337	22	111	67	154	299	486	392	207	416	532	329	65
Nov. 8----	179	376	328	319	44	26	158	384	21	170	145	66	---	151	176	376	28	---	87	71	298	385	130	442	360	12	145	3	88	416	223	40	548	344	15	383	707	107	(142)
Nov. 9----	324	376	354	320	270	---	131	277	69	391	197	294	---	327	396	350	183	377	208	363	305	396	248	256	368	128	261	22	161	436	125	196	577	346	116	394	437	312	200
Nov. 10----	274	300	328	311	265	18	75	323	187	396	250	245	---	286	387	363	184	376	223	374	296	394	251	51	330	147	330	11	40	302	71	252	520	427	205	399	540	336	153
Nov. 11----	199	272	298	312	258	---	71	366	61	310	295	279	---	223	379	173	214	361	270	367	264	328	231	70	372	196	347	24	58	317	96	307	445	323	218	370	520	316	168
Average------	170	225	332	318	190	---	155	378	72	289	233	227	---	192	314	223	157	379	192	315	276	372	176	176	365	126	274	16	117	229	155	192	521	390	163	383	534	285	(147)
Nov. 12----	57	28	320	314	156	22	46	208	62	249	266	229	---	61	277	43	195	333	200	333	173	340	57	83	353	200	277	20	67	31	36	300	492	388	225	373	427	311	53
Nov. 13----	25	27	153	164	19	32	37	339	21	61	239	192	---	45	100	61	166	357	216	262	238	199	39	249	240	44	293	18	83	24	77	237	493	342	101	376	433	---	32
Nov. 14----	191	222	125	133	4	10	130	239	15	184	245	129	---	170	95	201	28	255	70	111	135	154	59	405	208	4	235	6	86	303	50	65	547	175	39	283	381	63	35
Nov. 15----	16	147	217	242	87	39	134	365	9	246	198	256	---	17	263	275	(46)	294	126	311	101	201	52	136	311	79	266	18	135	123	97	238	469	398	34	320	324	282	90
Nov. 16----	73	244	249	243	22	20	196	395	29	227	231	128	40	55	84	278	75	257	210	66	197	316	38	275	---	8	173	17	198	251	109	163	544	382	87	157	415	96	39
Nov. 17----	26	28	333	324	90	14	36	391	38	30	245	229	16	49	104	33	54	323	152	294	96	398	44	160	343	104	269	7	57	183	108	181	522	383	74	197	---	---	52
Nov. 18----	119	58	319	309	12	11	84	421	33	80	170	62	93	113	121	121	180	365	225	82	139	365	61	398	279	19	89	14	61	87	45	32	587	323	97	381	520	24	65
Average------	73	108	245	247	56	21	95	337	29	154	228	175	149	73	149	145	(106)	312	171	209	154	282	50	244	289	65	229	14	98	143	75	174	522	342	94	298	417	155	52
Nov. 19----	264	324	283	286	65	19	---	305	22	195	98	54	7	257	293	347	15	353	10	131	241	332	133	390	341	42	86	1	49	394	239	72	563	161	31	383	542	84	50
Nov. 20----	244	279	326	318	106	9	48	220	73	281	236	226	96	210	247	273	159	356	227	328	169	354	97	194	343	82	263	16	---	223	152	132	---	406	142	382	(512)	274	72
Nov. 21----	202	324	309	291	114	31	245	121	56	198	238	229	71	134	180	166	93	350	170	244	258	366	176	67	342	73	279	10	77	239	115	146	601	409	173	381	(501)	281	160
Nov. 22----	288	44	246	256	239	56	215	390	67	37	177	142	70	294	37	101	127	366	175	70	224	371	217	59	341	175	161	15	103	16	94	154	---	325	139	398	475	92	74
Nov. 23----	270	152	298	297	74	17	215	408	59	162	59	33	74	246	81	361	59	339	166	41	235	341	69	50	336	38	33	15	175	49	67	203	462	376	96	383	437	38	72
Nov. 24----	291	58	318	303	233	31	138	417	95	58	86	117	91	273	79	213	110	344	64	132	201	345	195	260	339	67	114	4	58	35	97	63	565	250	122	380	390	248	65
Nov. 25----	278	306	318	292	56	44	63	290	155	318	122	112	166	266	220	333	176	346	269	34	204	345	(74)	389	336	86	119	16	79	367	110	183	495	91	93	375	479	114	66
Average------	263	212	300	292	127	30	154	307	75	179	145	130	82	240	162	256	106	351	154	140	219	351	(137)	201	340	81	151	11	90	189	125	136	537	288	114	383	(476)	162	80
Nov. 26----	270	302	287	269	204	30	57	406	150	311	207	188	155	243	310	329	221	338	121	307	160	325	78	329	325	122	258	11	152	361	147	90	536	411	190	363	495	163	103
Nov. 27----	177	168	257	236	---	10	101	118	(44)	234	247	155	150	147	250	164	111	322	217	282	240	328	52	258	307	13	287	18	46	248	97	235	431	353	159	360	489	219	88
Nov. 28----	287	129	304	291	131	---	(168)	387	141	37	136	114	35	261	113	338	16	351	103	52	104	326	155	350	322	40	144	7	164	337	110	78	---	209	54	373	466	71	100
Nov. 29----	241	202	296	286	89	12	157	306	45	284	117	148	55	223	236	168	21	349	30	77	197	341	190	381	326	79	167	4	125	358	80	88	550	357	68	375	403	176	151
Nov. 30----	277	324	315	275	220	15	215	372	117	---	35	17	74	230	101	340	36	349	38	62	203	329	154	401	297	119	14	1	22	376	57	83	---	78	85	382	391	22	99
Dec. 1----	290	310	321	304	191	6	71	417	(132)	323	241	245	143	228	319	340	125	337	218	322	194	322	166	396	206	83	275	16	35	375	31	241	---	446	55	373	493	(279)	125
Dec. 2----	191	295	294	271	189	4	65	354	88	311	194	142	128	184	299	---	188	221	---	307	128	322	124	256	326	75	166	12	43	320	53	137	---	385	145	212	437	252	149
Average------	248	247	296	276	171	13	(119)	337	(102)	250	168	144	106	217	233	280	103	324	121	201	175	328	131	339	301	76	187	10	84	339	82	136	---	320	108	348	453	(169)	116

Note.--Langley is the unit used to denote one gram calorie per square centimeter.
Values in parentheses are interpolated.

DESCRIPTION of CHARTS

CHART I. A. AVERAGE TEMPERATURE (°F.) AT SURFACE. B. DEPARTURE OF AVERAGE TEMPERATURE FROM NORMAL.-The average monthly temperature presented in Chart I-A is computed from the average daily maximum and the average daily minimum which in turn are computed from the daily maximum and minimum temperatures reported by some 225 first-order Weather Bureau stations and 700 cooperative stations. The departures from normal are presented in Chart I-B. They are based on the 30-year normals (1921-50) for the first-order Weather Bureau stations and on means of 25 years or more (mostly 1931-55) for the cooperative stations.

CHART II. TOTAL PRECIPITATION.-

CHART III. A. DEPARTURE OF PRECIPITATION FROM NORMAL (INCHES). B. PERCENTAGE OF NORMAL PRECIPITATION.-Chart II is based on daily precipitation records at about 800 Weather Bureau and cooperative stations. In Chart III the anomaly in the month's precipitation is shown as a departure from the normal total and as a percentage of the normal total. These anomalies show the deviations from the 30-year normals (1921-50) for about 225 first-order Weather Bureau stations in Charts III A and B, supplemented in Chart III-A by the deviation from means of 25 years or more (mostly 1931-55) for about 700 cooperative stations.

CHART IV. TOTAL SNOWFALL.-

CHART V. A. PERCENTAGE OF NORMAL SNOWFALL. B. DEPTH OF SNOW ON GROUND.-Chart IV gives the total depth in inches of unmelted snowfall as reported during the month by Weather Bureau and cooperative stations. This is converted in Chart V-A into a percentage of the normal total amount computed for each Weather Bureau station having at least 10 years of record. The depth of snow on ground is that reported by both Weather Bureau and cooperative stations as of 7:00a.m. Eastern Standard Time on the last Monday of the month. This is reported only for the months December through April. The snowfall charts are presented each month November through April.

CHART VI. A. PERCENTAGE OF SKY COVER BETWEEN SUNRISE AND SUNSET. B. PERCENTAGE OF NORMAL SKY COVER BETWEEN SUNRISE AND SUNSET.-These charts are based on visual observations made hourly at Weather Bureau stations and averaged for the month. Sky cover includes, in addition to cloudiness, obscuration of the sky by fog, smoke, etc. Normal amount of sky cover is computed for stations having at least 10 years of record.

CHART VII. A. PERCENTAGE OF POSSIBLE SUNSHINE. B. PERCENTAGE OF NORMAL SUNSHINE.-Chart VII-A shows the amount of sunshine received in terms of percentage of the total hours of sunshine possible during the month. In Chart VII-B this is shown as a percentage of the normal number of hours of sunshine received. Normals are computed for Weather Bureau stations having at least 10 years of record.

CHART VIII. AVERAGE DAILY VALUES OF SOLAR RADIATION, DIRECT AND DIFFUSE.-Plotted on the chart are the monthly means of daily total solar radiation, both direct and diffuse, in langleys (gm. cal. cm.$^{-2}$) for all Weather Bureau stations which record this element. Supplementary data for which limits of accuracy are wider than for those data shown are drawn upon in making the analysis. The inset shows the percentages of the mean based on the period 1951-55.

CHART IX.-TRACKS OF CENTERS OF ANTICYCLONES AT SEA LEVEL.-

CHART X. TRACKS OF CENTERS OF CYCLONES AT SEA LEVEL.-Centers which can be identified for 24 hours or more are tracked in these charts. Semi-permanent features such as the Great Basin and Pacific Highs and Colorado and Mexico Lows are not shown. The 7:00 a.m. EST positions are shown by open circles, with the intermediate positions at 6-hour intervals shown by solid dots. The date is given above the circle and the central pressure to whole millibars below. A dashed track indicates a regeneration rather than actual movement to the next position. Solid squares indicate position of stationary center for period shown beside it.

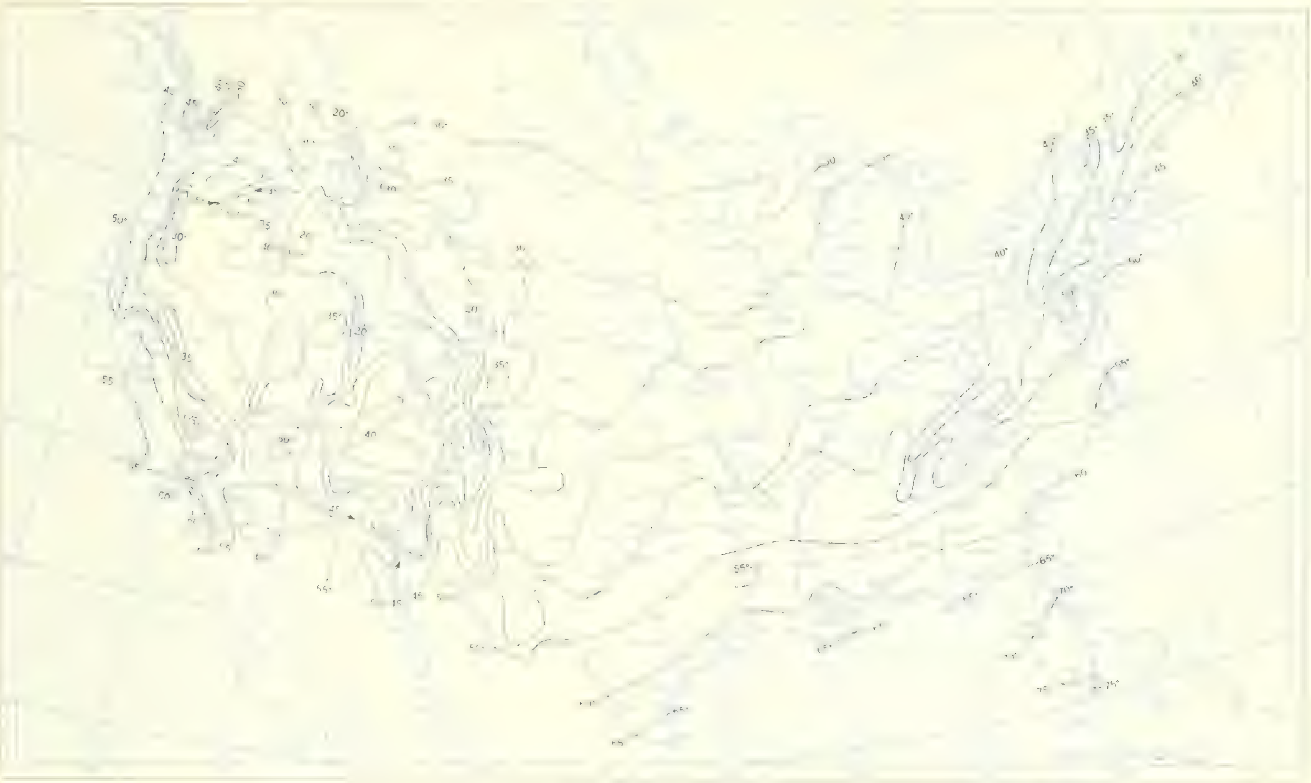
CHART XI. AVERAGE SEA LEVEL PRESSURE (mb.) AND SURFACE WINDROSES.-The average monthly sea level pressure is obtained from the averages of the 7:00 a.m. and 7:00 p.m. EST pressures reported at Weather Bureau stations. Windroses are based on the hourly wind directions (to 16 points of the compass) reported by Weather Bureau stations, each circle or arc indicating 5 percent of the time. The inset shows the departure of the average pressure from the normal average computed for each station having at least 10 years of record and for each 10° intersection in a diamond grid over the oceans from interpolated values read from the Historical Weather Maps for the 20 years of best coverage prior to 1940.

CHARTS XII-XVII. AVERAGE HEIGHT, TEMPERATURE, AND RESULTANT WINDS, 850, 700, 500, 300, 200, and 100 mb.-Height is given in geopotential meters and temperature in degrees Celsius. These are the averages of the 1200 GMT radiosonde reports. Wind speeds are given in knots; flag represents 50 knots, full feather 10 knots, and half feather 5 knots. Directions are shown to 360° of the compass. Winds are based on rawins at the indicated pressure surface and at 1200 GMT.

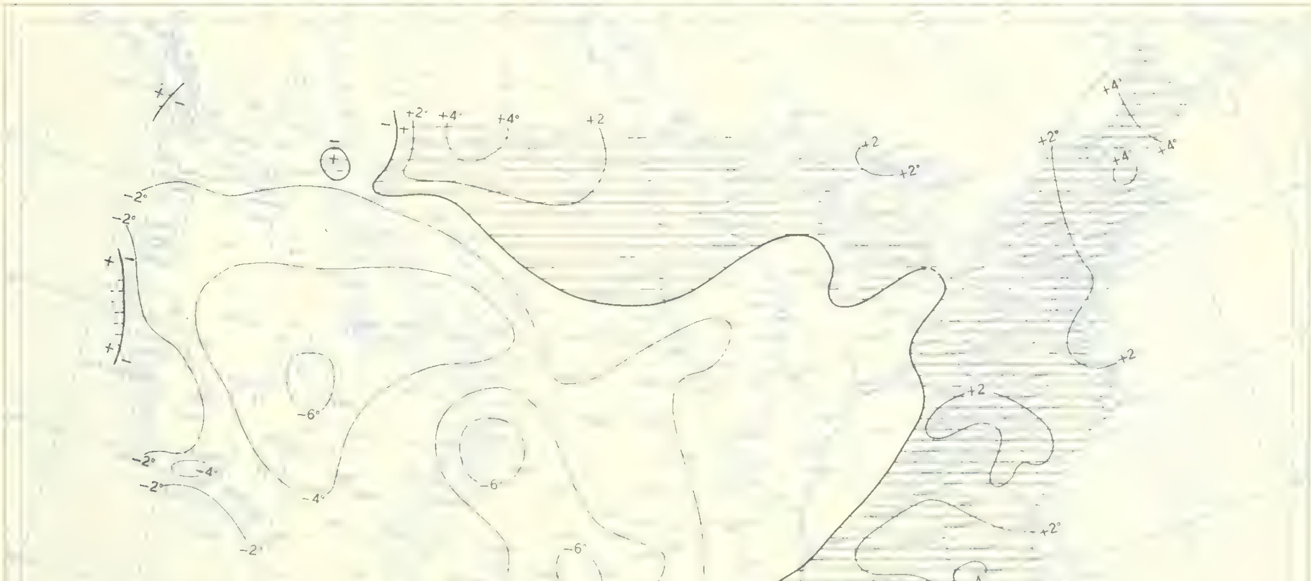
Tabulations of exact values of most of these charted elements for Weather Bureau stations are printed each month in tabular form in CLIMATOLOGICAL DATA, NATIONAL SUMMARY, and annual averages are presented in the CDNS Annual Issue each year.

USCOMM-WB-Asheville - 2/10/58 - 1850

Chart I. A. Average Temperature (°F.) at Surface, November 1957.



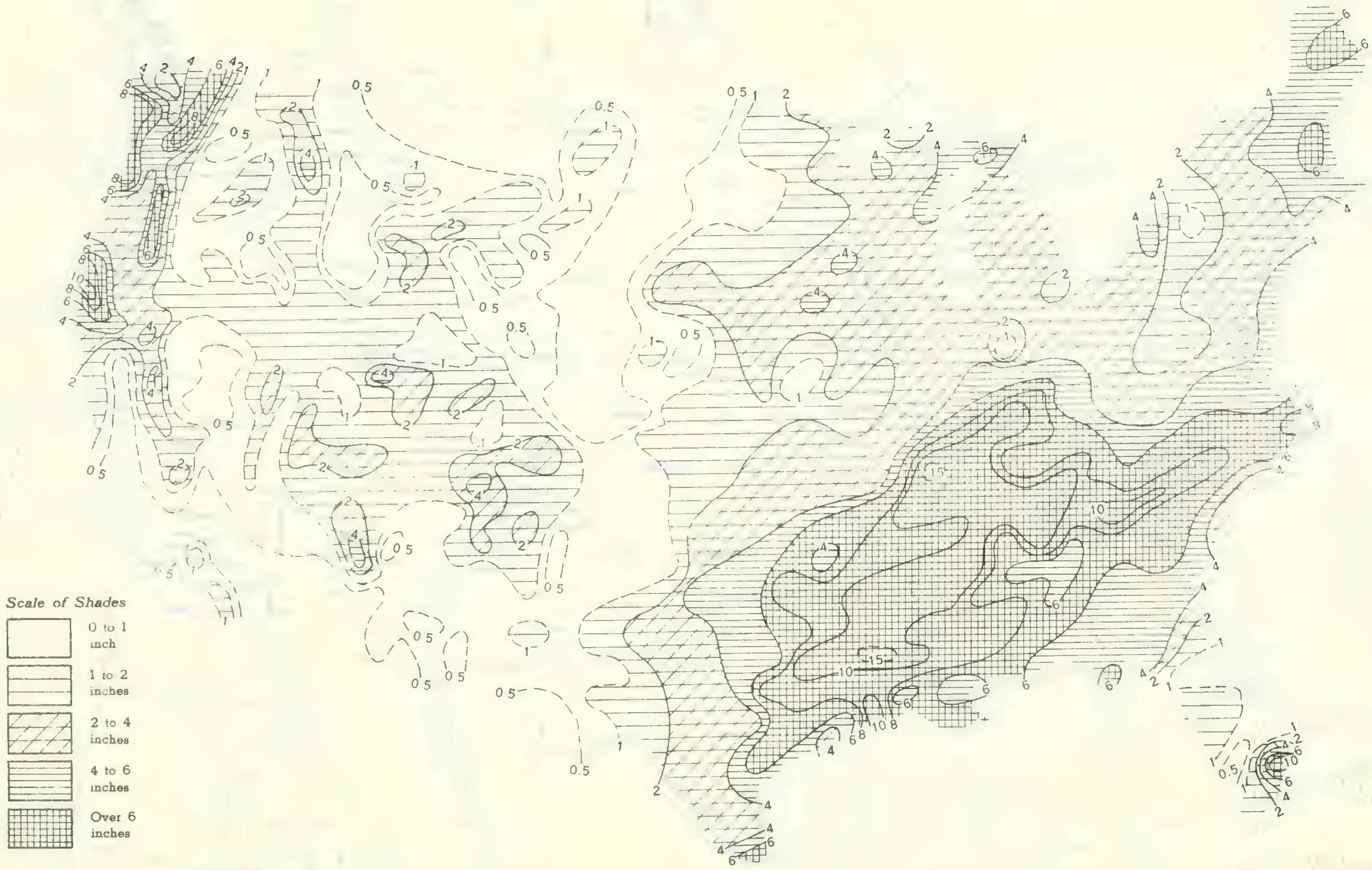
B. Departure of Average Temperature from Normal (°F.), November 1957.



A. Based on reports from over 900 Weather Bureau and cooperative stations. The monthly average is half the sum of the monthly average maximum and monthly average minimum, which are the average of the daily maxima and daily minima, respectively.

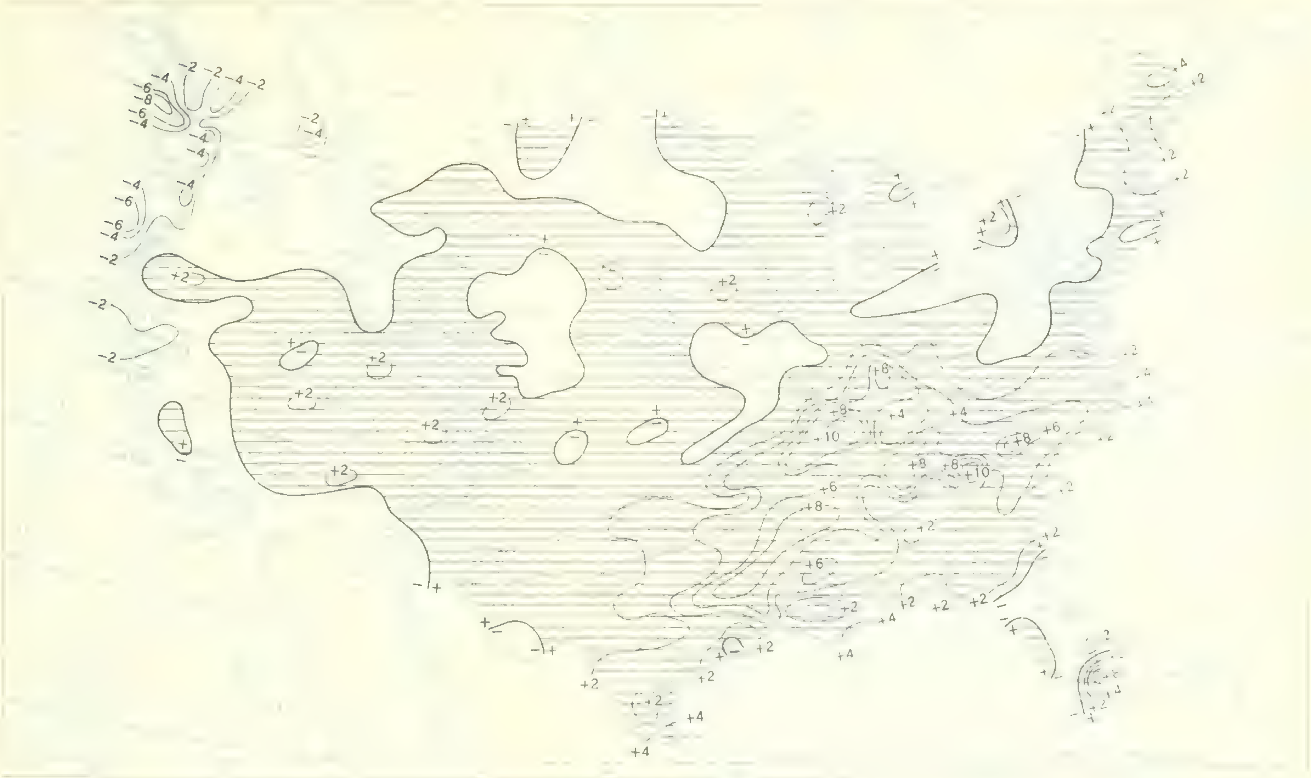
B. Departures from normal are based on the 30-yr. normals (1921-50) for Weather Bureau stations and on means of 25 years or more (mostly 1931-55) for cooperative stations.

Chart II. Total Precipitation (Inches), November 1957.

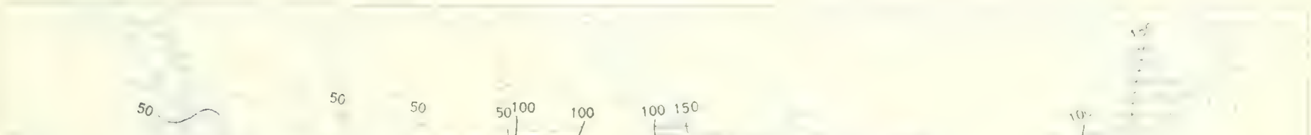


Based on daily precipitation records at about 800 Weather Bureau and cooperative stations.

Chart III. A. Departure of Precipitation from Normal (Inches), November 1957.

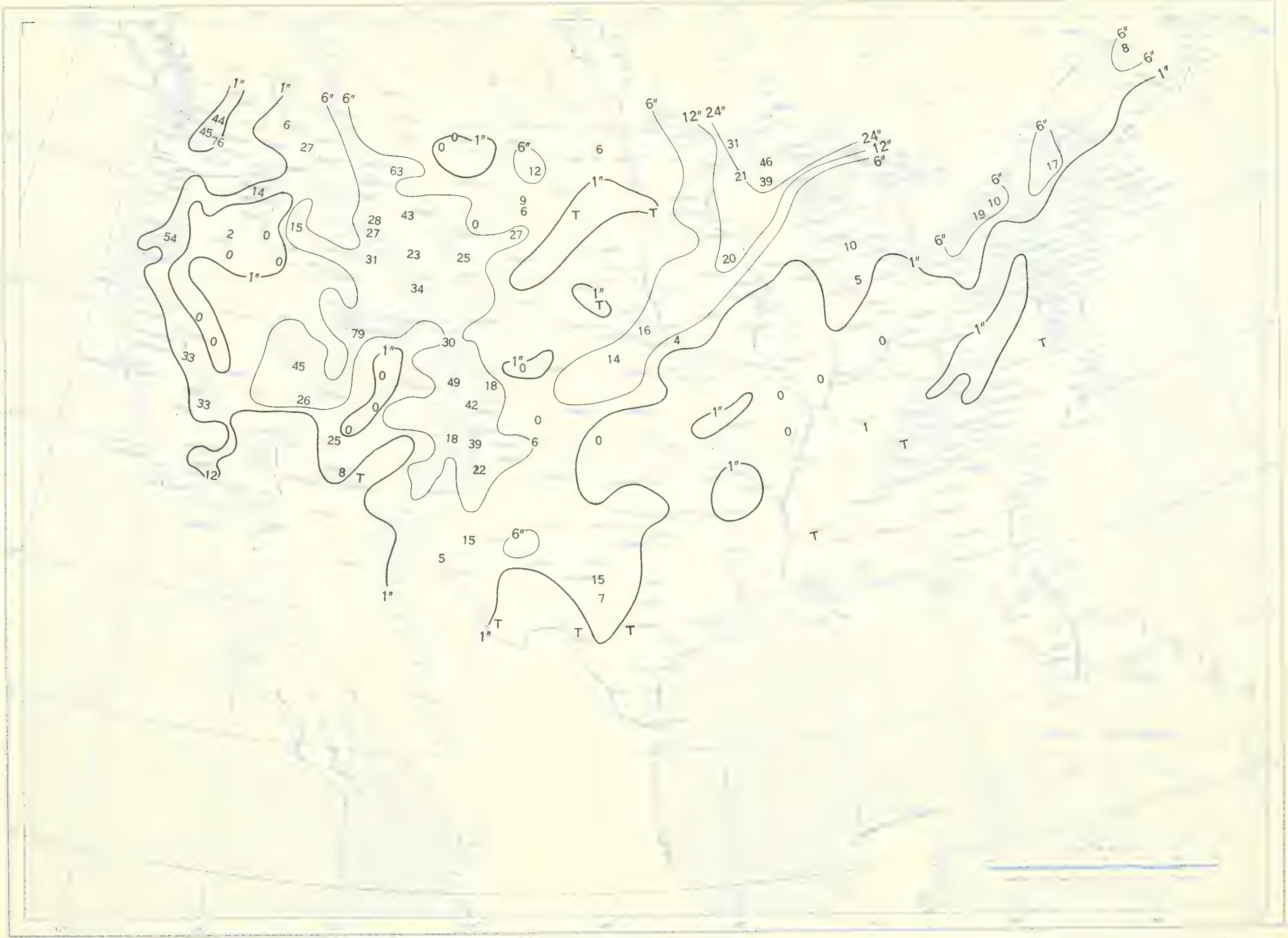


B. Percentage of Normal Precipitation, November 1957.



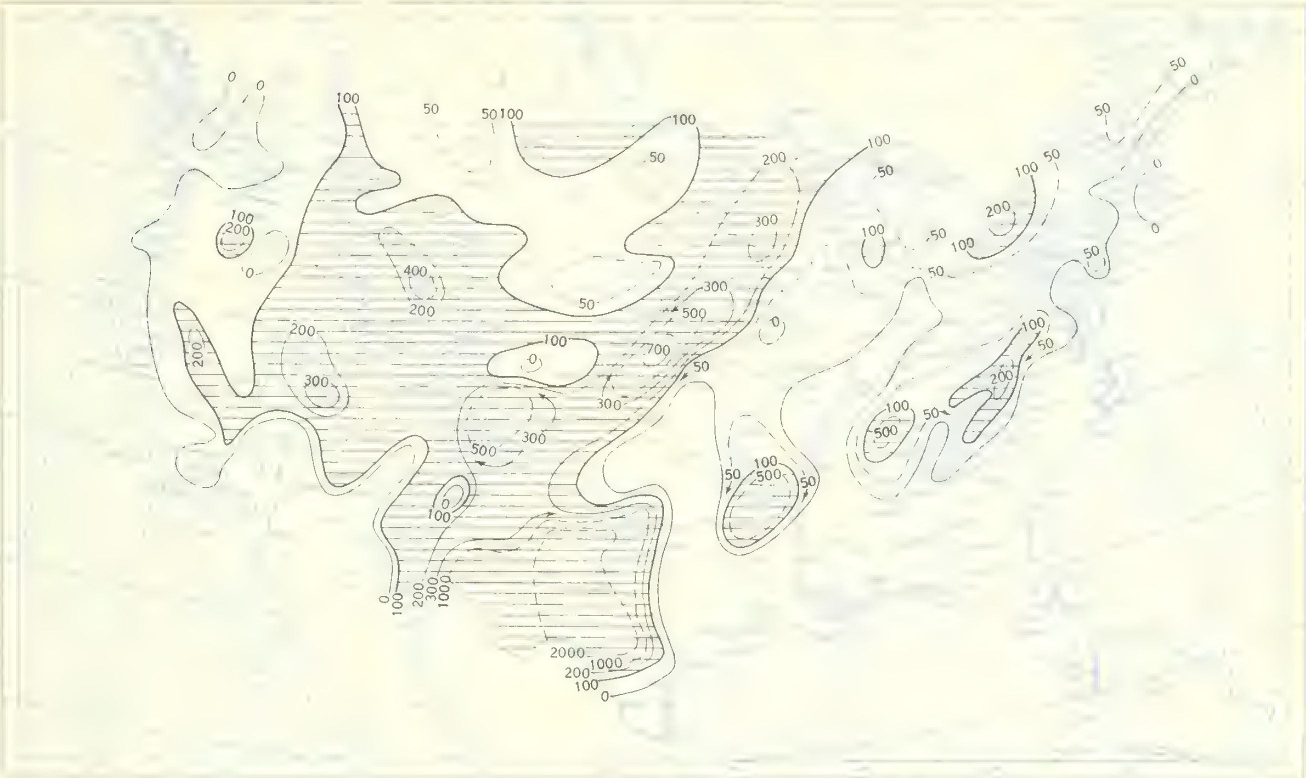
Normal monthly precipitation amounts are computed from the records for 1921-50 for Weather Bureau stations and from records of 25 years or more (mostly 1931-55) for cooperative stations.

Chart IV. Total Snowfall (Inches), November 1957.



This is the total of unmelted snowfall recorded during the month at Weather Bureau and cooperative stations. This chart and Chart V are published only for the months of November through April although of course there is some snow at higher elevations, particularly in the far West, earlier and later in the year.

Chart V. A. Percentage of Normal Snowfall, November 1957.

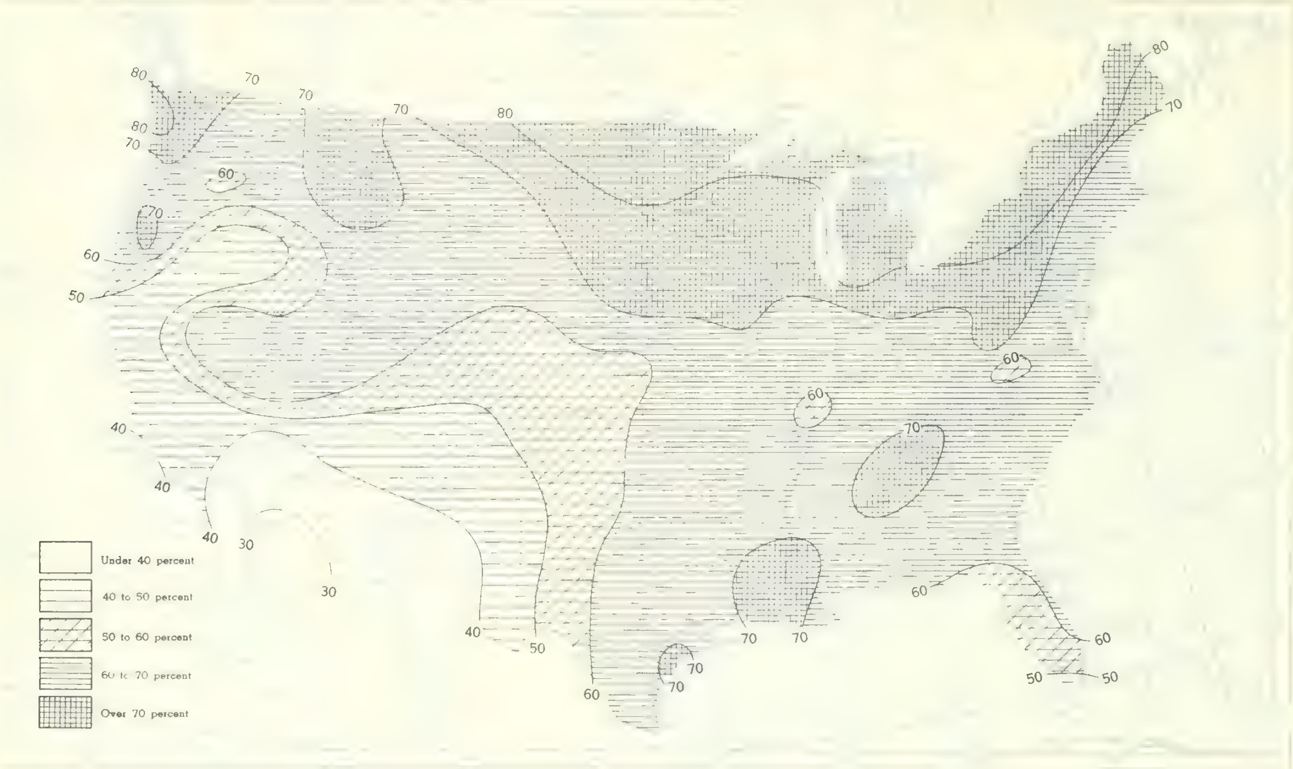


B. Depth of Snow on Ground (Inches), 7:00 a. m. E. S. T.

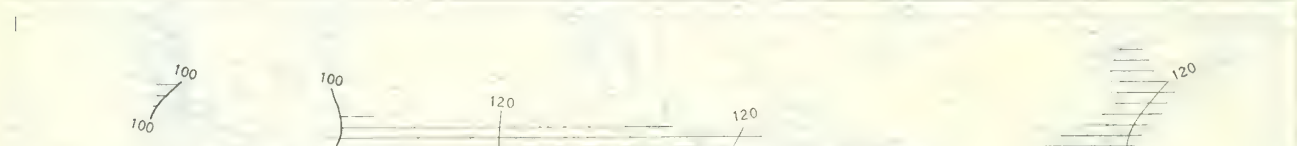
DATA NOT AVAILABLE

A. Amount of normal monthly snowfall is computed for Weather Bureau stations having at least 10 years of record.
B. Shows depth currently on ground at 7:00 a. m. E. S. T., of the Monday nearest the end of the month. It is based on reports from Weather Bureau and cooperative stations. Dashed line shows greatest southern extent of snowcover during month.

Chart VI. A. Percentage of Sky Cover Between Sunrise and Sunset, November 1957.

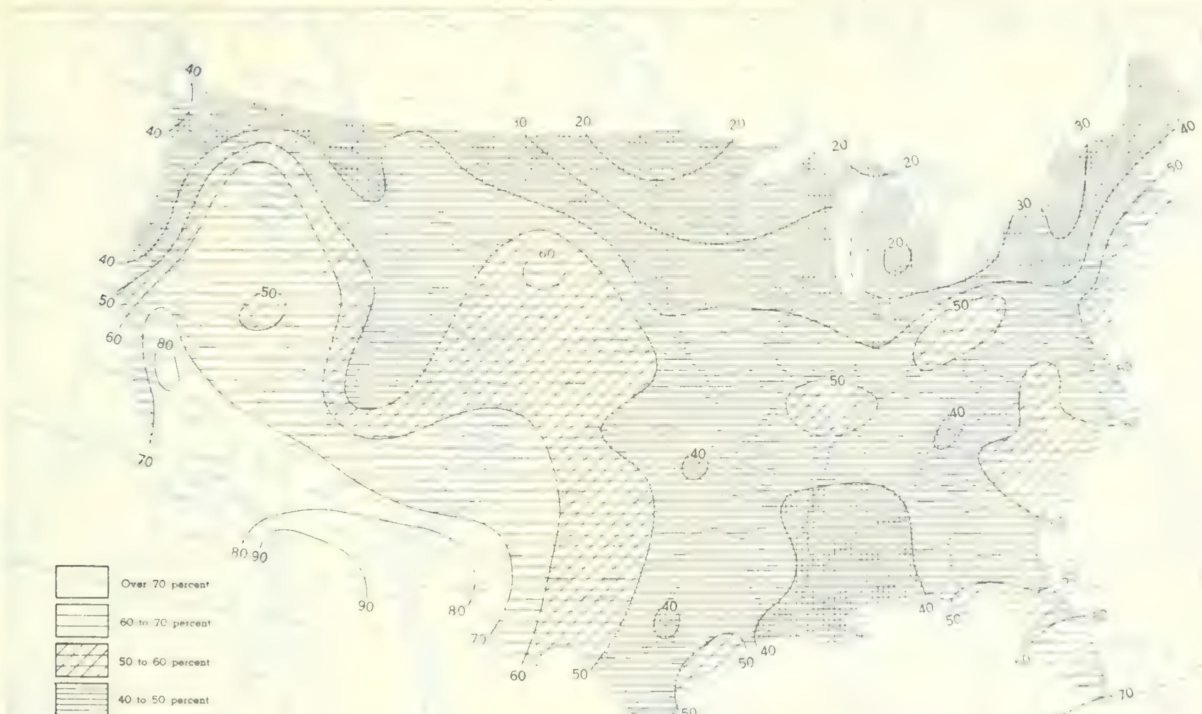


B. Percentage of Normal Sky Cover Between Sunrise and Sunset, November 1957.

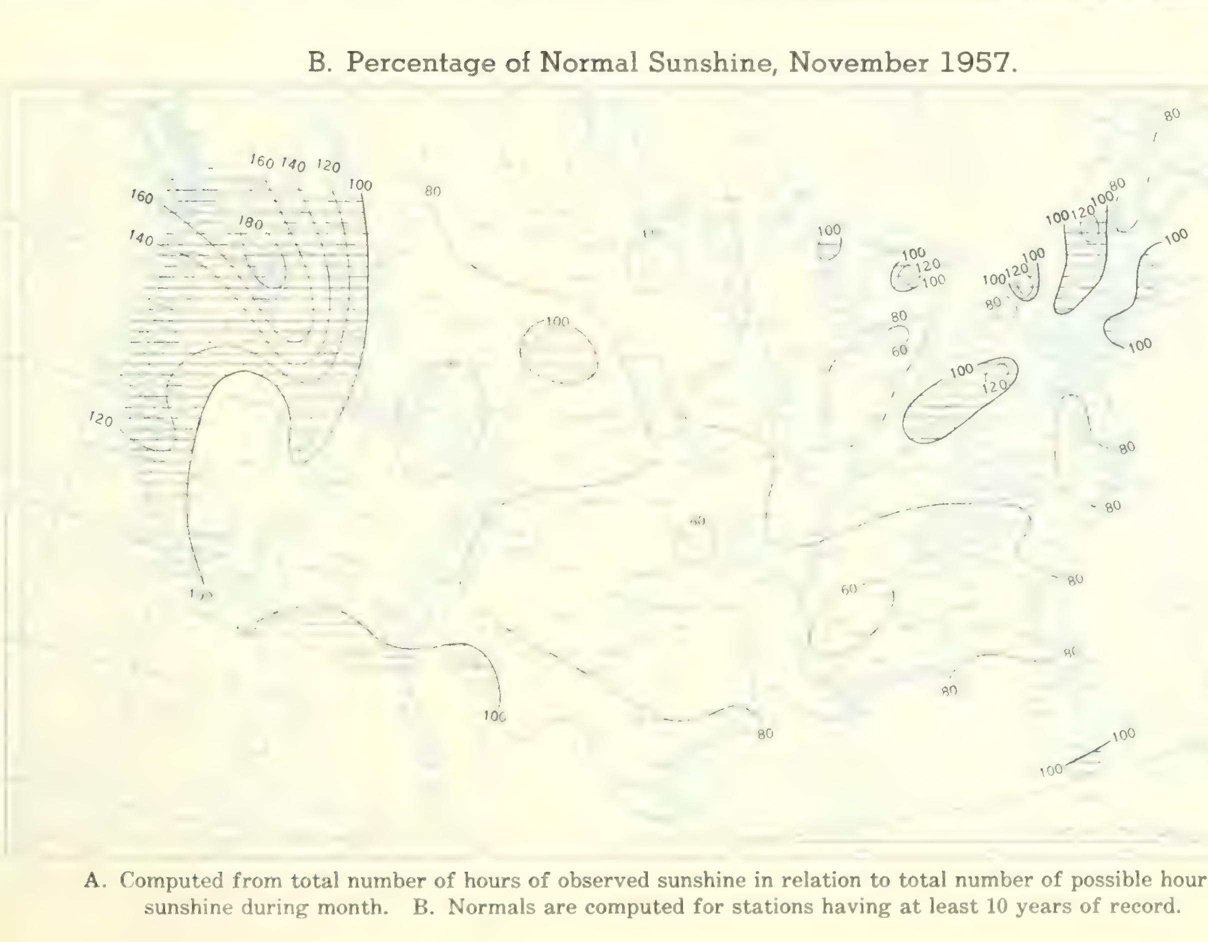


A. In addition to cloudiness, sky cover includes obscuration of the sky by fog, smoke, snow, etc. Chart based on visual observations made hourly at Weather Bureau stations and averaged over the month. B. Computations of normal amount of sky cover are made for stations having at least 10 years of record.

Chart VII. A. Percentage of Possible Sunshine, November 1957.



B. Percentage of Normal Sunshine, November 1957.



A. Computed from total number of hours of observed sunshine in relation to total number of possible hours of sunshine during month. B. Normals are computed for stations having at least 10 years of record.

Chart VIII. Average Daily Values of Solar Radiation, Direct + Diffuse, November 1957. Inset: Percentage of Mean Daily Solar Radiation, November 1957. (Mean based on period 1951-55.)

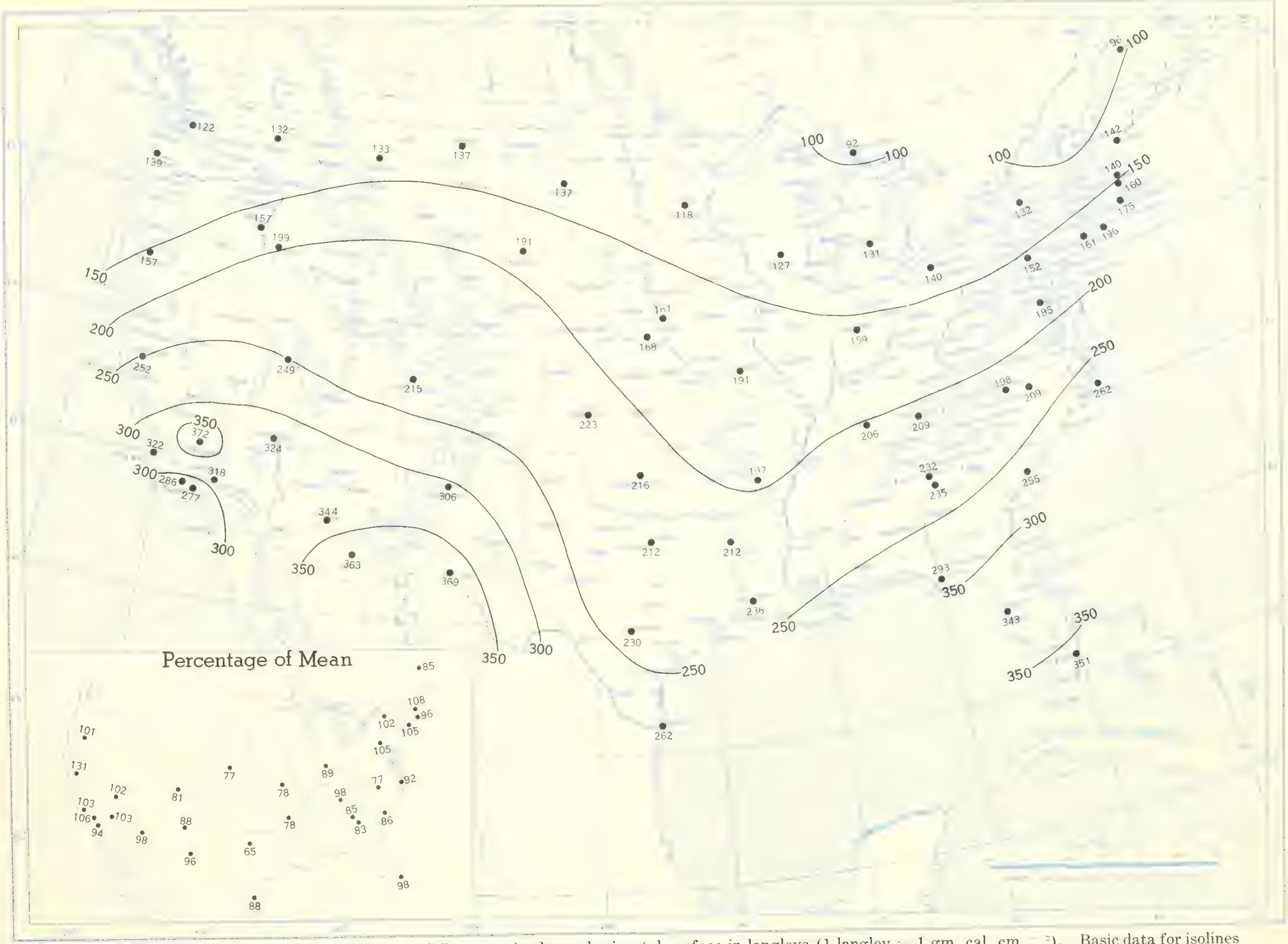
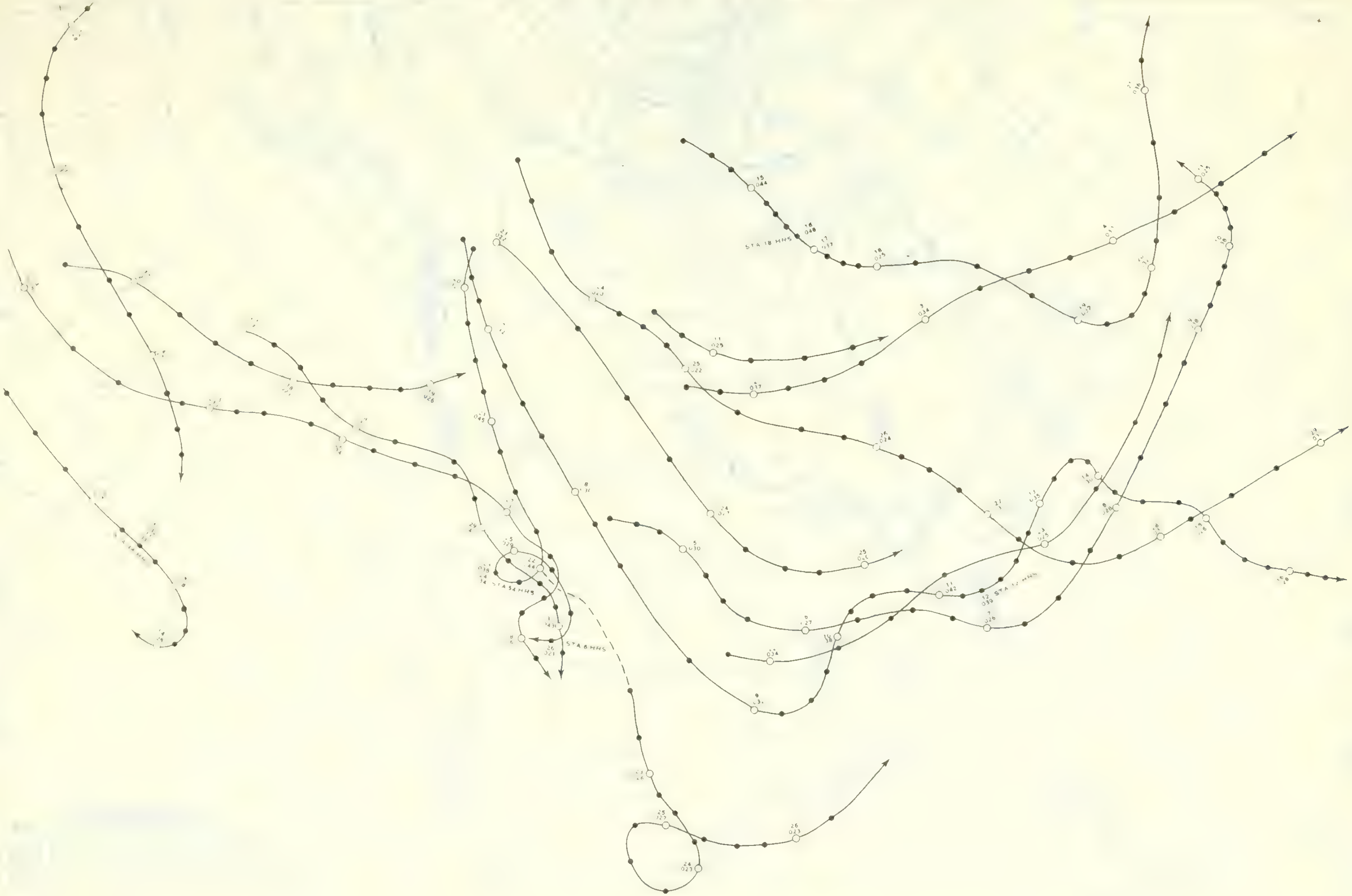


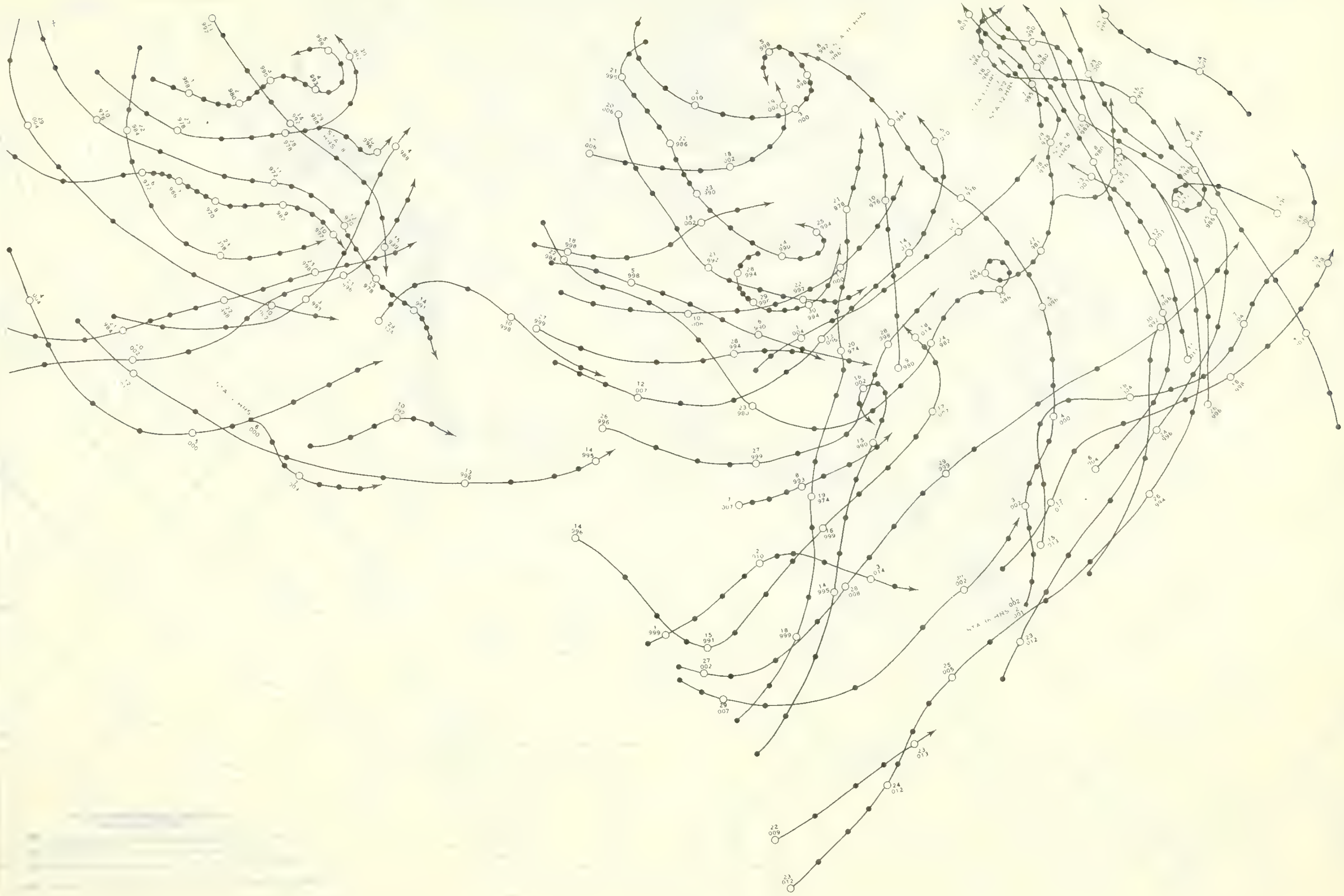
Chart shows mean daily solar radiation, direct + diffuse, received on a horizontal surface in langleys (1 langley = 1 gm. cal. $cm.^{-2}$). Basic data for isolines are shown on chart. Further estimates are obtained from supplementary data for which limits of accuracy are wider than for those data shown. The inset shows the percentage of the mean based on the period 1951-55.

Chart IX. Tracks of Centers of Anticyclones at Sea Level, November 1957.



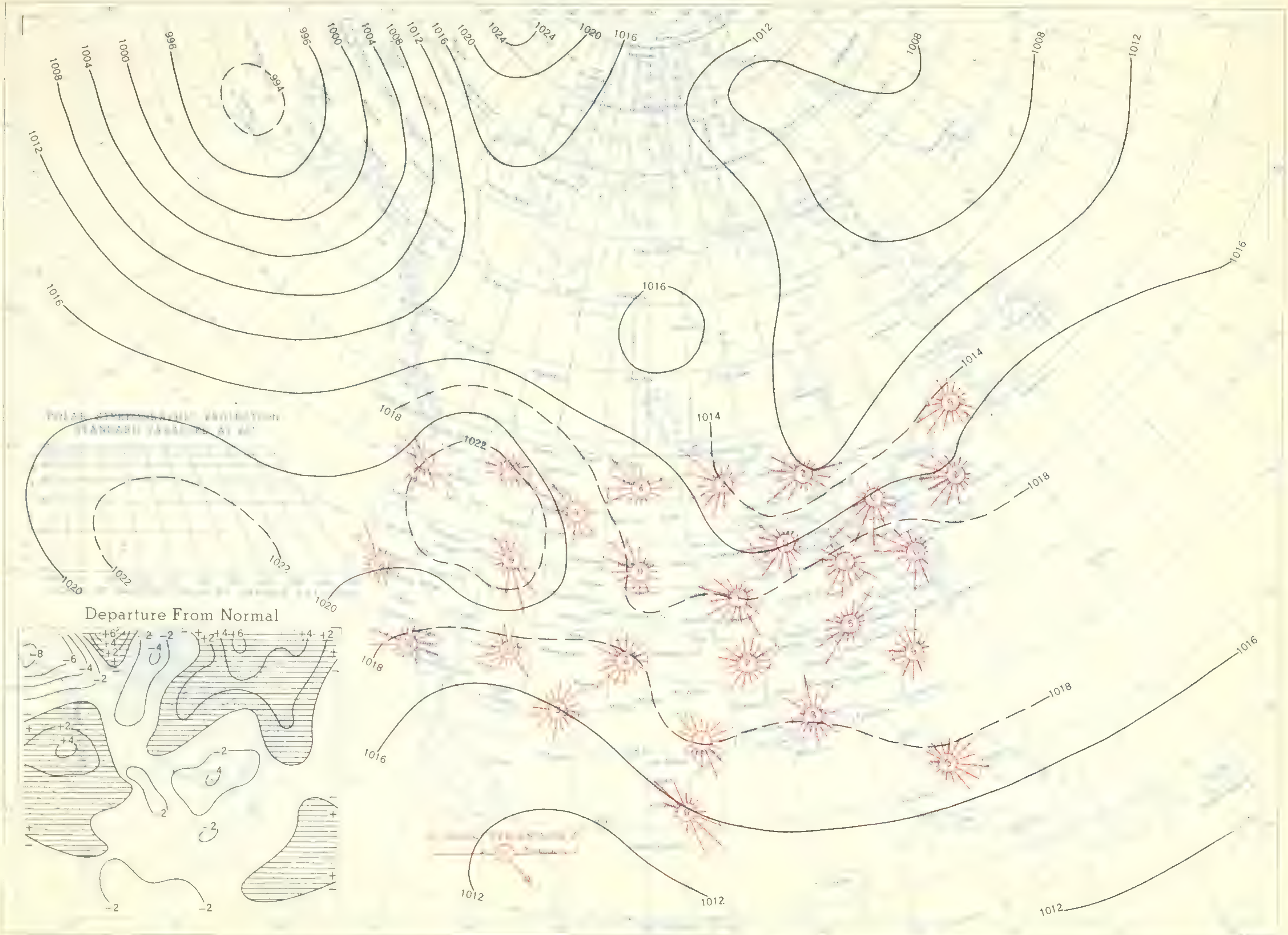
Circle indicates position of center at 7:00 a. m. E. S. T. Figure above circle indicates date, figure below, pressure to nearest millibar. Dots indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.

Chart X. Tracks of Centers of Cyclones at Sea Level, November 1957.



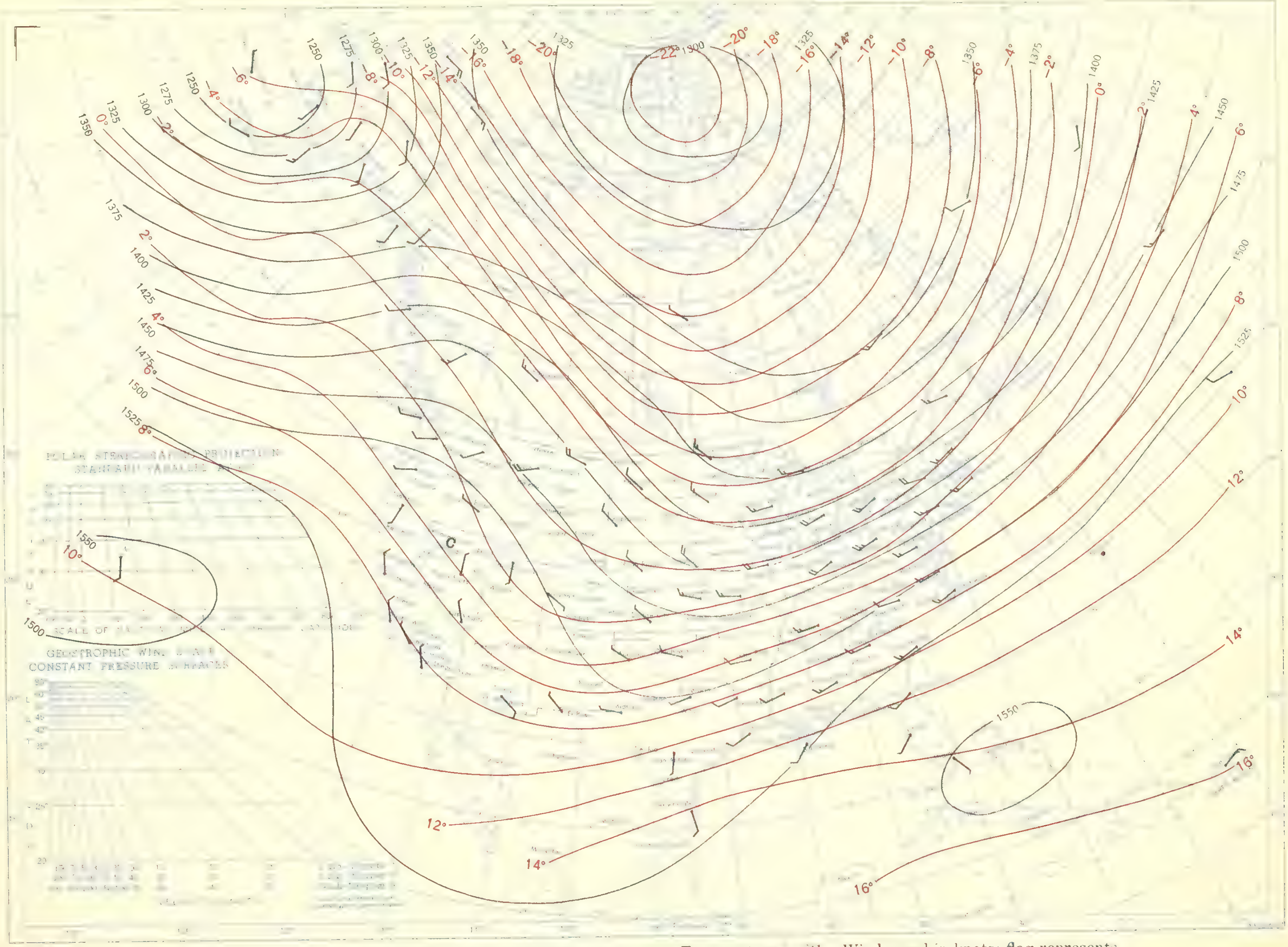
Circle indicates position of center at 7:00 a. m. E. S. T. See Chart IX for explanation of symbols.

Chart XI. Average Sea Level Pressure (mb.) and Surface Windroses, November 1957. Inset: Departure of Average Pressure (mb.) from Normal, November 1957.



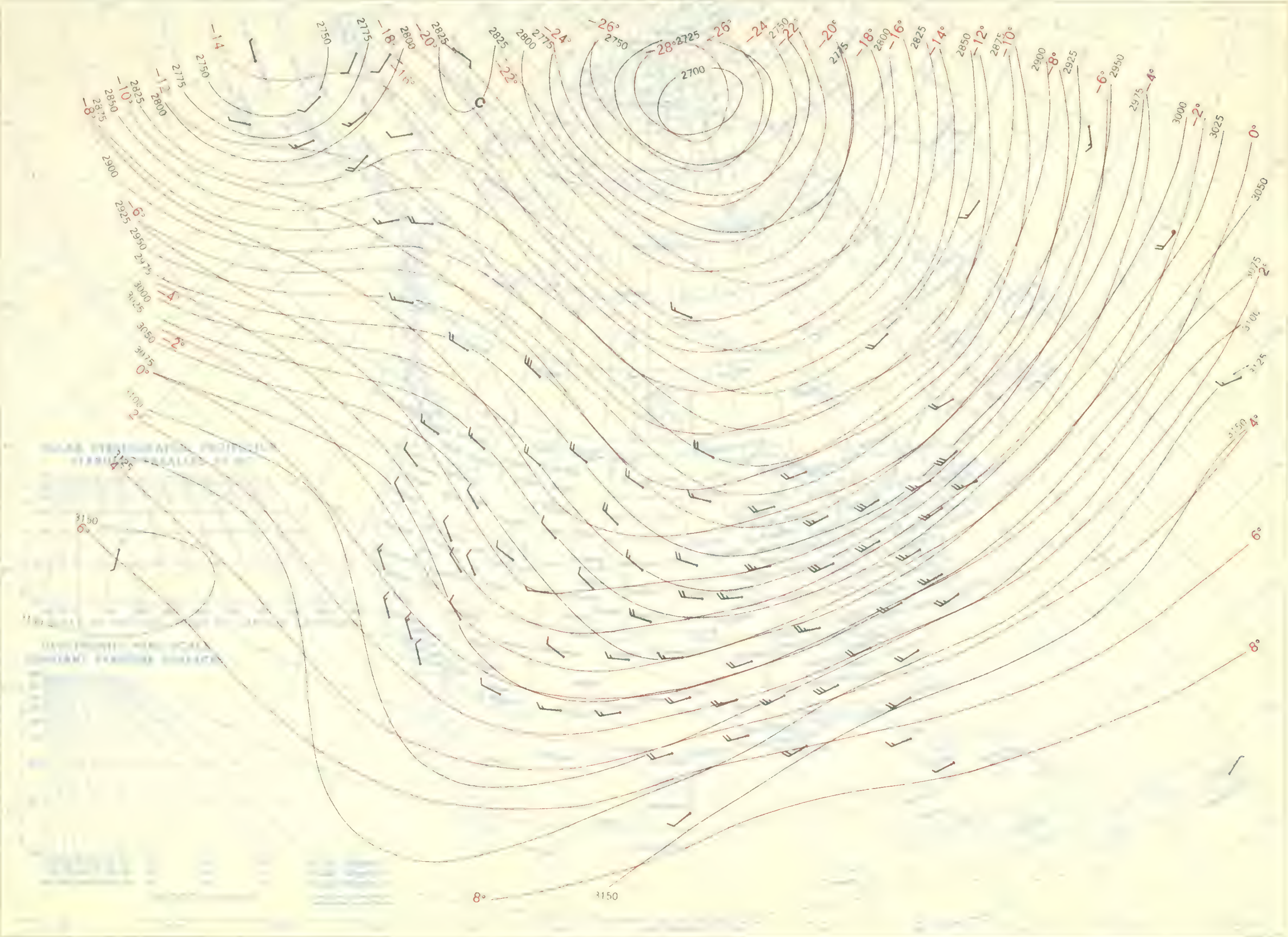
Average sea level pressures are obtained from the averages of the 7:00 a.m. and 7:00 p.m. E.S.T. readings. Windroses show percentage of time wind blew from 16 compass points or was calm during the month. Pressure normals are computed for stations having at least 10 years of record and for 10° intersections in a diamond grid based on readings from the Historical Weather Maps (1899-1939) for the 20 years of most complete data coverage prior to 1940.

Chart XII. 850-mb. Surface, 1200 GMT, November 1957. Average Height and Temperature, and Resultant Winds.



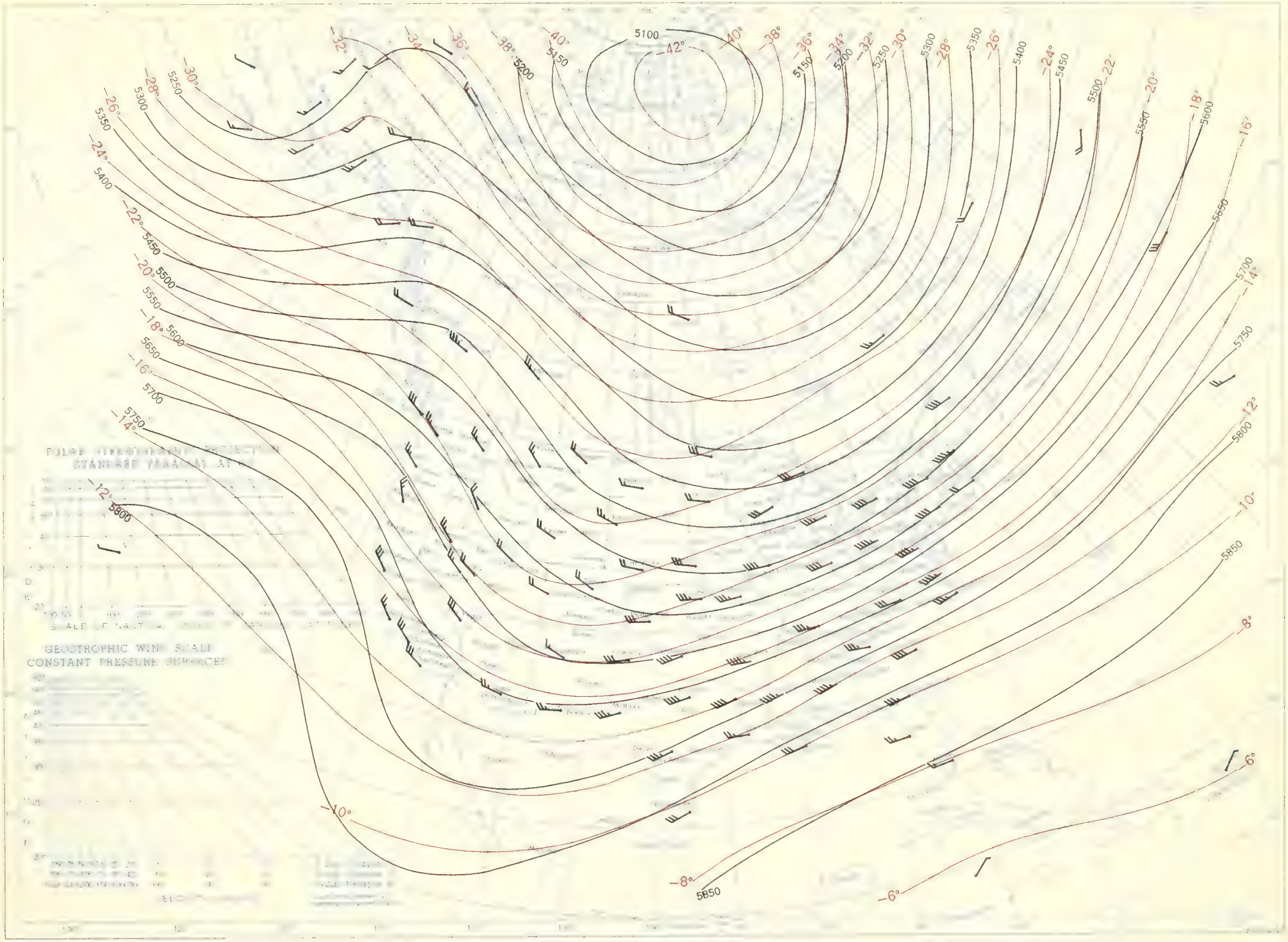
Height in geopotential meters (1 g.p.m. = 0.98 dynamic meters). Temperature in °C. Wind speed in knots; flag represents 50 knots, full feather 10 knots, and half feather 5 knots. All wind data are based on rawin observations.

Chart XIII. 700-mb. Surface, 1200 GMT, November 1957. Average Height and Temperature, and Resultant Winds.



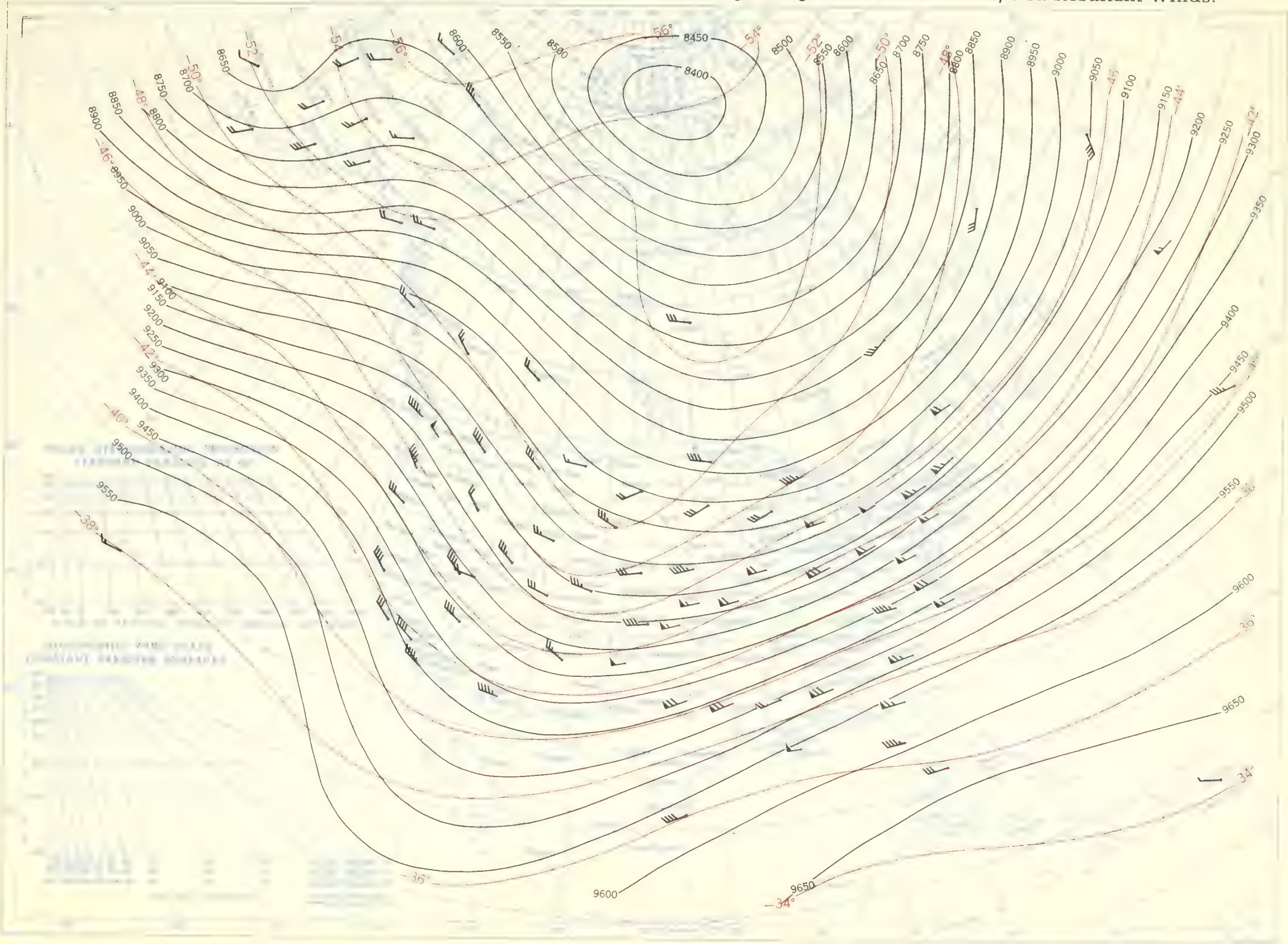
See Chart XII for explanation of map.

Chart XIV. 500-mb. Surface, 1200 GMT, November 1957. Average Height and Temperature, and Resultant Winds.



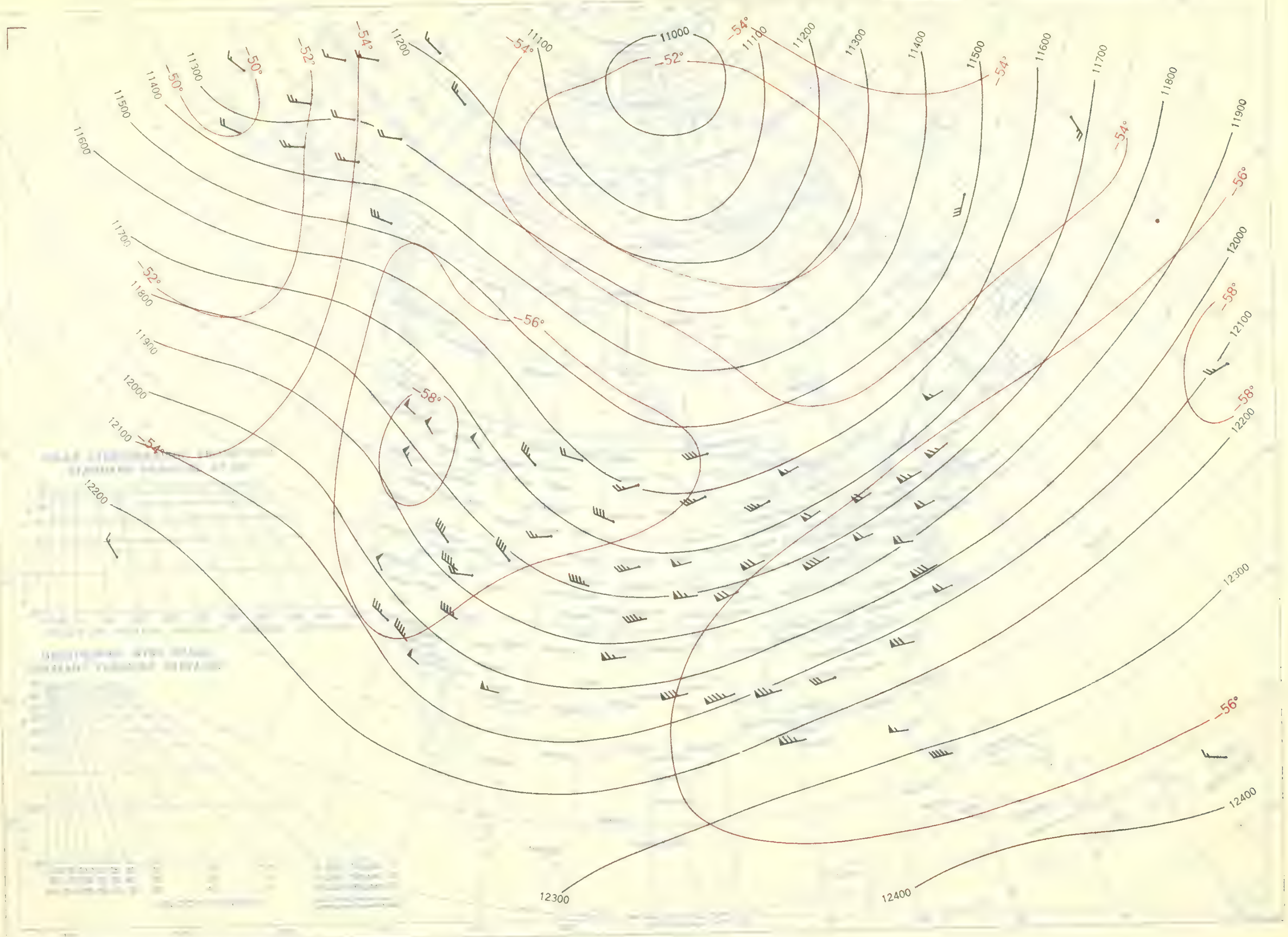
See Chart XII for explanation of map.

Chart XV. 300-mb. Surface, 1200 GMT, November 1957. Average Height and Temperature, and Resultant Winds.



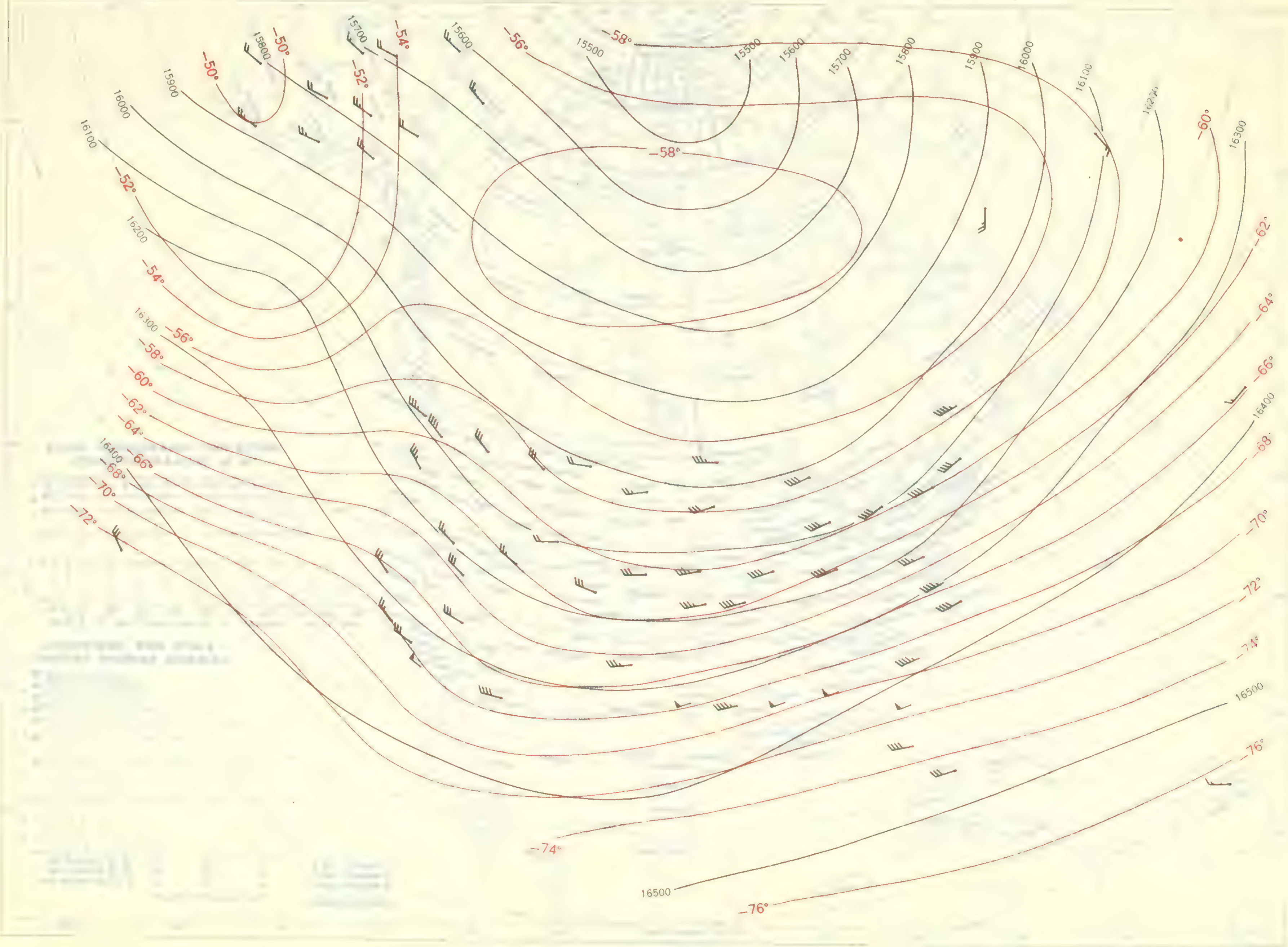
See Chart XII for explanation of map.

Chart XVI. 200-mb. Surface, 1200 GMT, November 1957. Average Height and Temperature, and Resultant Winds.



See Chart XII for explanation of map.

Chart XVII. 100-mb. Surface, 1200 GMT, November 1957. Average Height and Temperature, and Resultant Winds.



See Chart XII for explanation of map.

U. S. DEPARTMENT OF COMMERCE
SINCLAIR WEEKS, Secretary
WEATHER BUREAU
F. W. REICHELDERFER, Chief

MAR 22 1958

CLIMATOLOGICAL DATA

NATIONAL SUMMARY

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DECEMBER 1957
Volume 8 No. 12

ASHEVILLE: 1958

CONTENTS

SURFACE DATA

Page

General Summary of Weather Conditions---------------------- 515

Condensed Climatological Data - States-------------------- 516

Climatological Data - Stations---------------------------- 517

Heating Degree Days--------------------------------------- 521

Storm Data and Unusual Weather Phenomena------------------ 522

General Summary of River and Flood Conditions------------- 532

Flood Stage Data-- 535

UPPER AIR DATA

Rawinsonde Data--- 537

SOLAR RADIATION DATA

Solar Radiation Intensities------------------------------- 543

Blue Hill Data-- 544

Net Radiation--- 544

Daily Totals and Average Daily Totals by Weeks------------ 545

Delayed Data-- 548

CHARTS I-XVII

NOTE.--This publication contains all of the climatic data formerly printed in the MONTHLY WEATHER REVIEW.

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CLIMATOLOGICAL DATA

NATIONAL SUMMARY

Volume 8 No. 12

DECEMBER 1957

GENERAL SUMMARY OF WEATHER CONDITIONS

A destructive freeze in Florida, an unusual outbreak of tornadoes in the middle Mississippi Valley, unseasonably mild temperatures everywhere except Florida and California's Central Valley, and heavy precipitation in the Ohio Valley and Northeast were the month's main weather features. Owing to persistent abnormally mild temperatures, snow and ice in northern areas were less than usual or entirely lacking. In the Northeast, the heavy precipitation relieved water shortages brought on in many sections by summer and early fall drought. At the end of the month the snowpack in the Cascade and central Rockies was above normal, but was below normal in some southern ranges. Soil moisture was excessive in much of the South, and generally ample elsewhere.

TEMPERATURE.--Temperatures for December averaged as much as 14° above normal in the northern Great Plains, 8° in the Northeast, and 6° or more in all areas north of lines joining Austin, Tex., with Spokane, Wash., and Atlantic City, N. J., except the upper Great Lakes region where they were slightly less. Throughout this area the month was among the warmest Decembers on record. In the central and northern Great Plains, generally, it was the warmest December since the 1930's, and the warmest of record at a few scattered stations including Havre, Mont., 33.9°; Sheridan, Wyo., 35.0°; and Norfolk, Nebr., 32.5°. At Concord, N. H., it was the warmest December since 1923, and at Providence, R. I., the second warmest on record. Havre, Mont., observed only a trace of snow, the least amount for December on record. Mild weather was unusually persistent in the northern Plains where several stations including Great Falls, Mont., reported above normal temperatures every day of the month. Temperatures also were abnormally mild along the southern California coast, where San Diego reported a monthly average of 61.4°, the highest on record dating back to 1872, with 84° on the 9th and 81° on the 11th establishing new record high temperatures for those dates.

Temperatures averaged slightly below normal in California's Central Valley, due mainly to low daytime temperatures held below normal levels by cloudiness. Sacramento had 25 cloudy days, equaling the record since 1877. The month also was 2° or more colder than normal in Florida.

High pressure areas from the Pacific moving across the southern United States brought record-low temperatures to southern Texas on the 1st, ending the tender vegetable harvest in that area. Freezing temperatures and frost occurred in parts of northern Florida during the first week.

The most extensive and only major outbreak of Polar air during the month occurred from the 10th to the 13th. Temperatures were reduced to subzero levels on 3 days in the upper Mississippi Basin and to subfreezing levels in all southern areas east of the Rockies except the extreme southern tip of Texas and extreme southern Florida. In Florida low readings on the 12th and 13th, approximating those of the more recent historic freezes of December 1934 and January 1940, caused extensive damage to citrus, truck, and other crops. A surge of Arctic air, affecting only northern areas east of the Rockies, brought subzero temperatures to the upper Mississippi Basin and northern Great Plains the last 4 days of the month.

Extreme temperatures for the month ranged from 90° at Bonita, Calif., on the 9th to -35° at Bondurant, Wyo., on the 24th and Taylor Park, Colo., on the 31st.

PRECIPITATION.--In the western portions of the Pacific States and in most sections east of the Mississippi River, precipitation totaled 2 inches or more. Totals were 200 percent or more of normal at stations in the middle Mississippi Valley and Northeast. Indianapolis, Ind., and Worcester, Mass., reported their wettest Decembers on record, with totals of 6.70 and 6.92 inches, respectively. In Indiana and Illinois, heavy rains from the 17th to the 20th caused flooding along the Wabash River, resulting in some losses of unharvested crops.

Generous precipitation in the Northeast added to soil moisture and replenished water supplies that in some sections had been short since May. In New Jersey, where monthly totals ranged from 3.34 to 12.10 inches, reservoirs were up 10 to 14 feet. In Pennsylvania monthly totals, ranging from 2.20 to 11.21 inches, replenished wells and streams throughout the State. In Connecticut, Massachusetts, and Rhode Island no station reported less than 3 inches for the month.

In the Far West, precipitation was normal or above in Washington, Oregon, and central and northern California, with totals ranging up to 10 inches or more along the north Pacific coast and generally from 1 to 2 inches inland. Most precipitation in these areas fell during the second half of the month. Monthly totals in the Nation were topped by 32.84 inches at Valsetz, Oreg.

In most of the Great Plains and Far Southwest, precipitation for the month generally totaling under one-half inch was less than 25 percent of normal. At the end of the month surface soil was becoming quite dry in some sections of the western portions of the central and lower Great Plains where some soil erosion occurred. The lack of moisture was not serious, however, and the winter grain outlook was much better for the season than it had been for several years.

SNOW.--Owing to mild December temperatures, the snow cover was much less extensive than usual throughout the month, being limited generally to some extreme north-central sections and mountainous areas of the Northeast and Far West.

One of the heavier snowstorms of the month moved from the middle Mississippi Valley eastward to the Atlantic coast on the 3d and 4th. One to 3 inches fell in central Illinois, several inches in central Indiana, 6 to 8 inches in central Ohio, and up to a foot or more locally along the east coast from northern Virginia to northern New Jersey. The heavy snow caused considerable traffic conjestion

GENERAL SUMMARY OF WEATHER CONDITIONS—Continued

DECEMBER 1957

in many coastal cities, but it was all melted by warmer weather and rain on the 7th and 8th. During another storm on the 11th, moderate to heavy snow fell in the Appalachian region and Northeast and in local areas of the Ohio Valley and Great Lakes region. Amounts generally ranged from 2 to 6 inches in the Northeast. Warmer weather melted most of this snow during the following 3 days.

Snowfall during the second half of the month was significant mainly for the heavy falls in the Cascades, raising the snowpack to above normal there.

DESTRUCTIVE STORMS.--December storms were featured by an outbreak of tornadoes in Illinois and some adjacent areas of nearby states on the 18th and 19th. On the 18th and 19th, 22 funnel clouds were reported to have touched the ground in Illinois alone. More than a score of persons were killed, over 450 injured, and property damage amounted to millions of dollars.

Windstorms in the Pacific Northwest caused minor damage over extensive areas on several occasions, with the worst storm occurring on the 25th. These storms were responsible for losses totaling several hundred thousand dollars.

On the 10th, losses of corn and milo in Nebraska blown down by high winds were estimated at several hundred thousand dollars.

Winds and rains over the Northeast on the 20th and 21st caused damage in Pennsylvania, New York, New Jersey, and New England totaling several hundred thousand dollars.

CONDENSED CLIMATOLOGICAL SUMMARY

DECEMBER 1957

Section	Temperature						Precipitation			
	Monthly extremes						Monthly extremes			
	Station	Highest	Date	Station	Lowest	Date	Station	Greatest	Station	Least
		°F			°F			In.		In.
Alabama	7 Stations	77	15+	Bridgeport 2W	4	12	Swaim	6.80	Falco Open Pond Tower	1.40
Arizona	Bouse	84	9	Alpine	-4	1	Bright Angel RS	2.95	9 Stations	.00
Arkansas	3 Stations	76	18	Mount Magazine	4	11	Sheridan Tower	6.53	Flippin CAA AP	.61
California	Bonita	90	9	Boca	-12	23	Gasquet RS	22.43	2 Stations	.00
Colorado	Las Animas 1N	76	9	Taylor Park	-35	31	Wolf Creek Pass 4W	3.10	19 Stations	.00
Connecticut	Putnam	63	20	Salisbury	-1	13	Mohawk Ranger Sta.	9.91	Bridgeport WB AP	3.90
Delaware	Milford	67	19+	Newark University Farm	11	6	Lewes	6.70	Wilmington N Castle WB	4.74
Florida	Deer Park	88	20	2 Stations	12	13	Pompano Beach	9.35	Dry Tortugas	.41
Georgia	Bainbridge	78	7	Blue Ridge	-3	12	Flat Top	12.58	Brunswick CAA AP	1.10
Idaho	Grand View	63	21	Obsidian 2NNW	-28	31	Wallace	8.82	Chilly Barton Flat	.14
Illinois	East St. Louis Parks C	67	18	4 Stations	-2	12	Hutsonville Power Pl	10.49	Streator 3N	1.60
Indiana	Tell City Pwr Plant	68	18	Paoli	-7	12	Leavenworth Dam 44	8.54	Whiting	1.87
Iowa	3 Stations	63	9	Fayette	-7	4	Clinton No. 1	4.95	Sioux City 4N	.05
Kansas	2 Stations	75	8	4 Stations	3	11	Pleasanton	2.89	4 Stations	.00
Kentucky	Williamsburg 2	72	24	Manchester 4SE	-4	12	Lovelaceville	8.37	Inez	3.32
Louisiana	Belah Fire Tower	81	16	Chatham	12	12	Angola	6.95	Buras 2NW	1.16
Maine	Millinocket	61	22	Squa Pan Dam	-17	18	Gilead	8.08	Portland WB AP	3.10
Maryland	Preston 1S	68	19	Bittinger 2NW	-4	12	Benson Police Brks	8.45	Hancock Fruit Lab	3.18
Massachusetts	Charlton Masonic Home	66	21	Pittsfield WB AP	5	13	Winchendon	9.80	Chatham Lt Sta	3.00
Michigan	3 Stations	60	20	Watersmeet Fish Hatch	-22	30	Port Huron Sewage Pl	5.33	Eagle Harbor Coast Gd.	.66
Minnesota	Pipestone	53	10	Int. Falls WB Airport	-26	30	Minneota	.97	Hallock	.02
Mississippi	State Line	78	25	Fulton 3W	8	12	Clarksdale	7.94	Biloxie City	1.91
Missouri	2 Stations	72	18	Marble Hill	0	12	Marble Hill	6.93	Oregon	.53
Montana	Colstrip	71	9	2 Stations	-22	23+	Haugan	7.31	17 Stations	.00
Nebraska	Harlan County Dam	73	10	Nenzel 20S	-12	31	Auburn	1.02	4 Stations	T
Nevada	2 Stations	74	8+	Mountain City RS	-24	23	Glenbrook	2.86	Lahontan Dam	.00
New Hampshire	Windham	63	20	Fabyan	-9	18	Mount Washington	13.35	Bethlehem	3.49
New Jersey	Phillipsburg	68	20	2 Stations	4	6+	Milton	12.10	Canton	3.34
New Mexico	Rodeo	77	30	Eagle Nest	-16	1+	McGaffey 4SE	1.19	65 Stations	.00
New York	Poughkeepsie	68	21	Wanakena Ranger School	-13	3	Elka Park	13.85	Honeoye Falls	.89
North Carolina	2 Stations	76	19	Boone	-10	12	Haywood Gap	12.34	Monroe 4 SE	1.90
North Dakota	Marmarth	62	10	Center	-30	31	Steele	.63	2 Stations	T
Ohio	2 Stations	67	23	Centerburg 2	-5	12	Wilmington	6.51	Ashtabula	2.31
Oklahoma	Fairview	78	9	Oologah Dam	5	11	Kiamichi Tower	3.71	9 Stations	.00
Oregon	Heppner	71	10	Minam 7NE	-8	31	Valsetz	32.84	Buena Vista Sta.	.29
Pennsylvania	Franklin	68	20	Ridgway 3W	-8	5+	Pimple Hill	11.21	Erie WB AP	2.20
Rhode Island	Greenville	63	20	Greenville	11	13	Woonsocket	6.65	Kingston	5.48
South Carolina	2 Stations	78	20+	Caesars Head	-1	12	Caesars Head	6.74	2 Stations	1.74
South Dakota	3 Stations	72	9	Aberdeen CAA AP	-18	31	Deerfield 5NW	1.09	4 Stations	.00
Tennessee	5 Stations	70	17+	Crossville Exp. Sta.	-11	12	Haw Knob	13.80	Limestone TVA	3.50
Texas	Poteet	88	10+	2 Stations	8	11	Warren	4.59	Numerous	.00
Utah	La Verkin	74	12	Scofield Dam	-29	31	Alta	9.25	2 Stations	.00
Vermont	3 Stations	62	20+	3 Stations	-10	12+	Searsburg Mountain	8.26	Montpelier CAA AP	3.34
Virginia	Diamond Springs	72	21	Dante	-8	12	Rose Hill	7.82	New Castle	2.26
Washington	4 Stations	65	10+	Winthrop	-6	31	Cougar 1E	31.97	Quincey 3S	.21
West Virginia	Williamson	73	24	Cranberry Glades	-8	12	Kumbrabow State Forest	9.17	Moorefield 1SSE	1.60
Wisconsin	5 Stations	54	6+	Couderay	-23	12	Racine	3.23	Danbury 1SE	.21
Wyoming	Sheridan WB AP	69	9	Bondurant	-35	24	Moose 3NW	6.10	Heart Mountain	.00
Puerto Rico	Jayuya	92	21	Garzas Dam	52	10	Rio Blanco 1800 Ft.	23.33	Potala	.35
Hawaii	Opihiale	95	2	Mauna Loa Slope Obsy	24	31	Waikamoi Dam	57.21	Moaula 18	.09

+ And also on a later date or dates.

Note: Dates in Table 1 apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for times of observations).

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure: ø Station	Pressure: Sea level	Temperature: Average maximum	Temperature: Average minimum	Temperature: Average	Temperature: Departure from normal	Temperature: Highest	Date	Temperature: Lowest	Date	No. of days: Max 90° F or above	No. of days: Min 32° F or below	Average dew point	Average relative humidity	Precipitation: Total	Precipitation: Departure from normal	Precipitation: Greatest in 24 hours	No. of days: .01 inch or more	No. of days: With thunderstorms	Snow, Sleet: Total	Snow, Sleet: Max depth on ground	Wind: Average hourly speed	Wind: Prevailing direction	Fastest mile: Speed	Fastest mile: Direction	Fastest mile: Date	No. of days (sunrise to sunset): Clear	Partly cloudy	Cloudy	Sky cover, tenths sunrise to sunset	Possible sunshine
	Ft.	Mb.	Mb	°F	°F	°F	°F	°F		°F				°F	%	In	In	In.			In	In	M p. h.		M p h			0-3	4-7	8-10	0-10	%
ALABAMA																																
Birmingham	610	995.6	1021.6	59	37	48.1	2.4	73	24	14	12	0	14	37	68	4.01	-1.24	2.06	10	1	T	0	9.7	S	39	SE	19	10	6	15	6.0	51
Mobile	211	1014.0	1022.6	63	41	52.2	-1.3	72	24	19	12	0	5	42	73	3.10	-2.31	.90	8	2	0.0	0	10.6	SE	--	--		12	8	11	4.8	
Montgomery	198	1013.8	1022.3	62	38	49.7	.3	75	24	17	12	0	10	40	72	3.57	-.97	1.40	13	1	T	0	6.9	NW	29	S	20	12	6	13	5.4	59
ARIZONA																																
Flagstaff	6993	------	------	49	21	35.1	6.7	58	12	8	1	0	28	--	--	.59	-1.27	.31	6	0	1.6	1	--	---	--	--	--	14	8	9	4.4	--
Phoenix	1114	979.3	1019.2	69	41	55.0	2.9	78	9	31	3	0	1	38	59	.23	-.74	.12	2	0	.0	0	3.1	E	*16	E	31	11	8	12	5.1	86
Prescott	5014	849.6	1021.3	57	27	41.9	4.1	65	10	18	1	0	27	--	--	.28	-1.09	.20	3	0	.0	0	6.6	SSW	29	SW	5+	12	5	14	5.0	79
Tucson	2558	928.9	1017.9	68	42	54.9	2.9	75	9+	27	3	0	1	29	45	.89	-.05	.69	3	0	.0	0	6.8	SE	38	SE	1	16	3	12	4.5	86
Winslow	4880	854.7	1021.9	53	24	38.8	4.3	62	16	13	1	0	28	18	47	.01	-.52	.01	1	0	.0	0	4.8	SE	*26	WSW	18	15	6	10	4.8	--
Yuma	199	1012.9	1018.4	73	47	59.6	2.5	80	9	41	1+	0	0	30	37	.05	-.50	.05	1	0	.0	0	7.7	NNE	23	NE	8	15	6	10	4.4	96
ARKANSAS																																
Fort Smith	458	1001.7	1018.8	59	34	46.7	4.2	71	15+	16	11+	0	13	36	72	1.38	-1.76	.71	5	1	T	0	8.3	NE	37	SW	19	13	9	9	4.8	57
Little Rock	257	1006.1	1019.8	59	39	49.1	5.2	72	15+	16	12	0	6	38	67	3.88	-.20	1.55	11	2	T	0	10.3	S	40	W	20	11	8	12	5.5	53
Texarkana	361	------	------	61	42	51.5	3.5	75	18	20	11	0	4	--	--	2.93	-1.91	.90	9	2	.0	0	9.3	SSW	--	--	--	--	--	--	---	-
CALIFORNIA																																
Bakersfield	489	1004.1	1022.6	57	39	47.6	-1.1	75	16	31	3	0	1	41	79	1.02	-.01	.64	6	0	.0	0	2.4	NW	*20	NW	16+	5	4	22	7.7	--
Bishop	4108	877.4	1020.7	58	24	40.9	1.8	74	9	15	1	0	29	--	--	1.60	.71	.84	4	0	.0	0	---	---	--	--	--	14	3	14	5.3	--
Blue Canyon	5280	841.2	1020.0	48	34	41.1	2.6	72	9	17	22	0	14	--	--	11.38	2.63	3.17	13	0	29.9	18	7.9	---	--	--	--	8	6	17	6.5	--
Burbank	699	992.2	1018.7	71	45	58.2	3.5	83	9	40	24	0	0	40	56	3.46	.60	1.41	6	0	.0	0	2.7	S	*23	ESE	15	12	8	11	4.7	--
Eureka (U)	43	1017.3	1019.6	56	44	49.8	1.2	62	7	37	9+	0	0	--	--	5.69	-.40	2.06	17	2	.0	0	6.8	---	32	SW	16	5	7	19	7.3	38
Fresno	331	1009.5	1021.8	53	37	45.3	-1.0	67	16	30	1+	0	5	40	86	1.90	.27	.79	6	0	.0	0	4.1	SE	23	NW	21	5	5	21	7.7	40
Los Angeles (U)	312	------	------	72	52	61.7	4.4	84	9	46	3+	0	0	41	53	2.14	-.97	.92	5	0	.0	0	6.9	---	34	SE	15	15	8	8	4.4	75
Los Angeles	99	1014.6	1018.5	71	51	60.8	5.2	85	9	45	6	0	0	44	61	2.10	-.51	1.08	5	0	.0	0	6.3	NE	*32	W	5	13	10	8	4.5	--
Mt. Shasta (R)	3544	894.3	1020.7	47	27	37.2	2.5	64	10	18	31	0	27	--	--	6.11	.72	1.72	12	0	17.9	8	---	---	--	--	--	5	9	17	6.8	--
Oakland	3	1021.0	1021.3	57	41	48.8	.2	62	2	35	1+	0	0	42	79	3.26	-.16	1.32	9	0	.0	0	6.4	ENE	*46	WSW	18	11	5	15	6.0	--
Red Bluff	341	1008.5	1021.6	52	37	44.9	-1.9	67	2	30	22+	0	4	38	81	2.59	-1.64	1.18	14	0	.0	0	6.8	SE	38	SE	17	6	3	22	7.5	44
Sacramento	17	1020.3	1021.5	52	39	45.3	-.5	61	2+	30	23	0	3	41	86	2.99	-.02	1.24	10	0	.0	0	7.8	SSE	31	S	18	4	2	25	8.1	36
Sandberg (R)	4517	865.2	1020.0	51	39	45.3	2.9	60	10	30	22	0	5	--	--	4.28	1.43	2.98	5	0	.0	0	17.4	---	*41	SSW	15	11	7	13	5.4	--
San Diego	19	1014.6	1017.9	71	52	61.4	4.5	84	9	46	1	0	0	47	65	1.38	-1.19	.83	4	0	.0	0	4.7	NE	28	SW	5	15	8	8	4.3	80
San Francisco (U)	52	------	------	56	47	51.5	-.4	63	2+	41	12	0	0	--	--	3.60	-.47	1.35	13	0	.0	0	6.4	---	34	SW	18	--	--	--	---	61
San Francisco	8	1020.7	1021.3	56	43	49.6	.3	63	2	37	23	0	0	44	82	4.18	.59	1.54	10	0	.0	0	5.6	SE	35	SW	17	7	9	15	6.5	--
Santa Maria	238	1010.5	1019.4	68	41	54.3	1.9	83	9	30	23	0	2	40	63	2.12	-.49	.98	8	0	.0	0	4.9	WNW	*23	WSW	5+	15	4	12	4.8	--
COLORADO																																
Alamosa	7536	772.4	1026.3	37	2	19.9	.5	47	22	-14	1+	0	31	--	--	.01	-.16	.01	1	0	.3	4	---	---	--	--	--	15	10	6	4.1	--
Colorado Springs	6173	809.0	1018.0	53	22	37.7	6.2	70	9	10	11+	0	29	11	38	.02	-.29	.02	1	0	.2	T	9.1	N	*37	NNE	7	17	4	10	4.3	--
Denver	5292	836.1	1015.9	54	25	39.6	7.9	71	9	10	31	0	28	8	32	.06	-.45	.06	1	0	.8	1	13.9	SSW	41	W	7	13	12	6	4.7	75
Grand Junction	4849	863.9	1025.4	41	22	31.5	3.0	50	10	15	1+	0	31	21	68	.43	-.25	.11	7	0	4.6	2	6.4	ESE	33	W	17	10	5	16	5.7	63
Pueblo	4639	856.4	1018.0	57	21	39.0	7.9	73	9	9	31	0	29	15	43	.01	-.42	.01	1	0	.3	T	9.0	WNW	42	N	7	17	4	10	4.4	82
CONNECTICUT																																
Bridgeport	7	1017.9	------	45	31	37.8	5.5	60	21	14	12	0	20	--	--	3.90	.82	1.28	16	0	8.4	4	---	---	--	---	--	10	4	17	6.7	--
Hartford	169	1011.7	1017.8	44	27	35.3	5.7	61	20	8	13	0	24	27	71	6.33	3.04	1.70	13	0	5.5	5	12.7	S	39	NW	1	7	7	17	7.0	38
Middletown (U)	133	1012.3	------	44	28	35.8	---	60	20	11	13	0	23	--	--	6.77	----	2.25	14	0	5.0	3	10.3	---	‡63	SSE	26	--	--	--	---	--
New Haven	6	1017.4	1018.0	45	31	37.6	5.7	60	21	16	12+	0	21	--	--	5.78	1.84	1.34	16	0	7.5	5	8.6	---	39	SE	26	8	6	17	6.7	48
DELAWARE																																
Wilmington	78	1015.5	1018.8	45	30	37.9	2.8	59	20	14	12	0	22	31	77	4.74	1.75	1.01	14	0	11.2	10	8.6	WNW	--	--	--	7	7	17	6.7	--
DIST. OF COLUMBIA																																
Washington (U)	72	------	------	49	34	41.6	3.4	63	20+	13	12	0	12	--	--	6.11	3.36	1.76	12	0	8.5	8	7.3	---	29	NW	1+	--	--	--	---	--
Wash. Nat'l. AP	14	1014.9	1019.6	49	34	41.4	3.4	64	23	13	12	0	12	31	69	5.62	3.01	1.56	12	0	12.0	8	11.0	SSW	62	SW	20	10	3	18	6.5	51
FLORIDA																																
Apalachicola (U)	13	1020.2	------	62	46	53.9	-2.4	70	7	26	12	0	3	--	--	1.23	-2.06	.59	5	0	.0	0	7.6	---	31	NW	4	18	6	7	3.5	79
Daytona Beach	31	1020.5	1022.1	68	46	57.1	-3.4	80	8+	24	12	0	6	47	76	1.34	-1.11	.71	6	0	.0	0	9.9	WNW	*25	WNW	11	12	5	14	5.3	--
Fort Myers	15	1020.2	------	74	50	61.8	-3.8	82	8+	28	12+	0	2	--	--	3.55	2.26	1.65	9	1	.0	0	9.6	---	*29	N	9+	9	12	10	5.3	--
Jacksonville	24	1020.5	1022.1	65	42	53.7	-2.7	77	7	17	13	0	6	44	76	1.31	-1.06	.59	8	1	T	T	8.9	NW	28	S	7+	13	7	11	5.1	69
Key West (U)	[illegible]	1018.8	------	75	62	68.6	-3.2	83	7+	47	12	0	0	--	--	1.26	-.52	.76	5	0	.0	0	9.3	---	28	NE	1	9	10	12	†5.9	63
Lakeland (U)	214	------	------	69	49	59.3	-3.2	80	8	25	12	0	3	--	--	1.39	-.61	.74	8	1	.0	0	6.8	---	--	---	--	12	11	8	4.7	62
Miami (U)	8	------	------	72	60	65.7	-3.8	77	31	34	12	0	0	--	--	2.25	.52	.87	11	3	.0	0	14.8	---	43	NW	9	8	9	14	6.2	59
Miami	7	1018.8	1020.0	74	58	65.6	-3.6	79	20+	35	12	0	0	57	76	2.84	1.19	1.31	11	2	.0	0	9.5	N	21	NE	15	6	9	16	6.5	--
Miami Beach	9	------	------	74	62	67.9	-3.0	80	1	35	12	0	0	--	--	1.69	-.14	.63	12	0	.0	0	---	---	--	---	--	6	9	16	---	--
Orlando	106	1017.1	1021.8	70	48	59.1	-3.6	80	8+	24	12	0	4	43	75	2.85	.76	2.10	7	1	.0	0	8.9	NNE	*29	WNW	11	11	7	13	5.2	--
Pensacola (U)	13	1019.8	------	62	45	53.4	-1.7	71	24	22	12	0	5	--	--	2.24	-1.93	.61	6	0	.0	0	†9.8	---	25	NW	11	--	--	--	---	62
Tallahassee	64	1019.3	1022.1	65	41	53.0	-1.1	75	24+	20	13	0	7	43	73	2.01	-1.67	1.12	7	0	.0	0	5.6	NNW	--	---	--	11	12	8	4.7	--
Tampa	19	1020.1	1021.9	70	49	59.3	-3.4	78	25+	26	13	0	2	48	71	1.74	-.22	1.27	7	1	.0	0	9.8	N	*29	NW	11	12	6	13	5.3	68
West Palm Beach	15	1019.1	1020.2	74	58	65.9	-2.8	82	20	31	12	0	1	55	70	2.91	.71	1.76	8	2	.0	0	11.4	ENE	*30	NW	12	3	10	18	7.2	--
GEORGIA																																
Athens	798	991.7	1021.[illegible]	56	35	45.5	.3	70	23	10	12	0	13	36	72	3.42	-1.30	1.11	9	0	T	T	10.6	ENE	*43	WNW	4	10	5	16	5.8	--
Atlanta	975	978.0	1021.5	56	37	46.7	1.5	69	24	12	12	0	10	37	71	3.05	-1.50	1.00	11	0	T	0	11.0	WNW	37	W	3	8	7	16	6.1	52
Augusta	143	1014.4	1021.7	60	36	47.7	.2	75	7	14	13	0	10	39	75	2.70	-1.03	.85	10	0	.0	0	6.6	W	*24	WNW	4+	11	5	15	5.6	--
Columbus	385	1007.6	------	61	36	48.5	.9	73	24	16	13	0	14	--	--	1.91	-2.66	1.05	7	0	T	0	---	---	--	---	--	10	7	14	5.7	--
Macon	356	1007.7	1021.8	62	38	50.0	.3	74	16	17	12	0	8	38	68	2.46	-1.78	1.25	7	0	T	0	9.7	WNW	35	S	7	11	8	12	5.2	59
Rome	637	997.8	------	56	31	43.5	.2	72	24	9	12	0	18	--	--	4.14	-1.08	1.74	12	1	T	0	---	---	--	---	--	8	8	15	6.4	--
Savannah	48	1019.0	1021.8	62	39	50.6	-1.1	75	7	17	13	0	8	39	70	1.73	-.91	1.26	8	0	0	0	8.8	WNW	33	SW	7	12	6	13	5.3	67
Thomasville (U)	283	------	------	64	42	53.3	-1.3	75	17+	20	12	0	5	--	--	1.90	-1.63	.84	7	1	.0	0	---	---	--	---	--	--	--	--	---	--
IDAHO																																
Boise	2842	923.5	1022.2	41	28	34.4	3.4	59	16	18	31	0	25	28	78	2.08	.79	.56	13	0	5.1	3	10.5	SE	50	S	23	1	5	25	8.8	32
Idaho Falls 46W (R)	4933	850.3	1024.0	35	12	23.5	3.2	45	16	-11	31	0	31	--	--	.47	-.28	.13	7	0	4.8	2	6.3	---	a30	WSW	6	--	--	--	---	--
Idaho Falls 42NW (R)	4790	------	------	33	9	20.7	2.9	44	16+	-10	31	0	31	--	--	.49	-.12	.18	8	--	---	--	7.0	---	a30	SSW	20	--	--	--	---	--
Lewiston	1413	964.8	1017.3	47	33	39.6	5.6	55	9	25	11+	0	11	--	--	1.16	-.14	.37	13	0	T	T	---	---	--	---	--	5	3	23	8.0	--
Pocatello	4444	864.9	1022.4	39	23	31.0	4.2	50	16	1	31	0	27	25	79	.74	-.40	.23	9	0	4.1	1	13.0	SW	46	S	26	4	6	21	7.8	42
ILLINOIS																																
Cairo (U)	314	1005.1	------	52	37	44.6	4.9	64	18	13	11	0	9	--	--	6.89	3.56	2.40	13	4	T	T	11.2	S	43	S	18	9	8	14	6.4	52
Chicago	610	991.9	1015.9	42	27	34.5	6.5	57	22	2	11	0	20	27	73	1.95	.00	.43	10	0	6.0	2	11.9	NW	37	N	10	7	5	19	7.1	46
Moline	589	993.2	1016.2	41	25	32.8	5.9	57	22	1	12	0	23	25	73	3.82	2.25	1.20	7	1	6.4	6	13.5	WSW	33	SW	18	8	8	15	6.7	45
Peoria	654	993.2	1016.4	43	26	34.1	5.5	58	18	3	12	0	23	26	73	3.55	1.51	.85	11	1	5.4	4	12.4	S	41	NW	10	7	5	19	7.1	39
Springfield	589	993.2	1017.2	45	28	36.6	6.0	60	19	5	12	0	22	29	74	3.42	1.39	1.06	12	1	5.0	3	15.4	SSW	38	SW	18	5	8	18	7.4	38
INDIANA																																
Evansville	383	1002.4	1018.5	51	32	41.2	4.3	63	23	9	11+	0	19	33	72	6.41	3.23	1.57	14	3	.6	T	11.5	SSW	39	S	18	5	10	16	6.9	49
Fort Wayne	801	984.1	1016.3	42	27	34.4	5.6	56	19+	5	12	0	26	28	77	4.63	2.37	1.80	13	0	3.6	2	13.6	SW	48	SW	6	6	7	18	6.9	42
Indianapolis	793	986.8	1017.9	45	28	36.2	5.1	58	22	2	12	0	21	29	76	6.70	3.91	1.46	14	1	3.4	3	14.4	SSW	36	SW	6	4	10	17	7.2	43
South Bend	768	986.5	1015.6	41	26	33.2	5.4	57	22	7	12	0	27	27	79	4.47	2.19	.82	16	1	17.0	8	13.2	SSW	*30	NNW	10	5	7	19	7.4	--

See footnotes at end of table.

State and station	Elevation (ground)	Pressure		Temperature											Average relative humidity	Precipitation							Wind					No. of days (sunrise to sunset)			Sky cover, tenths (sunrise to sunset)	Possible sunshine
		Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	No. of days		Average dew point		Total	Departure from normal	Greatest in 24 hours	No. of days		Snow, Sleet		Average hourly speed	Prevailing direction	Fastest mile			Clear	Partly cloudy	Cloudy		
												Max. 90° F. or above	Min. 32° F. or below						.01 inch or more	With thunderstorms	Total	Max. depth on ground			Speed	Direction	Date					
	Ft	Mb	Mb	°F	°F	°F	°F	°F		°F				°F	%	In	In.	In			In.	In.	M p h		M. p. h.			0–3	4–7	8–10	0–10	%
IOWA																																
Burlington	694	989.5	1016.3	43	24	33.4	5.5	59	22	1	12	0	26	25	72	4.24	2.56	1.70	8	1	6.9	6	12.9	NW	41	N	10	6	6	19	7.1	55
Des Moines	948	984.8	1017.0	41	23	32.0	5.8	57	5+	2	31	0	26	23	73	1.33	.19	.42	9	0	9.1	4	12.5	NW	47	NW	10	8	5	18	6.6	56
Dubuque	1065	990.2	1015.9	37	21	29.0	5.6	53	5	-2	12	0	30	20	70	2.79	1.44	1.01	8	0	10.4	5	---	---	--	--	--	8	5	18	7.0	--
Sioux City	1094	973.9	1016.5	43	22	32.4	9.0	63	9	1	31	0	27	19	60	.28	-.46	.16	6	0	2.2	2	13.3	SSE	52	NW	10	7	9	15	6.5	56
Waterloo	870	------	------	36	20	27.8	4.7	51	22	0	11	0	29	--	--	.68	-.49	.42	5	0	5.6	3	13.7	---	--	--	--	--	--	--	---	--
KANSAS																																
Concordia (U)	1375	965.8	------	50	27	38.6	6.8	65	9	6	31	0	24	--	61	.58	-.03	.25	6	0	3.0	3	8.0	W	40	NW	10	12	8	11	5.3	65
Dodge City	2594	927.5	1017.3	54	27	40.6	7.2	69	9	8	11	0	25	21	52	T	-.50	T	0	0	T	0	15.1	NW	57	NW	19	13	6	12	4.9	69
Goodland	3645	887.2	1016.6	53	19	35.6	7.0	70	4	7	10+	0	31	16	50	.05	-.42	.05	1	0	1.5	2	10.7	WSW	*33	NNW	10	15	8	8	4.2	--
Topeka	877	980.7	1017.4	49	26	37.6	5.4	64	5	8	11+	0	22	26	57	1.16	.00	.49	8	0	2.2	2	11.9	SSW	49	N	10	6	11	14	6.3	51
Wichita	1321	967.2	1017.0	52	29	40.4	4.9	65	4	9	11	0	23	28	66	.45	-.65	.34	4	0	T	T	12.9	S	52	N	10	10	8	13	5.8	65
KENTUCKY																																
Lexington	979	982.3	1019.1	49	31	39.8	5.9	62	23	4	11+	0	17	33	77	5.69	2.01	1.94	15	1	1.5	1	14.1	S	--	--	--	8	6	17	6.8	--
Louisville	474	998.6	1018.3	51	33	41.8	4.9	64	23	7	11+	0	17	34	74	4.88	1.58	1.50	13	0	.6	T	12.0	S	35	SE	18	5	12	14	6.8	40
LOUISIANA																																
Baton Rouge	64	1018.6	1021.9	67	43	54.8	1.2	75	6+	19	12	0	4	44	71	3.14	-2.11	1.07	8	3	.0	0	8.9	ESE	--	--	--	13	6	12	5.1	--
Lake Charles	12	1019.6	1021.2	67	47	56.7	2.7	75	15	24	12	0	2	47	74	4.05	-1.71	1.38	6	2	.0	0	7.6	SE	*29	S	6	13	5	13	5.1	--
New Orleans (U)	9	1019.6	------	66	49	57.5	.4	76	31	30	12	0	1	--	--	3.67	-.91	1.27	7	3	.0	0	6.1	---	23	NE	11	13	9	9	4.6	59
New Orleans	3	1019.3	1021.8	65	45	55.2	-.9	75	18	25	12	0	3	47	77	3.09	-1.58	1.12	8	3	.0	0	5.7	SSE	*30	NW	11	12	11	8	4.5	--
Shreveport	252	1009.8	1019.7	63	42	52.6	2.8	77	18	19	12	0	4	40	66	3.10	-1.73	1.36	7	1	.0	0	10.6	S	--	--	--	13	5	13	5.1	67
MAINE																																
Caribou	624	990.3	1014.7	30	12	21.0	6.4	53	21	-4	3+	0	29	17	82	4.62	2.39	1.39	19	0	22.5	13	11.9	WSW	*50	S	11	4	3	24	7.9	--
Portland	61	1012.3	1016.4	42	24	32.9	7.8	60	21	9	6	0	26	27	77	3.12	-.67	.69	11	0	.9	T	12.8	SW	62	SE	26	10	5	16	6.4	45
MARYLAND																																
Baltimore (U)	14	------	------	49	35	42.1	3.3	64	23	14	12	0	11	--	--	5.45	2.50	1.79	12	--	---	--	---	---	--	--	--	--	--	--	---	--
Baltimore	146	1014.4	1019.4	47	31	39.1	3.4	63	23	13	12	0	18	31	73	5.30	2.35	1.60	12	0	9.5	7	12.6	SW	40	SE	20	8	6	17	6.7	54
Frederick	294	------	------	45	28	36.3	1.3	61	21	9	5+	0	22	--	--	4.91	1.99	1.81	10	0	5.0	5	---	---	--	--	--	--	--	--	---	--
MASSACHUSETTS																																
Blue Hill Obs. (R)	629	992.6	1016.6	44	29	36.0	6.9	61	20	12	12+	0	23	--	70	5.73	1.83	1.28	12	0	.2	T	18.7	W	60	SSE	26	10	6	15	6.2	48
Boston	15	1011.3	1016.1	47	33	40.0	7.2	63	20	17	13	0	14	28	65	6.58	3.21	1.90	10	0	T	T	13.8	WSW	*53	S	26	10	6	15	6.4	57
Nantucket	43	1016.7	1017.3	48	34	40.6	5.4	57	10	19	13	0	14	34	77	5.36	1.56	1.32	13	0	4.0	3	15.6	WNW	56	N	5	7	7	17	6.9	56
Pittsfield	1153	973.0	------	40	25	32.3	7.5	58	21+	5	13	0	28	--	--	5.60	2.55	2.33	15	0	6.2	4	---	---	--	--	--	--	--	--	---	--
Worcester	986	979.6	------	41	27	33.8	6.4	59	20	9	12+	0	26	--	--	6.92	3.30	2.35	12	0	2.2	2	14.9	---	*51	WNW	1	7	8	16	6.6	--
MICHIGAN																																
Alpena (U)	587	990.9	------	35	23	28.6	2.9	55	23	2	11	0	25	--	75	1.62	-.13	.44	16	0	15.0	5	12.1	---	40	SE	25	2	6	23	8.3	29
Detroit	619	989.2	1016.2	41	27	34.1	4.6	58	19	9	12	0	26	26	73	4.60	2.40	1.12	14	0	5.1	2	13.4	SW	34	NW	1+	5	7	19	7.3	31
Detroit (Willow Run)	722	986.1	1015.3	41	26	33.6	4.9	59	20	9	11+	0	25	27	77	3.41	1.37	.80	10	0	5.5	2	12.9	SW	*31	ENE	17	5	8	18	7.2	--
East Lansing (U)	856	------	------	40	25	32.4	5.3	59	20	8	11	0	27	--	--	2.80	.68	.73	15	0	11.0	3	6.5	SW	18	NW	10	--	--	--	---	21
Escanaba (U)	594	990.5	------	32	19	25.3	2.9	43	23	0	30	0	29	--	76	2.07	.64	.88	13	0	9.8	5	10.3	---	36	NW	10	4	9	18	7.4	30
Flint	761	986.5	1015.2	38	22	30.4	4.1	59	20	5	12	0	27	25	80	2.08	.18	.48	13	0	7.1	3	10.0	WSW	*25	SW	19	5	6	20	7.7	--
Grand Rapids	681	989.2	1015.2	39	23	31.3	4.0	56	20+	5	12	0	27	26	78	2.38	.21	.50	15	0	17.4	11	12.6	S	32	S	19	3	5	23	8.1	26
Marquette (U)	677	985.1	------	32	19	25.4	2.3	45	22+	5	10	0	30	--	73	1.65	-.39	.55	15	0	18.2	10	9.4	---	31	NW	10	1	8	22	8.4	31
Muskegon	627	990.9	1014.9	39	24	31.5	2.3	55	22	10	11	0	28	26	77	2.13	.20	.55	12	0	16.0	7	---	---	--	--	--	4	7	20	7.6	--
Sault Ste. Marie	721	990.2	1013.7	30	17	23.7	3.8	46	23	-9	12	0	29	21	87	3.54	1.24	.86	20	0	32.2	18	11.5	ESE	*35	WNW	23	2	2	27	9.1	16
MINNESOTA																																
Duluth	1409	971.2	1014.3	26	9	17.6	4.4	43	15	-16	29	0	31	11	76	.37	-.83	.12	10	0	5.8	6	12.8	NW	65	NW	10	7	7	17	6.9	48
Intern'l. Falls	1179	970.5	1013.8	23	3	13.0	3.9	39	24	-26	30	0	31	6	72	.37	-.48	.07	12	0	3.9	2	10.0	W	*32	W	15	6	5	20	7.1	--
Minneapolis	830	981.4	1016.4	32	18	25.3	5.9	46	15+	-4	29	0	30	17	73	.24	-.61	.12	5	0	2.2	1	11.9	NW	34	NW	1+	8	7	16	6.7	44
Rochester	1017	977.3	1015.9	32	17	24.9	5.9	45	15	-3	11	0	30	19	79	.50	-.52	.23	5	0	4.0	3	11.3	WNW	--	--	--	9	7	15	6.6	--
St. Cloud	1034	975.6	1015.3	31	13	21.8	6.3	47	9+	-10	29	0	31	14	73	.38	-.31	.27	5	0	3.7	2	---	---	--	--	--	9	7	15	6.3	--
MISSISSIPPI																																
Jackson	305	1009.2	1021.6	63	38	50.3	1.3	72	6+	17	12	0	13	40	70	3.03	-2.57	1.02	7	1	.0	0	8.4	SSE	34	NW	8+	13	3	15	5.5	51
Meridian	294	1007.3	------	63	37	49.9	1.7	74	24	14	12	0	15	--	--	2.25	-3.29	.85	8	1	.0	0	---	---	--	--	--	13	8	10	4.7	--
Vicksburg (U)	234	1011.1	------	62	44	53.2	2.7	72	6+	23	12	0	2	--	--	4.24	-1.14	1.50	10	1	.0	0	9.8	---	30	S	6	12	5	14	5.5	56
MISSOURI																																
Columbia	778	987.5	1016.9	48	30	39.1	6.0	65	5	8	11	0	16	29	68	2.79	.72	1.27	12	3	2.2	1	12.1	SSW	56	NW	10	6	6	19	7.1	44
Kansas City	741	981.4	1017.5	48	31	39.5	5.8	64	22	10	11	0	16	28	65	2.21	.71	.76	11	1	5.5	4	11.1	SSW	43	NW	10	6	7	18	6.9	47
St. Joseph	809	981.0	------	47	25	36.1	4.9	62	5	5	31	0	26	--	--	1.24	-.15	.47	9	0	4.8	4	12.5	S	*46	NNW	10	9	6	16	6.3	--
St. Louis (U)	465	------	------	50	34	42.0	5.8	66	18	8	11	0	10	--	--	2.88	.45	.82	12	2	.5	1	12.6	SW	39	NW	11	7	4	20	7.1	53
St. Louis	552	995.9	1017.2	49	32	40.8	5.7	66	18	8	11	0	15	30	66	2.78	.69	.58	12	2	.6	T	12.0	NW	--	--	--	7	6	18	7.0	--
Springfield	1265	968.8	1017.3	53	32	42.4	6.7	65	15	8	11	0	15	32	70	3.03	.86	1.88	12	3	1.0	T	15.7	S	49	NW	10	7	6	18	6.7	47
MONTANA																																
Billings	3568	888.3	1014.2	47	28	37.3	10.1	69	9	16	11	0	26	20	50	.05	-.53	.02	3	1	.3	T	14.7	WSW	48	NW	7	5	15	11	6.2	59
Butte	5530	827.6	1020.5	37	14	25.5	7.0	57	9	-15	31	0	31	15	--	.32	-.29	.15	7	0	8.4	6	7.5	WSW	*35	WNW	7	4	4	23	7.9	--
Glasgow (U)	2277	936.7	1013.3	38	18	28.1	12.3	55	8	-3	31	0	31	--	68	.07	-.46	.04	3	0	1.2	1	---	---	--	--	--	4	10	17	7.1	--
Great Falls	3664	883.8	1012.1	44	29	36.6	10.1	62	9	17	31	0	23	18	48	.11	-.59	.03	6	0	.7	T	22.8	SW	56	SW	8+	2	10	19	7.6	36
Havre (U)	2488	921.1	1011.9	45	23	33.9	13.5	56	8	0	30	0	29	--	--	.04	-.52	.02	2	0	T	T	11.0	---	41	W	8+	4	13	14	7.0	47
Helena	3893	871.0	1016.4	41	24	32.6	9.9	59	9	11	31	0	29	20	61	.31	-.33	.19	5	0	2.8	3	9.0	WSW	47	SE	26	4	5	22	7.9	50
Kalispell	2965	------	------	38	24	31.1	6.4	44	8+	2	31	0	29	--	--	.98	-.56	.20	13	0	9.2	4	---	---	--	--	--	2	4	25	8.7	--
Miles City	2629	928.2	1014.4	45	22	33.3	12.6	66	9	6	31	0	30	19	--	.02	-.49	.02	1	0	.1	T	11.4	W	*32	W	9+	8	11	12	5.9	--
Missoula	3200	901.1	1018.3	39	25	32.0	8.4	48	12+	8	31	0	30	25	77	1.41	.38	.68	13	0	4.0	1	5.8	SE	56	W	6	2	6	23	8.6	35
NEBRASKA																																
Grand Island	1841	948.5	1016.4	48	21	34.5	7.5	70	9	-5	31	0	28	20	60	.38	-.17	.31	3	0	3.3	3	13.0	WSW	--	--	--	13	7	11	5.3	--
Lincoln (U)	1166	------	------	47	27	36.9	7.8	66	9	3	31	0	23	--	--	.67	-.19	.41	6	0	5.6	5	10.9	SW	49	NW	10	7	13	11	6.0	57
Norfolk	1544	958.3	1015.6	45	20	32.5	8.8	66	9	-5	31	0	30	20	63	.41	-.37	.37	2	0	4.1	4	---	---	--	--	--	8	8	15	6.2	--
North Platte	2779	914.7	1016.3	49	18	33.7	6.5	68	9	-7	31	0	31	21	66	.50	.10	.50	1	0	6.4	6	9.1	WNW	49	N	7	15	6	10	4.9	68
Omaha	978	975.3	1016.8	45	25	35.0	7.6	63	9	6	31	0	26	23	65	.42	-.39	.17	7	0	5.5	3	10.4	SSE	41	N	10	10	9	12	5.8	66
Omaha, N.Omaha AP	1323	966.8	------	43	23	33.0	7.7	59	9	0	31	0	27	--	--	.57	-.24	.30	7	0	4.6	4	---	---	--	--	--	7	11	13	6.2	--
Scottsbluff	3950	877.4	1016.6	50	20	35.1	8.1	65	9	-5	31	0	30	18	55	.18	-.25	.17	2	0	2.3	2	12.4	WNW	*44	NNW	7+	9	15	7	5.4	--
Valentine	2587	921.8	------	48	18	32.8	7.6	66	9	-6	31	0	30	--	--	.06	-.40	.03	2	0	.8	1	10.8	---	45	N	10	7	14	10	5.9	73
NEVADA																																
Elko	5075	847.6	1023.1	43	15	29.3	2.4	55	8	2	1+	0	30	20	65	.50	-.55	.16	10	0	4.0	2	4.8	SW	*26	NNW	26	10	2	19	6.5	--
Ely	6257	811.0	1022.4	46	16	30.6	3.7	60	11	2	23	0	29	17	61	.50	-.38	.32	5	0	4.0	2	10.4	S	37	S	17	13	7	11	5.3	65
Las Vegas	2162	953.9	1020.8	60	34	46.8	.0	70	8	26	1	0	17	22	40	.01	-.57	.01	1	0	.0	0	5.4	W	*32	SW	5	15	5	11	4.4	77
Reno	4397	864.9	1022.6	49	22	35.2	2.0	56	7	13	2+	0	29	23	67	1.52	.58	.64	6	0	3.1	1	5.5	S	52	SE	17	8	8	15	6.3	69
Winnemucca	4299	870.6	1022.0	47	19	33.1	3.1	60	16	4	1+	0	26	23	65	.44	-.56	.26	6	0	.7	T	6.8	S	41	W	21	9	5	17	6.5	47
NEW HAMPSHIRE																																
Concord	339	1005.6	1016.6	42	24	32.9	8.9	60	20	9	13	0	26	24	72	4.95	2.14	1.86	11	0	4.6	4	8.2	WNW	35	NW	27	7	8	16	6.9	45

See footnotes at end of table.

CLIMATOLOGICAL DATA

State and station	Elevation (ground)	Pressure		Temperature										Average dew point	Average relative humidity	Precipitation							Wind					No. of days sunrise to sunset			Sky cover, tenths, sunrise to sunset	Possible sunshine
		Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	No. of days: Max. 90° F or above	Min. 32° F or below			Total	Departure from normal	Greatest in 24 hours	No. of days: .01 inch or more	With thunderstorms	Snow, Sleet: Total	Max depth on ground	Average hourly speed	Prevailing direction	Fastest mile: Speed	Direction	Date	Clear	Partly cloudy	Cloudy		
	Ft	Mb	Mb	°F	°F	°F	°F	°F		°F				°F	%	In	In	In			In	In	M p h		M p h			0-3	4-7	8-10	0-10	%
NEW HAMPSHIRE (Cont'd)																																
Mt. Washington	6262	796.5	-----	24	7	15.2	6.3	39	10+	-18	12+	0	31	-	84	13.35	7.50	2.40	24	0	59.0	5	46.0	W	‡120	WNW	[illegible]	2	5	24	8.5	24
NEW JERSEY																																
Atlantic City(U)	8	1016.2	------	48	36	42.3	4.1	60	24	16	12	0	8	-	--	6.77	3.46	1.48	13	0	4.6	4	18.3	---	56	N	1+	11	4	16	6.2	51
Newark	11	1017.1	1018.3	46	32	39.1	5.1	61	20+	16	13	0	16	30	71	5.74	2.64	1.52	14	0	16.2	11	9.9	SSW	*35	S	20	6	8	17	6.9	
Trenton (U)	56	1011.2	1018.2	45	33	39.2	4.2	63	20	13	12	0	12	--	-	4.70	1.92	1.27	13	0	9.9	8	9.7	---	34	S	20	9	6	16	6.3	19
NEW MEXICO																																
Albuquerque	5310	851.3	1020.9	50	27	38.5	2.5	59	17	17	1	0	27	20	51	.32	-.27	.28	4	0	2.9	2	5.9	N	44	W	18	15	10	6	3.9	79
Clayton	4969	844.9	1015.9	56	24	40.3	5.2	71	12	10	11	0	26	--		.00	-.36	.00	0	0	0	0	---	---	--	--	--	19	1	11	4.0	-
Raton	6379	805.3	1018.6	51	19	34.9	5.5	64	12	8	31	0	31	--	-	.00	-.35	.00	0	0	0	T		---	--	--	-	18	4	9	3.7	
Roswell	3612	895.0	1018.3	61	27	43.7	2.9	72	16	15	1	0	26	21	44	.00	-.53	.00	0	0	0	0	10.4	--	72	W	7	15	3	13	4.5	
NEW YORK																																
Albany	277	1013.3	1017.0	40	26	33.2	6.8	61	20	5	13	0	25	27	76	4.12	1.95	1.76	15	0	7.0	6	10.1	S	42	SE	20	3	8	20	7.6	37
Binghamton	1601	956.1	1016.7	37	24	30.6	5.2	58	20	5	12	0	26	24	75	2.60	.00	.96	15	0	4.7	2	12.8	WNW	47	SE	19	2	10	19	8.0	25
Buffalo	693	987.0	1016.3	41	28	34.8	5.8	62	20	8	12	0	24	27	73	3.74	.82	1.16	17	0	4.8	1	14.2	SSW	52	SW	23	0	7	24	8.7	25
New York (U)	10	1016.6	------	46	35	40.6	4.9	58	20	17	12	0	9	--	-	4.64	1.57	1.14	13	0	8.3	7	16.6	---	60	NW	1	12	3	16	6.2	46
New York	19	1016.2	1018.1	46	36	41.1	5.4	61	20	18	12	0	8	30	66	5.25	2.25	1.25	14	0	11.0	8	14.8	WNW	51	SE	26	9	6	16	6.7	
Rochester	543	996.3	1016.2	41	27	34.2	6.0	63	20	8	12	0	23	28	78	1.92	-.48	.56	16	0	6.9	2	13.1	WSW	38	W	21	1	5	25	8.5	29
Schenectady	217	------	------	41	28	34.8	8.9	60	20+	13	12+	0	25	-		3.06	.63	1.27	14	0	5.3	5	-	---	--	--	--	12	9	10	5.4	
Syracuse	424	994.7	1017.4	41	27	34.2	5.1	66	20	7	12	0	25	28	77	2.90	.16	.63	18	0	13.5	9	12.7	WSW	40	NW	1	1	6	24	8.5	20
NORTH CAROLINA																																
Asheville (U)	2203	939.1	------	51	31	41.2	1.0	64	23	1	12	0	16	-	--	3.36	.40	1.49	11	0	1.5	1	9.4	-	35	SE	7	10	8	13	6.1	43
Cape Hatteras(R)	9	1019.1	1019.9	60	43	51.5	2.0	72	24	19	12	0	4	43	74	6.40	1.31	2.59	12	1	T	0	13.3	WSW		-		9	8	14	5.9	47
Charlotte	725	992.3	1021.3	56	34	45.1	2.1	70	16	10	12	0	14	34	69	2.19	-1.60	.83	7	0	T	T	9.0	SSW	40	SW	7	10	7	14	5.9	57
Greensboro	891	988.3	1021.3	54	32	42.5	2.4	66	16+	9	12	0	17	31	68	2.49	-.62	.90	9	0	T	T	8.3	SW	34	NW	11	11	3	17	6.0	62
Raleigh	433	1006.5	1020.5	56	34	44.8	2.4	69	7	10	12	0	13	34	69	3.42	.13	.97	9	0	1.0	T	7.3	S	*29	WSW	20+	8	8	15	6.0	59
Wilmington	30	1019.6	------	60	38	49.3	.7	73	19+	14	12	0	6	-	--	4.84	1.38	1.78	11	0	1.0	1	11.2	---	38	NW	4	11	9	11	5.2	71
Winston-Salem	967	984.4	1020.7	53	33	43.3	2.7	66	16	8	12	0	15	30	64	3.00	-.23	1.43	8	0	T	0	10.9	SW	*39	WNW	4	10	5	16	5.9	--
NORTH DAKOTA																																
Bismarck	1650	952.3	1014.7	35	13	24.2	8.7	53	20	-24	31	0	31	15	67	.38	-.02	.21	4	0	5.7	3	11.3	WNW	50	NW	9	6	7	18	6.9	59
Devils Lake (U)	1471	958.0	------	27	10	18.7	7.5	47	20	-16	31	0	31	--	77	.29	-.19	.12	6	0	4.1	2	9.0	NW	34	NW	25	6	7	18	7.1	56
Fargo	895	979.7	1015.6	31	12	21.5	8.6	45	20+	-16	31	0	30	14	72	.05	-.55	.05	2	0	1.2	1	16.1	SSE	58	N	10	4	13	14	6.7	50
Williston (U)	1877	943.8	1013.8	35	16	25.6	9.9	49	21	-16	30	0	31	16	65	.30	-.24	.12	5	0	4.2	2	7.4	S	28	NW	25	5	9	17	7.2	58
OHIO																																
Akron	1210	979.0	1018.0	42	25	33.4	3.3	60	20	8	11+	0	26	29	83	3.94	1.36	1.49	21	0	2.3	2	13.5	S	--	--	--	6	6	19	7.3	-
Cincinnati Obs.	761	------	------	48	31	39.5	4.5	62	23	6	12	0	15	--	--	5.60	2.76	1.49	15	0	4.0	2	8.2	---	29	SW	31		--	--	--	53
Cincinnati	869	985.0	1018.0	47	30	38.7	5.1	61	23	5	12	0	16	29	70	5.98	3.15	1.76	14	0	2.2	1	12.3	SW	29	SSW	6+	6	7	18	7.1	--
Cleveland (U)	787	988.0	1016.7	43	29	36.1	5.2	61	20	11	11	0	21	28	73	3.38	1.09	1.26	16	0	7.5	5	17.3	S	43	S	20	5	7	19	7.7	27
Columbus (U)	724	------	------	45	30	37.5	4.2	60	23	10	11	0	16	--	--	4.01	1.57	1.14	14	0	5.3	5	---	---	--	--	-	--	--	--	--	--
Columbus	815	987.3	1018.3	45	28	36.8	5.1	61	23	8	11	0	22	30	77	4.68	2.19	1.09	14	0	8.5	5	11.5	SSW	43	SE	20	6	8	17	7.0	44
Dayton	1002	980.3	1017.9	44	29	36.3	4.6	59	23	6	11	0	21	28	72	4.04	1.57	1.39	15	0	2.8	3	14.4	SSW	40	W	31	4	10	17	7.0	48
Sandusky (U)	603	993.2	------	43	29	36.3	4.8	60	19+	12	12	0	22	--	--	3.14	.98	1.34	18	0	3.7	2	11.1	---	41	NW	11	8	6	17	6.6	40
Toledo	676	990.4	------	42	26	34.3	5.4	59	20	10	11+	0	26	--	--	3.61	1.32	1.02	12	0	4.2	2	13.3	---	45	SW	31	4	11	16	7.2	46
Youngstown	1178	973.8	1017.8	42	26	33.7	3.7	58	19+	9	12	0	25	28	79	3.75	.81	1.15	18	1	7.4	3	14.3	SW	*29	W	12+	5	8	18	7.5	-
OKLAHOMA																																
Oklahoma City	1280	973.2	1018.3	56	33	44.3	4.1	67	4+	13	11	0	15	31	65	.72	-.76	.70	3	1	.0	0	14.8	S	50	NW	7	15	8	8	4.2	68
Tulsa	672	992.9	1017.7	58	35	46.0	5.2	69	4+	15	11	0	11	32	61	1.44	-.25	1.07	6	1	T	0	10.7	S	38	NE	10	12	8	11	5.2	58
OREGON																																
Astoria	8	1013.9	1014.3	51	39	45.0	2.3	62	10	31	30	0	2	41	86	11.97	-1.24	1.49	24	3	0	0	8.7	SE	*35	S	24+	1	3	27	8.8	--
Burns (U)	4140	874.0	1020.3	41	22	31.3	3.6	57	7	10	31	0	30	25	79	1.58	.14	.45	10	0	10.7	5	---	---	--	--	--	6	6	19	7.2	--
Eugene	361	1003.7	1017.6	49	37	42.7	2.1	60	7	28	31	0	8	--	--	12.82	6.82	3.74	21	0	T	0	9.3	---	*32	S	17+	0	6	25	9.0	--
Meacham	4050	------	------	37	27	31.7	2.6	48	9	18	30+	0	30	--	-	5.91	1.53	1.72	15	0	44.7	18	---	---	--	-	-	3	4	24	8.4	--
Medford	1312	971.9	1020.5	43	33	38.2	-.3	56	16+	25	1+	0	15	36	93	3.92	.79	.97	19	0	1.5	T	3.2	S	*24	WNW	25	0	4	27	9.3	
Pendleton	1492	962.4	1016.8	49	34	41.3	6.0	59	6	22	31	0	12	33	75	1.85	.16	.46	13	1	T	T	11.2	SE	*46	WNW	25	3	6	22	7.9	--
Portland	21	1010.2	1015.9	49	39	43.9	3.1	58	10	32	10+	0	3	39	83	6.15	-.02	1.28	20	0	T	0	11.4	S	55	S	17	1	2	28	9.0	21
Roseburg	505	998.6	1017.6	50	37	43.8	2.6	63	7	30	4	0	5	--	--	9.23	4.30	2.35	19	0	.1	T	4.4	---	30	NW	25	1	3	27	8.9	14
Salem	195	1009.1	1016.6	49	37	43.1	2.1	59	7	24	31	0	3	40	90	8.87	1.75	1.68	20	0	0	0	9.7	S	*35	S	24	0	3	28	9.1	
Sexton Summit(R)	3836	------	------	44	33	38.6	1.9	61	9	25	21+	0	17	--	--	7.12	2.42	1.73	17	0	31.1	12	---	---	--	--	--	3	4	24	8.3	--
PENNSYLVANIA																																
Allentown	376	1004.1	1018.8	44	28	35.5	4.4	63	20	12	12	0	24	29	77	5.52	2.50	2.19	14	0	6.9	6	11.0	WNW		--	--	7	7	17	7.0	
Erie	732	------	------	42	29	35.8	5.1	62	20	13	11	0	21	--	--	2.20	-.19	.78	16	0	4.7	4	15.6	-	*40	SSE	19	1	9	21	8.3	-
Harrisburg	335	1004.9	1019.0	44	30	37.3	3.4	63	20	13	12	0	19	26	66	5.23	2.67	1.98	10	0	7.0	6	7.8	WNW	37	NW	1	7	3	21	7.1	45
Philadelphia (U)	26	------	------	47	36	41.2	3.8	62	20	17	12	0	9	--	--	----	----	----	--	-	--	--	--	---	-	-	--	-	--	--	---	--
Philadelphia	10	1013.8	1018.4	46	33	39.4	3.5	64	20	14	12	0	16	31	72	4.49	1.82	1.21	11	0	7.8	7	9.3	SW	42	S	20	6	9	16	6.9	48
Pittsburgh (U)	749	------	------	46	31	38.7	3.5	63	23	10	12	0	15	--	--	4.60	2.03	1.11	17	--	3.5	--	---	---	--	--	--	-	--	--	--	32
Pittsburgh	1151	986.8	1018.1	43	27	35.3	4.4	60	19	8	12	0	23	28	74	4.22	1.71	1.00	19	0	4.9	4	12.1	WSW	*34	SW	23	6	6	19	7.4	40
Reading (U)	266	1006.2	1018.3	45	32	38.7	3.9	63	20	14	12	0	16	--	--	5.59	2.79	2.13	12	0	5.0	4	11.8	---	47	S	20	6	8	17	7.0	40
Scranton	940	983.4	1018.9	41	26	33.6	4.0	62	20	8	12	0	25	26	71	4.04	1.67	1.46	11	0	6.0	3	10.2	SW	47	SW	20	5	9	17	7.4	31
Shippingport (U)	736	------	------	44	27	35.4	---	61	19	9	12	0	24	--	--	4.01	----	1.11	14	0	2.0	2	3.6	-	‡30	WNW	1	--	--	--	---	-
Williamsport	527	998.8	------	42	28	35.2	4.3	62	20	12	12	0	24	--	--	5.05	2.38	2.42	15	0	3.0	3	---	---	--	-		4	8	19	7.6	-
RHODE ISLAND																																
Block Island	110	1012.4	1016.9	48	35	41.8	6.7	58	10+	22	12	0	10	--	--	5.62	2.26	1.52	12	0	1.5	T	---	---	--	--	--	9	8	14	6.3	--
Providence	55	1011.0	1017.2	46	31	38.4	6.8	60	21	15	13	0	20	29	69	5.86	2.41	1.73	12	0	.3	T	13.1	SW	*48	SE	26	9	7	15	6.2	58
SOUTH CAROLINA																																
Charleston (U)	9	------	------	60	43	51.7	-.5	70	16	20	12	0	4	--	--	3.35	.64	1.72	9	0	0	0	9.3	--	31	SW	7		-		--	63
Charleston	41	1019.6	1021.6	62	38	50.2	-.3	74	24	15	13	0	9	41	76	3.57	.86	1.83	8	0	0	0	11.0	SW		--	-	12	7	12	5.3	
Columbia	217	1012.7	1021.3	60	37	47.7	.7	73	7+	15	12+	0	10	37	71	2.44	-1.15	.65	11	0	T	0	6.8	SW	*29	SSW	7	11	5	15	5.6	56
Florence	146	1015.3	------	60	38	48.9	2.4	73	7+	15	12	0	10	--	--	2.29	-.96	.68	10	0	T	T	--	--		--		12	6	13	5.3	
Greenville	1018	982.5	1020.7	55	35	44.9	.8	67	23+	10	12	0	8	32	65	3.56	-.95	1.12	8	0	T	0	9.8	WSW	50	SW	20	9	5	17	6.3	57
Spartanburg	801	------	------	55	34	44.6	.7	69	16	9	12	0	13	--	--	2.54	-1.45	.84	6	0	T	0	10.0	---	32	SSW	20				-	
SOUTH DAKOTA																																
Huron	1282	966.8	1015.6	40	18	28.7	9.1	59	9	-4	31	0	30	19	69	.05	-.40	.05	1	0	8	1	12.2	SSE	45	NW	25	7	8	16	6.8	51
Rapid City	3165	898.1	1014.8	48	22	34.9	9.2	70	9	4	31	0	30	19	57	.04	-.30	.02	2	0	2	T	9.6	NW	47	NW	7+	9	11	11	5.9	58
Sioux Falls	1420	962.4	1015.7	40	19	29.4	10.0	61	9	-1	11	0	29	16	60	.40	-.27	.38	3	0	1	T	11.4	SSE	*41	NNW	10	7	10	14	6.2	--
TENNESSEE																																
Bristol	1519	964.7	------	51	31	40.9	2.2	67	23	2	12	0	18	--	--	4.45	1.02	1.29	13	0	7	1	--	--	-				5	17	6.6	-
Chattanooga	670	992.8	1021.3	54	33	43.6	1.5	67	23+	9	12	0	17	35	76	4.55	-.76	1.99	14	0	T	T	8.0	S	32	NW	16	6	7	18	6.6	45
Knoxville	950	984.7	1021.0	53	35	43.9	2.9	68	23	5	12	0	14	36	74	5.16	.90	1.80	17	0	6	1	11.2	SW	47	SW	20	8	5	18	6.7	38
Memphis (U)	271	------	------	56	41	48.3	3.9	68	19	16	11	0	5	--	--	4.27	-.52	2.13	11	0	T	T		---		-		--		--	---	--
Memphis	263	1004.7	1019.8	57	39	47.8	4.5	68	19	15	12	0	10	37	67	4.45	-.64	2.08	10	1	T	T	11.9	SSW	37	SW	19	10	5	16	6.1	55
Nashville	577	999.7	1019.7	54	36	44.8	3.2	67	23	9	12	0	15	37	74	5.84	1.78	2.07	14	2	.3	T	10.0	S	34	NW	3+	6	9	16	6.7	38

See footnotes at end of table.

CLIMATOLOGICAL DATA

DECEMBER 1957

State and station	Elevation (ground)	Pressure ø Station	Pressure Sea level	Temperature Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	No. of days Max. 90° F. or above	Min 32° F. or below	Average dew point	Average relative humidity	Precipitation Total	Departure from normal	Greatest in 24 hours	No. of days .01 inch or more	With thunderstorms	Snow, Sleet Total	Max. depth on ground	Wind Average hourly speed	Prevailing direction	Fastest mile Speed	Direction	Date	No. of days (sunrise to sunset) Clear	Partly cloudy	Cloudy	Sky cover, tenths (sunrise to sunset)	Possible sunshine
	Ft.	Mb	Mb.	°F.	°F	°F.	°F	°F.		°F		#		°F	%	In.	In.	In.			In.	In.	M. p. h.		M. p. h.			0–3	4–7	8–10	0–10	%
TENNESSEE (Cont'd.)																																
Oak Ridge	905	985.5	------	52	34	43.1	3.5	68	23	6	12	0	15	--	--	7.40	1.74	3.20	14	0	T	T	4.1	---	32	--	3+	8	5	18	6.6	--
TEXAS																																
Abilene	1759	956.7	1018.7	62	37	49.8	4.0	75	15	20	11	0	9	31	52	.52	-.85	.37	3	0	.0	0	12.1	SSW	52	W	19	12	10	9	4.6	78
Amarillo	3590	889.3	1017.3	58	28	42.7	5.4	70	17	9	11	0	23	20	47	.03	-.64	.03	1	0	.0	0	11.4	SW	48	N	19	16	9	6	3.6	85
Austin	615	998.6	1020.9	67	45	56.3	4.1	78	10	21	12	0	3	43	67	1.20	-1.51	.56	5	1	T	0	7.6	S	32	W	10+	11	6	14	5.1	54
Brownsville	16	1017.3	1020.1	74	54	64.4	2.0	82	19	33	12	0	0	55	74	1.27	-.89	.72	3	1	.0	0	13.0	SE	35	S	6	11	10	10	5.4	56
Corpus Christi	41	1019.0	1020.4	73	50	61.5	2.7	81	10+	29	12	0	2	51	73	.77	-1.50	.94	2	0	.0	0	10.2	SSE	35	S	6	11	8	12	5.5	57
Dallas	487	1000.7	1019.7	63	43	53.1	4.8	72	15+	21	11	0	3	40	64	2.14	-.48	1.20	4	0	.0	0	12.2	S	47	W	19	13	9	9	4.5	65
Del Rio (U)	957	------	------	67	44	55.1	1.9	80	19	28	1+	0	4	--	--	.82	-.06	.41	2	2	.0	0	---	---	--	--	--	--	--	--	---	--
El Paso	3920	889.6	1020.0	60	33	46.4	1.6	68	17	19	1	0	16	23	41	.02	-.47	.02	1	0	.0	0	10.4	N	45	NW	19	17	5	9	4.1	82
Fort Worth	544	998.6	1019.8	63	41	51.7	3.6	72	15+	21	11	0	6	38	64	1.78	-.70	1.10	5	0	.0	0	13.8	S	*44	WSW	19	14	9	8	4.4	--
Galveston (U)	7	------	------	65	54	59.2	2.2	72	31	35	11	0	0	--	--	1.19	-3.07	.34	8	--	.0	0	12.7	---	49	NW	10	--	--	--	---	63
Galveston	5	1018.6	1021.3	65	53	58.8	2.3	72	31	34	11	0	0	50	74	1.28	-3.54	.39	7	2	.0	0	12.9	SE	--	--	--	12	6	13	5.3	--
Houston (U)	41	1015.6	------	67	51	58.9	3.1	75	15	28	12	0	2	--	--	1.38	-3.25	.52	8	0	.0	0	10.4	SE	37	N	10	12	5	14	5.5	66
Houston	50	1018.3	1021.5	67	47	57.3	2.1	76	18	23	12	0	2	48	73	1.83	-2.63	.86	7	1	.0	0	11.6	SSE	--	--	--	11	3	17	5.9	--
Laredo	500	1004.1	1019.5	72	49	60.8	1.5	82	19	31	12	0	1	47	65	1.48	.04	.96	[illegible]	1	.0	0	9.5	SSE	*32	N	10	12	8	11	4.7	--
Lubbock	3243	904.5	1018.2	60	28	44.1	3.5	72	16	16	11	0	26	27	54	.06	-.60	.06	1	0	.0	0	14.3	SW	*58	WSW	19	17	6	8	3.9	--
Midland	2854	918.7	1019.0	63	34	48.5	3.1	75	16	21	11	0	12	26	46	.17	-.58	.11	2	0	.0	0	9.9	WSW	*32	NNE	10+	16	7	8	4.1	--
Port Arthur	16	1020.0	1021.6	66	46	56.3	2.2	75	18	25	12	0	2	48	77	3.01	-2.46	1.25	8	1	.0	0	11.9	ESE	36	NW	11	14	4	13	5.2	63
San Angelo	1903	951.2	1019.5	64	38	51.0	2.2	76	15	25	11	0	9	34	57	.33	-.80	.17	3	1	.0	0	11.7	SW	*40	NNE	10+	14	9	8	4.4	--
San Antonio	792	994.9	1020.4	68	43	55.5	2.4	81	10	18	12	0	5	42	65	.92	-1.00	.56	9	1	.0	0	7.4	S	39	NE	10	12	5	14	5.0	56
Victoria	110	1015.6	1020.6	70	46	58.4	1.6	79	15+	22	12	0	3	48	70	.83	-2.24	.47	6	0	.0	0	9.6	S	‡48	NNE	10+	11	6	14	5.5	--
Waco	500	999.7	1020.0	66	43	54.3	4.1	75	10+	25	11	0	5	41	66	.42	-2.32	.32	3	0	.0	0	12.6	S	*37	N	10	11	9	11	4.9	--
Wichita Falls	1020	980.7	1018.5	60	35	47.4	3.6	76	16	14	11	0	13	31	57	.56	-.91	.44	2	0	.0	0	9.7	S	*36	N	10	15	9	7	3.9	--
UTAH																																
Milford	5028	847.3	1020.3	48	18	32.8	4.8	56	7	6	31	0	30	--	--	.15	-.60	.08	3	0	T	T	---	---	--	--	--	12	7	12	5.4	--
Salt Lake City	4220	871.3	1023.6	43	24	33.4	1.9	56	16	10	27	0	27	25	73	1.61	.27	.58	11	2	11.1	3	8.1	SSE	29	NW	26	6	7	18	7.1	43
VERMONT																																
Burlington	331	1001.2	1016.4	38	22	29.6	6.8	62	20	0	13	0	27	23	75	3.93	2.05	1.14	13	0	12.0	10	10.8	S	40	S	6	4	6	21	7.8	40
VIRGINIA																																
Lynchburg	947	984.8	------	50	33	41.3	2.4	64	22	8	12	0	14	--	--	3.09	-.06	1.13	11	0	1.4	1	8.9	---	28	S	20	11	3	17	6.4	49
Norfolk	26	1018.5	1019.8	55	38	46.7	3.9	70	20	16	12	0	5	37	72	4.53	1.65	----	11	0	1.1	---	13.2	SSW	41	W	4	10	7	14	5.7	71
Richmond	162	1013.7	1020.3	53	34	43.0	3.5	68	7	11	12	0	15	35	75	6.88	3.99	2.10	12	0	2.9	2	8.9	S	40	SE	26	10	6	15	6.0	47
Roanoke	1174	976.9	1020.3	50	32	41.1	2.1	63	23	7	12	0	15	28	62	2.46	-.67	.97	12	1	T	0	9.0	SE	--	--	--	10	5	16	6.4	--
WASHINGTON																																
Olympia	190	1006.8	1014.0	48	37	42.4	3.0	60	8	26	31	0	5	38	84	8.91	.25	1.46	23	0	T	0	10.9	SSW	*39	SSE	23	1	2	28	9.2	--
Seattle (U)	14	------	------	50	42	46.0	2.9	61	8	35	31	0	0	--	--	4.36	-.98	.90	22	0	.0	0	13.6	---	60	SW	25	1	5	25	8.8	19
Seattle	14	1012.5	1013.7	--	--	----	---	--	--	--	--	--	--	38	76	----	----	----	--	--	---	---	9.6	S	--	--	--	--	--	--	---	--
Seattle-Tacoma	386	999.7	1013.9	49	39	43.7	3.9	61	10	32	30	0	1	38	84	5.52	-.16	.96	22	1	T	0	16.3	S	*40	SW	18+	3	2	26	8.7	--
Spokane	2357	945.8	1015.9	40	30	35.1	6.0	54	9	18	31	0	22	31	84	1.93	-.28	.39	14	0	10.8	3	11.2	SW	36	SW	19+	0	6	25	8.9	25
Stampede Pass (R)	3958	875.0	1015.5	33	26	29.7	3.5	53	9	18	31	0	29	--	--	19.13	4.47	2.81	28	0	143.3	98	---	---	--	--	—	2	1	28	9.0	--
Tatoosh (R)	101	1007.8	1010.8	50	42	45.7	1.6	59	10	37	21+	0	0	41	81	14.79	2.75	1.51	28	2	T	0	22.9	S	71	W	22	1	3	27	9.0	20
Walla Walla (U)	949	980.0	1016.6	49	36	42.4	6.1	60	25	25	31	0	11	--	--	1.87	.06	.52	15	0	T	0	6.8	---	42	SE	23	2	1	28	9.0	35
Yakima	1061	976.3	1014.8	45	26	36.3	4.7	55	25	18	30+	0	27	29	81	.83	-.27	.29	10	0	1.3	1	5.0	W	*31	SW	20	5	7	19	7.6	--
WEST VIRGINIA																																
Charleston	950	982.6	1018.9	51	30	40.4	2.3	66	23	8	12	0	18	28	63	3.80	.82	1.15	19	2	2.7	2	7.5	SW	21	SSW	1	10	3	18	6.8	--
Elkins	1970	------	------	46	26	35.8	2.9	64	20	4	11+	0	24	28	--	4.40	1.27	1.36	18	0	7.7	5	8.7	SSE	*30	WSW	1	8	3	20	7.0	--
Huntington (U)	565	------	------	51	31	41.1	2.0	67	23	7	11+	0	17	--	--	4.44	1.27	1.18	16	0	.5	T	---	---	--	---	--	--	--	--	---	--
Parkersburg (U)	615	------	------	48	30	39.0	2.9	65	23	8	11+	0	17	--	--	4.67	1.77	1.37	18	0	3.1	1	7.2	---	23	SE	20	7	7	17	6.9	33
WISCONSIN																																
Green Bay	689	991.2	1014.7	34	17	25.1	5.0	48	22	-2	29	0	30	20	80	1.59	.33	.66	11	0	7.2	3	12.6	WNW	52	W	21	8	8	15	6.4	47
La Crosse	652	990.2	1015.9	35	19	26.5	6.0	50	22	-3	11	0	30	18	70	.61	-.61	.25	6	0	3.5	4	11.3	NNW	*43	NNW	10	9	5	17	6.7	--
Madison	857	978.7	1015.4	37	19	27.9	4.9	51	15	-3	11	0	30	21	74	1.41	.01	.57	7	0	6.8	2	12.3	W	37	NW	10	6	6	19	7.0	51
Milwaukee	672	989.2	1015.3	38	22	29.7	4.0	53	22	-1	11+	0	29	23	75	2.36	.88	.62	9	0	8.0	6	16.2	WNW	42	NW	10	6	7	18	6.8	49
WYOMING																																
Casper	5322	835.1	1016.1	41	23	31.8	6.3	51	9	0	31	0	29	18	56	.43	-.22	.19	5	0	6.6	3	22.7	SW	*53	WNW	7	7	13	11	5.9	--
Cheyenne	6131	809.0	1015.8	46	24	35.0	6.3	61	4	7	31	0	27	14	43	.10	-.42	.06	3	0	1.0	1	17.9	WNW	56	NW	7	12	12	7	4.4	69
Lander	5563	833.7	1018.4	41	17	28.9	8.5	54	8	0	31	0	31	14	55	.14	-.35	.14	1	0	3.2	5	7.0	---	49	NW	7	9	18	4	4.8	84
Sheridan	3942	881.1	1015.0	49	22	35.0	11.0	69	9	9	11	0	30	17	52	.23	-.44	.12	3	0	2.1	1	11.1	WNW	54	W	20	11	8	12	5.5	61
PACIFIC AREA																																
Canton Island	9	1007.1	1007.2	90	78	84.0	1.0	94	11	73	1+	19	0	77	80	9.85	8.90	1.99	16	5	.0	0	12.3	N	*30	SW	1+	1	5	25	8.9	--
Guam (R)	361	------	------	84	72	78.3	---	85	2+	67	24	0	0	--	--	2.96	----	.58	21	0	.0	0	---	---	--	---	--	--	--	--	---	91
Hilo	31	1014.9	1017.2	77	66	71.6	.2	85	2	61	9	0	0	65	83	19.71	3.72	3.05	31	0	.0	0	10.1	WSW	*31	N	7	0	10	21	8.6	21
Honolulu	7	1015.9	1016.3	79	69	74.0	.3	86	6	62	8	0	0	64	71	2.84	-1.16	1.43	13	0	.0	0	16.9	NE	59	NE	1	2	16	13	6.6	49
Koror (R)	94	1006.1	1009.8	87	76	81.7	.9	90	4	74	16+	1	0	76	83	7.62	-5.91	1.45	29	2	.0	0	---	---	--	--	--	0	2	29	9.1	--
Lihue	115	1011.2	1016.9	78	68	72.7	1.2	84	3	62	9	0	0	65	78	6.77	1.42	2.40	28	0	.0	0	13.2	NE	58	NE	1	1	11	19	8.0	39
Majuro	10	1008.5	1008.8	86	78	81.9	---	88	11+	75	13+	0	0	75	79	2.28	----	1.42	13	0	.0	0	---	---	--	--	--	1	10	20	8.0	--
Ponape (R)	120	1004.4	1009.6	88	77	82.4	1.5	91	10	72	19	1	0	75	81	2.40	-14.79	1.58	16	0	.0	0	---	---	--	--	--	2	10	19	8.0	--
Truk, Moen Is.	8	1009.8	1010.2	86	78	81.9	.8	87	4+	74	1	0	0	75	80	3.43	-8.72	.97	16	1	.0	0	---	---	--	--	--	0	2	29	9.8	--
Wake Island	11	1014.9	1015.7	83	74	78.3	-.7	84	5+	72	6+	0	0	69	75	.91	-1.16	.25	18	0	.0	0	17.5	ENE	*28	ENE	8	15	15	1	4.0	--
Yap (R)	53	1008.5	1010.4	86	77	81.7	.5	88	6+	74	16	0	0	75	81	3.65	-6.50	.93	21	0	.0	0	---	---	--	--	--	0	0	31	9.6	--
WEST INDIES																																
San Juan, P.R. (U)	47	------	------	82	72	77.1	.6	87	18	67	10	0	0	--	--	4.36	-.47	1.56	--	--	---	--	---	---	--	--	--	--	--	--	---	--
San Juan P.R.	15	1012.8	1015.3	83	70	76.7	---	87	18	65	10+	0	0	70	82	6.63	----	2.82	21	0	.0	0	8.9	ENE	27	N	6	7	16	8	5.9	49
Swan Island	31	1013.6	------	83	74	78.5	.1	85	1+	70	12	0	0	--	--	4.05	-.55	.67	21	1	.0	0	---	---	--	--	--	6	16	9	6.1	--
ALASKA																																
Anchorage	92	990.2	995.4	17	2	9.4	-4.4	40	9	-20	20+	0	31	6	81	.36	-.48	.12	10	0	4.3	4	4.7	NNE	*23	S	1	8	5	18	7.0	31
Annette	110	997.0	1001.0	41	32	36.6	.5	53	10	24	26	0	18	33	87	17.87	8.76	2.67	29	0	29.3	14	13.1	ESE	*45	ESE	7	0	5	26	9.1	--
Barrow	22	1014.6	1015.2	-17	-25	-21.0	-10.6	5	11	-45	26	0	31	-29	64	.27	.07	.14	5	0	2.8	6	9.0	NE	25	NE	3	⊕	⊕	⊕	---	--
Barter Island	39	1011.2	1013.3	-18	-28	-23.0	---	10	11	-47	31	0	31	-32	57	.25	----	.13	6	0	2.5	18	10.8	ENE	*32	ENE	2+	⊕	⊕	⊕	---	--
Bethel	10	1000.3	1001.9	3	-10	-3.7	-10.9	36	1+	-41	28	0	31	-8	82	.33	-.52	.07	11	0	3.7	6	8.0	N	*30	SE	8	16	3	12	4.5	--
Cold Bay	90	998.0	1002.2	32	23	27.5	-2.3	45	11	11	24	0	27	23	83	3.52	1.04	1.04	28	0	19.2	12	20.0	NNW	*47	SSE	3	1	3	27	8.8	--
Cordova	40	990.5	992.1	30	15	22.3	-4.3	42	2	-7	24+	0	30	20	89	6.38	-.58	1.93	21	0	70.8	38	4.7	E	*23	ESE	1+	1	4	26	9.0	--
Fairbanks	436	986.8	1005.2	-8	-23	-15.6	-6.5	29	9	-45	26	0	31	-22	70	.25	-.25	.16	5	0	4.5	6	.8	N	*10	N	2	1	5	25	8.6	--
Juneau	15	997.6	998.2	34	25	29.4	1.8	42	10+	7	26	0	28	26	83	3.76	-.41	.73	26	0	39.0	22	8.1	ESE	31	SW	26	0	1	30	9.7	7
King Salmon	44	998.0	1000.0	9	-6	1.8	-12.4	39	1	-32	21	0	31	-5	72	.43	-.86	.11	10	0	3.4	2	8.9	N	*36	SSE	8	10	10	11	5.3	--
Kotzebue	10	1006.1	1006.8	-6	-19	-12.6	-8.9	23	10	-47	26	0	31	-18	75	.13	-.22	.10	3	0	11.5	13	8.8	NE	*40	E	9	15	3	13	4.8	--
McGrath	334	990.2	1003.9	-7	-23	-15.3	-8.0	30	9	-53	20	0	31	-20	77	.53	-.72	.25	10	0	9.0	16	1.6	N	*15	N	31	10	4	17	5.9	--
Nome	13	1003.1	1004.1	2	-9	-3.6	-11.3	29	9	-35	27	0	31	-10	75	.24	-.92	.06	8	0	2.7	7	7.3	E	*43	E	9	14	3	14	5.0	28
St. Paul Island	22	1000.7	1001.7	31	22	26.0	-3.3	40	10+	12	24+	0	29	22	80	2.37	.38	.30	18	0	15.1	8	---	---	--	--	--	0	9	22	8.3	--
Yakutat	28	993.6	994.6	33	23	28.0	.2	45	10	5	29	0	29	26	88	12.91	.60	1.31	28	0	91.6	70	10.9	E	*44	SE	10	0	1	30	9.6	--

Data from airport unless otherwise specified. U indicates Urban, R indicates Rural, sites.

* Data entered in column "Fastest Mile" is the fastest mile observed. This station is not equipped with automatic recording wind instrument.

+ And also on a later date or dates.

a Maximum hourly average † Airport data ‡ Peak gust

# Number of days maximum 70° or above for Alaskan stations. ⊕ Sun continuously below horizon during December.

ø Station pressures apply to elevations shown in Table 10b of the annual issue of this publication.

HEATING DEGREE DAYS

(Base 65°F.)

State and station	Current season: This month	Current season: Period July through this month	Normals July through this month
ALABAMA			
Birmingham	519	1104	1130
Mobile	389	701	623
Montgomery	470	854	864
ARIZONA			
Flagstaff	919	2828	2967
Phoenix (U)	286	550	555
Phoenix	303	568	645
Prescott	710	1738	1720
Tucson	306	661	649
Winslow	805	1803	1903
Yuma	162	287	364
ARKANSAS			
Ft. Smith	559	1218	1273
Little Rock	487	1029	1179
Texarkana	417	897	913
CALIFORNIA			
Bakersfield	535	884	819
Bishop	740	1714	1675
Blue Canyon	735	2200	2006
Burbank	206	454	580
Eureka (U)	465	1750	2033
Fresno	604	1069	1011
Los Angeles (U)	112	259	451
Los Angeles	133	292	697
Mt. Shasta (R)	854	2462	2326
Oakland	496	988	1238
Red Bluff	618	1180	942
Sacramento (U)	579	1045	980
Sacramento	602	1118	1072
Sandberg (R)	606	1687	1403
San Diego	117	251	496
San Francisco (U)	413	1116	1247
San Francisco	468	1038	1360
San Jose	440	809	861
Santa Maria	324	976	1113
COLORADO			
Alamosa	1393	3771	3621
Colorado Springs	839	2389	2391
Denver	782	2181	2364
Grand Junction	1032	2292	2293
Pueblo	798	2027	2279
CONNECTICUT			
Bridgeport	834	1781	2059
Hartford	911	2109	2280
New Haven	842	1867	2163
DELAWARE			
Wilmington	836	1804	1841
DIST. OF COLUMBIA			
Washington (U)	720	1530	1604
Washington	725	1515	1630
FLORIDA			
Apalachicola (U)	336	491	475
Daytona Beach	260	328	288
Fort Myers	149	166	126
Jacksonville	346	481	473
Key West (U)	30	30	18
Miami (U)	78	83	53
Miami	76	77	60
Miami Beach	41	41	37
Orlando	203	249	222
Pensacola (U)	351	595	529
Tallahassee	369	557	606
Tampa	193	239	223
West Palm Beach	89	92	69
GEORGIA			
Athens	599	1183	1109
Atlanta	560	1143	1125
Augusta	528	999	835
Columbus	504	913	951
Macon	460	857	824
Rome	660	1328	1256
Savannah	442	761	675
IDAHO			
Boise	942	2347	2340
Lewiston	782	2055	2247
Pocatello	1050	2799	2727
ILLINOIS			
Cairo (U)	628	1362	1465
Chicago	941	2163	2352
Chicago University	919	2134	
Moline	989	2394	2434
Peoria	949	2185	2323
Springfield	874	2059	2193
INDIANA			
Evansville	727	1701	1715
Ft. Wayne	942	2308	2382
Indianapolis	888	2116	2141
South Bend	977	2349	2442
IOWA			
Burlington	970	2257	2334
Des Moines	1018	2459	2472
Dubuque	1111	2731	2801
Sioux City	1003	2455	2733
KANSAS			
Concordia (U)	812	1975	2048
Dodge City	748	1896	1951
Goodland	904	2380	2461
Topeka (U)	786	1823	1891
Topeka	844	1956	2027
Wichita	757	1801	1763
KENTUCKY			
Lexington	774	1791	1884
Louisville	712	1627	1733
Pikeville (U)	653	1426	
LOUISIANA			
Baton Rouge	318	599	615
Lake Charles	262	521	593
New Orleans (U)	232	436	429
New Orleans	302	528	484
Shreveport	384	809	848
MAINE			
Caribou	1356	3420	3918
Greenville (U)	1267	3258	
Portland	986	2468	2847
MARYLAND			
Baltimore (U)	708	1393	1537
Baltimore	798	1743	1818
Frederick	885	1991	1841
MASSACHUSETTS			
Blue Hill Obs. (R)	899	2113	
Boston	766	1676	2015
Nantucket	748	1740	2078
Pittsfield	1010	2669	2933
MICHIGAN			
Alpena (U)	1120	2863	2962
Detroit	952	2234	2333
Detroit(Willow Run)	965	2284	2383
East Lansing (U)	1005	2400	
Escanaba (U)	1227	3080	3213
Grand Rapids	1039	2560	2640
Marquette (U)	1218	3077	3167
Muskegon	1031	2520	2593
S. Ste. Marie	1271	3287	3575
MINNESOTA			
Duluth (U)	1455	3683	3690
Duluth	1466	3723	3842
Internat. Falls	1611	4024	4223
Minneapolis	1226	2886	3015
Rochester	1237	2937	3144
St. Cloud	1332	3234	3483
MISSISSIPPI			
Jackson	449	915	882
Meridian	464	923	956
Vicksburg (U)	362	791	775
MISSOURI			
Columbia	797	1852	1973
Kansas City	783	1765	1875
St. Joseph	888	2057	2048
St. Louis (U)	702	1607	1703
St. Louis	745	1723	1805
Springfield	692	1685	1841
MONTANA			
Billings	851	2606	2767
Glasgow	1135	3060	3458
Great Falls	877	2794	2959
Havre (U)	960	2880	3298
Helena	998	3040	3349
Kalispell	1042	3240	3334
Miles City	976	2672	3068
Missoula	1017	2942	3270
NEBRASKA			
Grand Island	937	2323	2459
Lincoln (U)	863	2141	2250
Norfolk	1005	2482	2744
North Platte	968	2514	2581
Omaha	921	2244	2373
Scottsbluff	920	2517	2638
Valentine	993	2599	2730
NEVADA			
Elko	1101	3035	2905
Ely	1058	3088	2930
Las Vegas	556	1120	969
Reno	916	2479	2426
Tonopah	924	2355	2241
Winnemucca	983	2737	2612
NEW HAMPSHIRE			
Concord	990	2437	2907
Mt. Washington Obs.	1539	5789	
NEW JERSEY			
Atlantic City (U)	699	1425	1597
Newark	796	1634	1912
Trenton (U)	794	1658	1852
NEW MEXICO			
Albuquerque	817	1828	1757
Clayton	761	2061	1991
Roswell	655	1487	1415
NEW YORK			
Albany	981	2307	2583
Binghamton	1057	2655	2851
Buffalo	930	2282	2470
New York (U)	749	1528	1771
New York	734	1467	1732
Rochester	948	2370	2516
Schenectady	930	2156	
Syracuse	949	2268	2369
NORTH CAROLINA			
Asheville (U)	731	1698	1633
Cape Hatteras (R)	413	748	788
Charlotte	611	1238	1274
Greensboro	693	1518	1513
Raleigh	619	1352	1304
Wilmington	482	919	869
Winston-Salem	666	1439	1458
NORTH DAKOTA			
Bismarck	1257	3182	3524
Devils Lake (U)	1428	3628	3903
Fargo	1343	3294	3604
Grand Forks	1425	3548	
Pembina	1469	3509	
Williston (U)	1216	3192	3566
OHIO			
Akron	973	2350	2298
Cincinnati (U)	723	1587	1711
Cincinnati	809	1854	1999
Cleveland	891	2053	2181
Columbus	867	1993	2139
Dayton	882	2058	2128
Sandusky (U)	886	2071	2116
Toledo	944	2310	2376
Youngstown	961	2347	2274
OKLAHOMA			
Oklahoma City	633	1485	1417
Tulsa	582	1327	1382
OREGON			
Astoria	613	1959	1961
Burns (U)	1039	2748	2829
Eugene	682	1867	1939
Meacham	1025	3163	3105
Medford	823	2013	1849
Pendleton	729	1989	2095
Portland (U)	619	1498	1627
Portland	644	1743	1817
Roseburg	649	1772	
Salem	674	1821	1815
Sexton Summit (R)	811	2558	2373
PENNSYLVANIA			
Allentown	907	2044	2205
Harrisburg	855	1901	1971
Philadelphia (U)	733	1487	1624
Philadelphia	786	1695	1791
Pittsburgh (U)	808	1834	1890
Pittsburgh	912	2158	2268
Reading (U)	809	1745	1871
Scranton	966	2317	2272
Williamsport	917	2125	2250
RHODE ISLAND			
Block Island	714	1605	1963
Providence	817	1876	2221
SOUTH CAROLINA			
Charleston (U)	404	676	658
Charleston	453	812	778
Columbia	526	993	978
Florence	493	930	1015
Greenville	613	1258	1200
Spartanburg	623	1276	1211
SOUTH DAKOTA			
Huron	1118	2777	3029
Pierre	1066	2671	
Rapid City	924	2564	2858
Sioux Falls	1099	2753	3062
TENNESSEE			
Bristol	738	1630	1688
Chattanooga	657	1374	1380
Knoxville	648	1365	1454
Memphis	526	1130	1248
Nashville	619	1387	1372
TEXAS			
Abilene	466	1100	1048
Amarillo	683	1752	1730
Austin	275	671	646
Brownsville	94	214	218
Corpus Christi	157	349	365
Dallas	363	861	870
Del Rio (U)	585	302	644
El Paso	570	1177	1086
Ft. Worth	410	956	890
Galveston (U)	175	369	402
Galveston	189	393	418
Houston (U)	208	454	465
Houston	245	501	509
Laredo	163	385	306
Lubbock	640	1548	1444
Midland	504	1191	
TEXAS (Cont'd.)			
Port Arthur	269	533	587
San Angelo	424	1013	854
San Antonio	292	633	600
Victoria	224	486	408
Waco	327	780	754
Wichita Falls	539	1224	1181
UTAH			
Milford	993	2606	2551
Salt Lake City	971	2383	2279
VERMONT			
Burlington	1092	2625	2925
VIRGINIA			
Lynchburg	728	1642	1625
Norfolk	558	1110	1257
Richmond	674	1475	1532
Roanoke	735	1652	1632
WASHINGTON			
Olympia	696	2066	2254
Seattle (U)	581	1574	1776
Seattle-Tacoma	656	1992	2163
Spokane	922	2585	2750
Stampede Pass (R)	1084	3807	3831
Tatoosh Island (R)	588	2172	2480
Walla Walla (U)	696	1857	1966
Yakima	914	2433	2476
WEST VIRGINIA			
Charleston	756	1718	1720
Elkins	897	2295	2295
Huntington (U)	737	1641	1597
Parkersburg (U)	798	1812	1824
WISCONSIN			
Green Bay	1231	3056	3125
La Crosse	1189	2814	2931
Madison (U)	1152	2732	2747
Madison	1142	2775	2846
Milwaukee	1087	2647	2663
WYOMING			
Casper	1021	2940	3021
Cheyenne	923	2840	2912
Lander	1111	3182	3339
Sheridan	921	2798	3113
ALASKA			
Anchorage	1722	4342	4807
Annette	875	2735	3022
Barrow	2674	8759	8392
Barter Island	2733	8579	
Bethel	2130	5323	5559
Cold Bay	1158	3936	
Cordova	1316	3841	4190
Fairbanks	2499	6059	6374
Juneau	1097	3498	3966
King Salmon	1961	4583	
Kotzebue	2409	6466	6630
McGrath	2491	6064	6378
Nome	2129	6108	5967
St. Paul	1202	4461	4556
Yakutat	1139	3513	4071

Data from airport unless otherwise specified.
U indicates Urban, R indicates Rural, sites.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
NEW ENGLAND Northern and Central portions	1	A.m.			2	3	5	1	Wind, rain, and snow	Winds felled trees, limbs, and poles, snapping phone and powerwires in 4-state area. Most severe damage in central Massachusetts, where gusts reached 70 m.p.h. Many TV antennas and some chimneys, signs, and plate-glass windows smashed. Barn blew down at Sterling, Mass., $9,000 loss, including livestock. Sawmill at Zoar, Mass., collapsed. House roof section blown off at Clarksburg, Mass. Trees fell on barn at Yarmouth, Maine, and on several houses and 3 automobiles in Massachusetts. Falling limb injured man at Methuen, Mass. Cabin cruiser blown from moorings at Nahant, Mass., and wrecked on rocks at Graves Light. Rain in southern portion. Snow in north, up to 8 inches in northern Maine. Automobile accidents due to storm killed 1 person at Troy, Vt., and another injured. Another injured at Farmington, Maine. 1 dead from overexertion at Mapleton, Maine. Damage estimated at $60,000 in Massachusetts, $20,000 in Maine, and $3,000 each in New Hampshire and Vermont.
RHODE ISLAND Central and southern portions	1	A.m.					3	1	Wind	High winds with gusts measured at 55 m.p.h., at WBAS Providence caused widespread damage to powerlines, trees, and billboards in affected area. Two 50-foot boats driven ashore at Newport Naval Base; damage estimated at $2,000. Numerous smaller boats capsized or driven ashore in Narragansett Bay. Telephone failures to 1,500 users and several large billboards, store awnings, and trees blown down in greater Providence area.
CALIFORNIA Ontario, San Bernardino County	2						1	1	Wind	Santa Ana type winds, reported reaching speeds exceeding 45 m.p.h., caused little apparent damage. House trailers ordered to stay off highways in area.
VIRGINIA Northern and western mountain areas	3-4	Afternoon -night							Snow and freeze	Snowfall up to 14 inches in Loudoun County and generally 6 to 8 inches in mountains of west and north. Many schools closed in these areas because of slippery roads and highways.
CONNECTICUT and RHODE ISLAND Southern half of both States	3-4	Late p.m. 3d-late p.m. 4th				11			Snow and wind	Coastal storm yielded 10 inches of snow at Stamford, decreasing to 5 inches at New Haven and to 3 inches in southeast sections. Trace or less north of Hartford-Providence line. Traffic badly snarled on highways from New Haven to New York, with trips normally taking 1/2 to 2 hours increased to 4 to 6 hours. Numerous minor automobile accidents with injuries reported to 6 persons, while 4 persons hurt in falls on slippery walks. Winds blew in 2 large store windows in Bridgeport and forced overnight suspension of Narragansett Bay ferries. Deep snow in southwest forced abandonment of hundreds of cars and necessitated lodging of many persons not able to reach homes.
MARYLAND and DELAWARE	3-4				2			1	Snow	One of worst snowstorms in years paralyzed traffic and caused other troubles. Snow made driving hazardous and resulted in numerous traffic accidents. 2 persons died in traffic accidents. Thousands of motorists marooned for hours on blocked highways. Air traffic and shippingalso delayed. At Baltimore 8.4-inch snowfall on 3d-4th was second greatest so early in season and greatest since 9.9-inch fall on February 20, 1947. Greatest snowfall so early in season was 8.5 inches on November 25, 1938.
NEW JERSEY	3-4				2				Snow	Snowfall ranged from 1 or 2 inches along southeast coast to 13 inches in northern half of State. 1 death due to exertion, 1 to exposure.
IOWA Western portion	3-8					4	3	1	Snow	Snow-packed roads resulted in numerous automobile accidents.
NEW YORK New York City area, lower Hudson Valley, and coastal areas	4	Most of day			2	Many		1	Snow and wind	Snow of 4 to 12 inches fell from low pressure off Atlantic coast. Many traffic accidents and minor injuries from slippery traveling conditions. Some powerlines downed. Staten Island man died of heart attack after shoveling snow. North Lindenhurst resident died of heart attack after shoveling snow.
PENNSYLVANIA Entire State	4	Throughout day			12	7	4		Snow	Day-long storm ended with 3 to 11 inches of snow and drifts up to 6 feet deep with eastern sections hardest hit. All deaths result of heart attacks induced by overexertion in shoveling snow. Auto accidents resulted in several fatalities and injuries and accounted for all property damage. Storm moved eastward.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MASSACHUSETTS Nantucket and Cape Cod areas	4-5	Night					3	1	Wind and snow	Winds, reaching 80 m.p.h., in gusts at Nantucket, caused minor damage there and on Cape Cod. 3 small boats sank and 6 others slightly damaged, 3 plate-glass windows broken at Hyannis, and some phone and powerwires snapped in area. Snow on Cape caused automobile accident at Santuit.
CALIFORNIA Southern coastal area	4-5						3		Hail, electrical, rain, and wind	Hailstones size of peas fell in Downey-Southgate area. Small earthslide occurred at Pacific Palisades and slide blocked Brea Canyon Road east of Pomona. Trees toppled in Los Angeles, Pasadena, Arcadia, Sierra Madre, and Ventura. Wind blew in plate-glass window at Inglewood automobile agency, and display window at Ventura appliance store. Powerlines blown down in scattered areas, and lightning struck utility pole in Walnut area. Slippery streets contributed to many traffic accidents. Freak windstorm in Huntington Park damaged 3 homes in 1-block area, blew down billboard damaging automobile, and uprooted tree. In 1-block area of Westchester, freak, described as "big black spot" arrived with roaring sound, twisting off large trees, pushing in window, sweeping shingles from roofs, and tearing boards from fence.
SOUTH DAKOTA Statewide	4-8, 17, 26, 29					9	4		Ice and snow	Accidents resulted from icy or snow-packed highways on 4th through 8th, 17th, 26th, and 29th. Most injuries not serious.
	6									Minor storm reported at Ft. Lewis, Wash.
UTAH Northern portion	6-7				1	Several	3	1	Snow	Blizzard conditions in portions of Uinta Basin and in several canyons along Wasatch Range. Roads closed in some localities and up to 16 inches of snow fell in mountains. Several persons injured in traffic accidents on icy roads. 1 man lost his life in accident in Weber County.
SOUTH DAKOTA Rapid City Pennington County	7	8-11 a.m.					2		Wind	Gusts to 70 m.p.h., toppled previously fire-weakened wall, breaking communications and powerlines. Other minor damage.
COLORADO Eastern portion	7	Forenoon					4		Wind and snow	Cold front caused sudden drop in temperature, snow, and high wind. Gusts of wind up to 95 m.p.h., recorded at Rocky Flats Atomic Plant near Boulder. At Greeley, winds estimated up to 70 m.p.h., blew down wall and partition to 86x80-foot garage under construction, also damaged power- and telephone lines and TV aerials. 2 light planes torn loose from moorings and overturned at Stapleton Airport in Denver. Unloaded panel delivery truck overturned on highway between Canon City and Colorado Springs by gust of wind. Many trees uprooted, signs blown down, powerlines, buildings, etc., damaged throughout eastern Colorado by winds generally 50 to 60 m.p.h. Storm moved southeastward.
WYOMING All of State	7	All day					4	1	Wind	Cold front passing through State, with strong winds causing small amounts of damage at many places including 4 aircraft at Cody, 2 aircraft at Douglas, overturned haystacks, damaged fences, many television antennas downed, sand-blasted cars, etc. Storm moved southeastward.
	7									Minor storm also reported at Pawnee, Okla.
KANSAS Industry (near), Dickinson County	9								Wind and fire	Fire which got out of control as result of high wind burned large hay barn and contents of 1,500 bales of alfalfa hay.
NEW YORK Capital District and middle Hudson Valley	9-10							1	Freezing rain	2-day freezing rain and freezing drizzle left ground, communications lines, and shrubbery covered with layer of ice. Numerous lines and trees downed and many minor accidents due to icy roads. Damages all small, but total (if available) would amount to several thousand dollars.
SOUTH DAKOTA Statewide	10	1-10 a.m.					3		Wind	Wind speeds of 40 to 50 m.p.h., destroyed Christmas decorations and other fragile structures. In Minnehaha County, trailer overturned while in motion. Near Yankton, communications lines downed.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

DECEMBER 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
OKLAHOMA	10	Day				2		3	Wind and dust	Widespread minor damage resulted from strong northerly winds following cold front across State. Winds estimated at 60 m.p.h. Injuries resulted from wind blowing over concrete form, breaking man's leg, and blowing down an elderly woman. Blowing dust noted in open fields in west. Storm moved south-southeastward.
NEBRASKA Eastern third	10	All day					3	5	Wind and cold	Property damage widespread, but light; trees and TV antennas blown down and plate glass broken. 1 car smashed by falling tree. Much unharvested corn and milo blown down, some lost, and remainder harvested with great difficulty. Storm moved south-southeastward.
MISSOURI Lexington Lafayette County	10	1 p.m.							Wind	Large steel tower carrying 69,000 volt transmission line across Missouri River blown down.
KANSAS Central and eastern counties	10	Afternoon					4		Wind	High wind in advance of cold front reached speed of 60 m.p.h., or higher in gusts, at many places. Damage included Christmas decorations, TV antennas, trees, and electrical and communications services. Wall of new church in Hillsboro blown down, part of wall of old College Auditorium in McPherson toppled over and north wall of new garage in Eldorado flattened. Minor damages reported from other points. Storm moved east-southeastward.
MISSOURI Columbia, Boone County	10	7:30 p.m.							Wind	Fastest mile of wind, 56 m.p.h., from northwest at 7:30 p.m. This was 12 m.p.h. higher than previous record for December.
MAINE, MASSACHUSETTS, and NEW HAMPSHIRE	10				1	4	3	1	Wind, snow, and glaze	Northeast coastal storm caused minor wind damage in Maine and caused hazardous driving conditions in 3 states. 1 person killed and 2 injured at Chelmsford, Mass., and 2 injured in Maine, by automobile accidents attributed to storm.
	10									Minor storms also reported in western Iowa and at Burlington Junction, Mo.
PENNSYLVANIA Entire State	10-11	Throughout days			2	15	3		Snow	1 to 4 inches of snow piled up during 2-day period. Automobile accidents accounted for 2 deaths, numerous injuries and property damage. Storm moved eastward.
MICHIGAN Allegan, Cass, Berrien, and Van Buren Counties	10-11								Snow	Freak snowstorm, with snowfall ranging from 16 to 20 inches confined to small area in southwestern section of State.
NEW YORK State	10-12				4	Numerous		1	Snow	Snowfall of 3 to 9 inches in many places brought usual traffic accidents. Numerous injuries and 4 deaths resulted from accidents. 1 death near Silver Creek, another near Salamanca, and 2 at New Lebanon.
FLORIDA Limona, Hillsborough County	11	11 a.m.			0	0			Tornado	Small tornado unroofed several chicken houses and caused other minor damage.
VIRGINIA Central and northern mountain counties	11	Morning			13				Snow and cold	1 to 9 inches of snowfall, heaviest in Rockingham County. Storm more severe since it was accompanied by cold wave which broke low temperature records for date by morning of 12th in a few locations. Icy roads and cold weather blamed for 13 deaths, 10 in home fires, 2 in traffic crashes, and 1 from exposure.
FLORIDA Naples, Collier County	11	2:30 p.m.			0	0			Funnels aloft	Several funnel clouds sighted; 1 may have dipped near ground as 1 building unroofed.
FLORIDA West Palm Beach, Palm Beach County	11	3:55 p.m.			0	0			Funnels aloft	Several funnel clouds aloft sighted near Palm Beach International Airport.
FLORIDA Captiva, Lee County	11	Afternoon			0	0			Waterspout	
MISSOURI Louisiana, Pike County	11-12	11 a.m. 11th-1 a.m. 12th							Wind	Strong winds and high waves along water front sank small boats and damaged docks.
CONNECTICUT Western and central portions	11-12	Early p.m 11th - early a.m 12th			2	4			Snow	5 to 7 inches of snow to inland western and central counties and up to 3 inches in coastal areas resulted in usual skidding accidents, traffic tieups, and greatly delayed travel on

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

DECEMBER 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
CONNECTICUT (Cont'd.)										highways. Fatalities due to overexertion, shoveling snow, and injuries in skidding accidents on highways.
NEW JERSEY	11-12								Snow	Snowfall from 1 inch along coast to 8 or 9 inches in northwestern counties.
MICHIGAN Marcellus, Cass County	12	Early morning					5	1	Wind	Housetrailer factory collapsed when strong winds blew in 1 wall.
NORTH CAROLINA	12	Early morning			1		4		Cold	Man killed by exposure to cold and other contributing causes. Coldest weather in 10 years over much of State, causing widespread occurrence of minor damage due to water pipes bursting, radiators freezing, etc.
SOUTH CAROLINA	12-13								Cold wave	Severe cold wave caused some freezing to water pipes, perishables, and even some hardy shrubs. Small grains sustained some undetermined damage.
IOWA Waterloo, Black Hawk County	14	3:30 p.m.				1			Ice	Icy walks resulted in broken leg.
CALIFORNIA Entire State	15-16				7		3		Rain, snow, and wind	Heavy rains in north flooded many streets in Chico, and caused minor flooding in San Francisco Bay area. Private airplane with 7 persons aboard crashed in heavy snow storm in Yuba River Canyon while in flight from Reno to San Francisco. All aboard killed. In south, torrential rains flooded many areas of San Fernando Valley. Subdivision in Canoga Park inundated, damaging several homes. Home damaged by mud slide in Burbank. Some stores in Valley flooded, damaging merchandise. Lowland sections of Glendale, West Los Angeles, Culver City, Inglewood, and San Bernardino flooded. 3 automobiles caught by flood waters in dip near Saugus washed downstream. Section of roadway collapsed at Redondo Beach, causing parked car to plunge 20 feet down cliff. Rainfall totaled 10.22 inches for storm at Lake Arrowhead, and mud and rock slides closed many mountain roads. Locally strong winds blew down few trees and branches, with scattered power failures over area.
IDAHO Canyon and Ada Counties	16	Evening							Wind	Powerlines damaged in vicinity of Parma. At Star, trees uprooted, several roofs damaged, and large signs blown down. Power off 3-1/2 hours.
OREGON Northwestern portion	16-17	Late afternoon 16th - early morning 17th	125-150	*80			5	2	Wind	High winds reaching gusts of 60 m.p.h., at Corvallis, 58 m.p.h., at Salem, 55 m.p.h., at Eugene, and 52 m.p.h., at Portland caused widespread power and to lesser extent telephone service outages over northwest. Large number of trees felled, some across buildings, power- and telephone lines, highways, and, in a few cases, parked cars. Storm moved eastward.
WASHINGTON Entire State	16-17						4		Wind and rain	High wind and rain over entire State. Several residences damaged by falling trees. Power and communication outages occurred in various localities of State.
	17									Minor storm reported at Ozark, Mo.
CALIFORNIA Northern and central portions	17-18						3		Wind and rain	Unusually vigorous cold front moving across northern and central portions caused brief, but torrential rains, and violent gusts of wind in some areas. Minor damage from gusty winds reported in Sacramento Valley. At Vallejo, winds broke branches from trees, blew down or bent television antennas, and ripped shingles from roofs. Flash flood poured over lawns in 1 section of town and flooded some basements. At San Francisco Airport, 0.62 inch of rain in 1 hour. Overflowing storm drain flooded motel in Millbrae, and mud slides damaged homes and lawns in Belmont. At Seacliff, in Santa Cruz County, freak gust of wind tore roof from home, carrying it intact for approximately 400 feet, broke several windows, and knocked down trees and utility lines. In Watsonville, garage demolished by wind, and 2 trees blown down.
MISSOURI Hannibal, Marion County	18	12:20-1:40 p.m.							Wind, hail, and electrical	Wind at Hannibal estimated at 55 to 60 m.p.h. Much thunder, lightning, and hail. Telephone- and powerlines downed. Storm moved northeastward.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

DECEMBER 1957

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons: Killed	Number of persons: Injured	Estimated damage by categories †: Property (exclusive of crops)	Estimated damage by categories †: Crops	Character of storm	Remarks
MISSOURI Truxton, Lincoln County	18	12:30 p.m.	1/4	100	0	1	4		Tornado	Tornado moved northeastward.
MISSOURI Farmington Francois County	18	12:58-3:24p.m.		100	0	0			Funnel aloft and hail	Ground covered by hail 1/2 to 3/4" inch in diameter. Funnel seen by CAA observer 2 to 3 miles east of Farmington. Storm moved northeastward.
MISSOURI Sulphur Springs, Jefferson County	18	1:04 p.m.			0	0			Tornado (suspected) and hail	Funnel cloud reported. Hail 1 inch in diameter.
MISSOURI Fredericktown (15 miles north of), St. Francois County	18	2 p.m.			0	2	4		Tornado	Demolished buildings. Storm moved toward Libertyville. Possibly same storm that later hit McBride.
ILLINOIS Randolph and Perry Counties	18	2:30 p.m.	20		0		4		Tornado	Reported north of Chester at 2:30 p.m. Hit just north of Steeleville at 2:45 p.m., and moved east-northeastward to Jamestown and Conant. 10 or more homesteads damaged. May have been continuation of tornado which hit Farmington, Mo., at 1:50 p.m. This is first of 20 different tornado occurrences on this date in Illinois for worst late-season tornado situation ever recorded in State.
ILLINOIS Randolph and Perry Counties	18	3 p.m.	18		0	0	5		Tornado	Near Chester at 3 p.m. Continued east-northeastward to Denmark and may have been observed over Pinckneyville at 3:35 p.m. Brick school wrecked and 2 dozen or more homes demolished at Willisville.
MISSOURI Malden (35 miles northeast of) Mississippi County	18	3 p.m.			0	0			Funnel aloft	
ILLINOIS Wood River, Madison County	18	3:20 p.m.	1		0	1	4		Tornado	Continuation of tornado of Florrissant, Mo. 9 buildings damaged on south side of Wood River. Tornado moved east-northeastward.
MISSOURI McBride and Altenburg, Perry County	18	3-3:20 p.m.			0	0	5		Tornado	School lifted off foundation. No children injured. Apparently 2 funnel clouds involved. 15 to 20 buildings damaged.
ILLINOIS Mason City Mason County	18	3:35 p.m.	Short	Narrow	0	1	4		Tornado	Tornado moved northeastward. Damage to 3 or 4 buildings not heavy. Funnel cloud reported. May have been same formation that produced tornado at Truxton, Mo., 2-1/2 hours earlier. Truxton is about 110 miles away from Mason City.
ILLINOIS Perry County	18	3:35 p.m.	2-3		0	1	5		Tornado	Occurred at junction of Highways 150 and 154. 6 houses heavily damaged at Cutler "Y". Car driving on highway thrown off road and demolished. Same tornado may have been observed north of Pinckneyville about 3:55 p.m. Tornado moved east-northeastward.
ILLINOIS Boyd, Jefferson County	18	3:45 p.m.	5		0	2	4		Tornado	8 buildings heavily damaged at Boyd and near Kell. Tornado moved east-northeastward.
ILLINOIS Mt. Vernon area, Jefferson County	18	3:55-4:10 p.m.	18	100-250	1	45	6		Tornado	First observed about 10 miles west-southwest of Mt. Vernon. Patrol cars followed movement and reports broadcast on local radio station. Destruction complete among prefabricated ranch homes on far southwest side. Path continued across near north side of town, with less severe damage to older residences in wooded and rolling land. Path continued intermittently some 8 miles to east-northeast of town.
ILLINOIS Vandalia (southwest and south of), Fayette County	18	4 p.m.			0	0	1	1	Funnels aloft	1 or more funnels aloft reported by aircraft.
ILLINOIS Ava, Jackson County	18	4 p.m.	5		0	0	4		Tornado	Damage to 3 or 4 homesteads. May have been same formation reported at McBride, Mo., about 3:20 p.m. Tornado moved east-northeastward.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
ILLINOIS Rockwood (near), Randolph County	18	4:15 p.m.			0	0	4		Tornado	Freight cars overturned and damage to buildings.
ILLINOIS Mt. Vernon, Jefferson County	18	4:30 p.m.	12	200	0	0	4		Tornado	Hit far north side of Mt. Vernon at 4:45 p.m., with light damage to residences. Path began 10 miles to west-southwest. 6 farmsteads damaged. Tornado moved east-northeastward.
ILLINOIS Gorham-Murphysboro, Jackson and Williamson Counties	18	4:35 p.m.	30	200-300	11	200	6		Tornado	About 40 houses destroyed in Gorham and 40 in Murphysboro. Man killed at Sand Ridge and 10 killed at Murphysboro. Funnel followed river bottom on southeast side, destroying older buildings. Gas, electric, and water utilities knocked out. Lack of water hampered fire fighting. City without electric power for 60 hours. Intermittent path continued east-northeastward, with damage near DeSoto, Hurst, Bush, and at Plumfield. Tornado reported at Plumfield about 5:05 p.m. This tornado may have traveled at 60 m.p.h., but there is some doubt as to accuracy of time fixes.
ILLINOIS Perry County	18	4:35 p.m.	5	200	1	0	5		Tornado	Occurred at junction of highways 51 and 154. Small crossroads settlement at Sunfield "Y" wiped out. Very heavy destruction in small area. Several survivors took cover in buildings. Man remaining in open killed. Tornado moved east-northeastward.
MISSOURI Cape Girardeau County	18	4:45-4:55 p.m.	15	750	0	0	5		Tornado	Moved northeastward from Millersville to Oak Ridge to Highway 61.
ILLINOIS Orchardville-Clay City, Wayne and Clay Counties	18	5 p.m.	20	100-200	0	1	5		Tornado	Along 20-mile path from near Orchardville to south of Clay City some 20 farmsteads damaged or wrecked. Path may have curved from east-northeast toward northeast during movement. Damage heaviest near start of path, with path more intermittent later. Separate tornado may have occurred in same area 1/2-hour earlier.
ILLINOIS Carbondale, Jackson County	18	5:25 p.m.	1-2		0	5	4		Tornado	Tornado struck trailer camp 1 or 2 miles south of Carbondale, destroying 15 trailer homes and damaging 3 houses.
ILLINOIS Boos-Ste. Marie, Jasper County	18	5:25 p.m.	6		0		4		Tornado	Damage to 3 or 4 farmsteads in small area between Boos and Ste. Marie. Tornado moved northeastward.
ILLINOIS Dahlgren, Hamilton County	18	5:35 p.m.	2-3	150	0	3	5		Tornado	Heavy damage to several buildings on southeast side of village. May have been same tornado formation that struck Sunfield "Y" 1 hour earlier (32 miles to west-southwest). Tornado moved east-northeastward.
MISSOURI Chaffee, Scott County	18	5:35 p.m.			3	1	6		Tornado	Storm hit in downtown Chaffee, damaging many business houses and shoe factory.
INDIANA Rockville (20 miles east of), Parke County	18	5:45 p.m.			0	0	1	1	Funnel aloft	Air Force Radar Station near Rockville observed on radar what appeared to be funnel cloud. No damage or other visual contact reported. Funnel moved northeastward.
ILLINOIS White and Edwards Counties	18	6 p.m.	20		0		5		Tornado	Fairly heavy damage from southwest of Springerton to northwest of Grayville with some 20 farmsteads affected. Tornado moved east-northeastward.
ILLINOIS Forman, Johnson County	18	6 p.m.	Short		0		4		Tornado	Church destroyed and damage to school and 2 farms. Unconfirmed report of 2 successive tornadoes in small area. May have been same formation which struck Chaffee, Mo., at 5:15 p.m.; Chaffee is 40 miles to west-southwest.
ILLINOIS Sidell, Vermilion County	18	6:40 p.m.	4	60	0	0	4		Tornado	Tornado moved northeastward just to northwest of village. Not a strong tornado but there were reports of "roaring" sound.
KENTUCKY Owensboro (8 miles west of), Daviess County	18	8:05 p.m.			0	0			Funnel aloft	Pilot reported funnel cloud 1,000 feet above surface, moving south-southeastward.
WASHINGTON Eastern portion and lower Yakima Valley	18						4		Wind and rain	Wind speeds ranging from to 50 to 70 m.p.h., reported in Kennewick and Pasco areas. A few residences damaged by falling trees. Numerous power outages occurred. Christmas decorations damaged.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
	18									Minor storms also reported at Belleville, Ill.; at Clinton and Keokuk, Iowa; at Columbia and Florissant and near Advance, Mo.; and in northern Utah.
OREGON Western portion	18-22		400	*125			4	2	Rain	Heavy rains on 18th to 21st, preceded by several days of intermittent rain earlier in December, resulted in flooding of lowlands along some western tributary streams; local flooding in poorly drained sections in some towns where heavy rainfall exceeded capacity of sewer systems and a number of slides closed roads mostly in coastal range. Damage mostly consisted of erosion to flooded farmland, washing out of a few private bridges and sections of dykes, and highway damage from slides. Timely Bureau warning permitted all necessary evacuation of livestock, persons, and movable property. Storm moved eastward.
TENNESSEE Dotsonville Community, Montgomery County	19	10:30 a.m.				1		1	Electrical	Lightning tore light meter from house, knocked kitchen cabinet several feet, smashed outside telephone box, ripped down gutters, ruined refrigerator, and damaged roof. Woman received slight shock.
ARKANSAS Waldo to Stephens, Columbia and Ouachita Counties	19	12:44 p.m.	15		2	9	4	1	Tornado	Principal damage in Cotton Belt community, between Waldo and McNeil, Columbia County. 5 homes destroyed and 5 damaged. 3 other buildings destroyed, 2 persons killed and 9 injured. Tornado moved northeastward.
TEXAS Dallas, Tarrant County	19	Afternoon					4	1	Wind and dust	Strong, gusty winds (fastest mile 47 with gusts to 50 m.p.h.) blew down marquee roof onto 3 cars. Accompanying dust cut visibility at Dallas to 1/2-mile between 2:40 and 4:45 p.m. Storm moved eastward.
ARKANSAS Sherrill and Tucker Prison Farm, Jefferson County	19	3:40 p.m.	5	100	0	0	4	1	Tornado	Damage to 2 farms near Sherrill and on Tucker State Prison Farm. Tornado moved northeastward.
MISSOURI Golden City area, Dade County	19	4:10-4:15 p.m.	15	100	0	0	4		Tornado	Funnel first touched ground 2-1/2 miles south and 1 mile east of Golden City, damaging several farm buildings. Tornado then moved northeastward, lifting and dipping back to ground several times. Buildings on 5 farms damaged. Witnesses report seeing several funnels.
ILLINOIS Waltonville Jefferson County	19	5:50 p.m.	1	65	0	0	4		Tornado	Storm moved northeastward through southwest side of village. Heavy damage to 1 farmstead. Other buildings had lighter damage. Wind damage at Elkville and Royalton at about the same time may have been associated with tornadoes.
ILLINOIS Pankeyville Saline County	19	9 p.m.	1/2	100	0	0	4		Tornado	Storm moved northeastward, causing damage to barn and other buildings.
TENNESSEE Humboldt, Gibson County	19	9:15 p.m.			0	0		1	Tornado (suspected)	Warehouse demolished, most of roof from hotel and part of City Hall roof blown off. Cotton gin severely damaged, building moved and twisted, several houses and business establishments damaged by flying debris, and many powerlines, tree limbs, and TV antennas blown down. Many residents reported noise similar to that of fast train. $15,000 damage done to hotel alone.
TENNESSEE Milan, Gibson County	19	9:20 p.m.			0	2	4	1	Tornado (suspected)	Concrete-block garage destroyed, roof of which severely damaged nearby brick house; several other houses suffered roof, window, or antenna damage. 2 persons received minor injuries from flying debris. (Possibly continuation of Humboldt storm).
ALABAMA Littleville, Colbert County	19	11:15 p.m.	Short	Narrow	0	7	4	1	Tornado	
TENNESSEE Sitka Community, Gibson County	19	P.m.			0	0		1	Tornado (suspected)	4 tenant farmhouses wrecked. (Possibly continuation of Humboldt-Milan storm).
TENNESSEE Chester County	19	P.m.						1	Wind	Many roofs ripped off, trees blown down, powerlines torn down, and several outbuildings damaged.
TENNESSEE Henderson County	19	P.m.						1	Wind and electrical	Roof blown from Post Office at Darden. Elsewhere power transmission pole snapped and transformers damaged by lightning.

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STORM DATA AND UNUSUAL WEATHER PHENOMENA

DECEMBER 1957

Place	Date	Time	Length of path miles	Width of path yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
TENNESSEE Jackson (near), Madison County	19	P.m.						1	Wind	2 farm buildings destroyed; considerable damage to 2 houses and a barn.
ALABAMA Winfield (4 miles south of), Fayette County	19	Late evening	Short	Narrow	0	0	3	1	Tornado	1 home and outbuildings destroyed.
	19									Minor storms also reported at Batesville, Ark., near Brookhaven, Miss.; at Aurora, Knobnoster, and Sweet Springs, Mo.; at Altus and Gage and near Erick, Okla.; and at Somerville, Tenn.
IOWA Entire State	19-31				1	12	4	1	Snow and ice	Numerous automobile accidents; pedestrians slipped and fell; 1 farmer killed when shotgun discharged as he slipped and fell on ice.
ALABAMA Clanton, Chilton County	20	2:30 a.m.	Short	Narrow	0	0	5	1	Tornado	Cotton mill and 35 homes heavily damaged. Tornado moved northeastward.
ALABAMA Castleberry (8 miles east of), Conecuh County	20	3 a.m.	3/4	35	0	0	3	1	Tornado	Hit twice with blows about 1/2 mile apart. 2 houses and barn destroyed. Tornado moved northeastward.
PENNSYLVANIA Eastern portion	20	Day - night				3	5		Rain	Hardest hit was Pocono Mountain area where 4 to 5 inches of rain fell in 15 hours. Most damage caused by flooding. Sections of roads washed away as well as temporary bridge and dam under construction. 3 persons injured in automobile accident on rain-swept highway. Storm moved northeastward.
NEW YORK Penfield, Monroe County	20	8-9 p.m.					4	1	Wind	Wind associated with squall line tore roof off henhouse and blew parts of it into house. Damage to henhouse estimated at $20,000 and $3 to 4 thousand to home.
NEW JERSEY Central and northern portions	20						4		Wind	Damage to roofs, trees, and utility lines in several non-adjacent communities.
NORTH CAROLINA East of mountains	20						4		Wind	Strong winds in connection with squall line and cold front caused widespread minor damage. 1 aircraft turned over, tree blown down on automobile, numerous signs blown down, and minor structural damage.
	20									Minor storm also reported in Decatur area, Ala.
CONNECTICUT Entire State	20-21	Late p.m. 20th-early a.m. 21st			4	2			Rain	Restricted visibility and slippery highways caused by heavy downpours blamed for 4 highway deaths in Bridgeport and New London areas. Precipitation of 1.50 to 2.50 inches and heaviest early on 21st was accompanied by record warm temperatures.
NEW YORK Lake of the Isles (In St. Lawrence river just east of Alexandria Bay)	20 evening - 21 a.m.				0	0		1	Wind or tornado (suspected)	Strong windstorm threw boats and trees around. Area isolated and no one present at time. Later in weekend damage discovered by a person going in to check on some boats. Residents reported "roaring wind" Friday evening, but no damage in other neighboring sections. Due to lateness of report, lack of qualified meteorologists in area, and isolated character of area, no checking done, but there is evidence of tornadic activity.
MAINE, MASSACHUSETTS, NEW HAMPSHIRE, and VERMONT	20-21	Night					4	1	Rain and wind	Rain caused road washouts and water damage to property, especially in Springfield-Holyoke-Chicopee, Mass., where phone service cut off also by flooded cables. Minor tree and limb damage by wind through entire section with some power outages resulting. High voltage line at St. Johnsbury, Vt., became crossed with home circuits with $5,000 loss to appliances.
NEW JERSEY Central and northern portions	20-21						5		Rain	Damage from flooding.
NEW YORK Long Beach Nassau County	21	12:01 a.m.					5	1	Wind	Wind ripped off roof section of 3-family apartment house and threw it into unoccupied bungalow
WASHINGTON Northwestern portion	22						4		Wind and rain	Numerous power and communication outages occurred in northern Puget Sound area. 1 pleasure boat sank near Anacortes. Several other small

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
WASHINGTON (Cont'd.)										boats damaged after breaking loose from their mooring and were pounded on rocks by high wind and waves.
FLORIDA Broward, Palm Beach, Hendry, and Glades Counties	23-24								Rains	2-day rainfall totals in 4-county area ranged from 3 to 8 inches generally with scattered amounts as high as 11 inches caused considerable local flooding and crop damage in truck crop-producing areas. Flooding rains, coming about 2 weeks after disasterous freeze of December 12-13, were especially disheartening to agriculture as they severely damaged portion of crops that survived freeze as well as many fields that had been planted after freeze. Total damages not estimated, but thought to have been considerable.
FLORIDA Tarpon Springs, Pinellas County	25	8 a.m.				1			Wind or tornado (suspected)	Several house trailers overturned in trailer park, but overall damages minor. Storm moved northeastward.
OREGON Western and northern portions	25	Late afternoon-evening					5	2	Wind	High winds, which reached 69 m.p.h., in gusts at Pendleton experienced along full length of western Oregon and along northern border inland to Blue Mountains, blew down or broke large branches off a great number of trees which caused widespread service interruptions and considerable damage to power installations and to lesser extent to telephone lines. Thousands of power service customers without service for periods ranging from a few minutes to several hours. Severe damage to roofs of homes and other buildings, and breaking of plate-glass store windows reported from several widely scattered areas. Total of 31 ewes killed when sheds in which they were sheltered collapsed under force of wind. Farm machinery and other property also damaged as several outbuildings in storm areas gave way. Storm moved eastward.
WASHINGTON Entire State	25						5		Wind and rain	Wind speeds ranging from 50 to 70 m.p.h., caused large number of power and communication outages. Windows broken in few localities and automobiles and residences damaged by falling trees. Heavy rainfall in some localities of western Washington. Highway traffic slowed or delayed. Rail traffic delayed near Tacoma by mudslide. Television service interrupted in southeastern Washington when micro-wave tower damaged by high wind.
CONNECTICUT and RHODE ISLAND	26	A.m. - late p.m.			1	6	4	1	Rain and wind	Intense storm with winds to 60 m.p.h., and precipitation of 1 to 2 inches caused moderate but widespread and varied damage throughout both States. Extensive power and telephone disruption as numerous trees blown on wires and, in one instance, blown onto automobile, injuring 2 persons. Over a dozen large store windows smashed in several cities, with damage in one instance set at $2,000. Small aircraft blown over at Hartford, church roof damaged at Meriden, and Christmas decorations downed by wind in many communities. Tides 2 to 3 feet above normal at storm height, with flooding of shoreline roads. Large rivers inland near bankfull and minor flooding occurred on small streams. Storm had beneficial aspect in that precipitation greatly replenished long deficient water supplies in reservoirs of both States.
MAINE, MASSACHUSETTS, NEW HAMPSHIRE, and VERMONT	26	Evening			2	3	5	1	Wind and rain	Winds damaged outdoor Christmas decorations, felled trees, limbs, and wires, broke plate-glass windows, toppled a few chimneys and destroyed some buildings. Greatest loss $40,000 at Belgrade, Maine when powerwires blew onto farmstead, destroying it by fire. Home at Lewiston, Maine, damaged by fallen tree. 20x175 foot wall toppled at Everett, Mass. Barn blown apart at Bellingham, and large shed at Adams, Mass. Man electrocuted at West Newbury, Mass., by fallen wire. 3 construction workers injured at South Braintree by girder blown down. Heavy rains caused some washouts in central Massachusetts and flooded cellars and buildings in low areas of several Massachusetts communities. Man struck and killed by automobile in Portland, Maine, during blinding rain. Loss estimates include $60,000 for Maine, $50,000 for Massachusetts, $3,000 for New Hampshire, and $1,000 for Vermont.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
	26									Minor storms also reported in northern Utah and Wyoming.
NEW JERSEY Central and northern portions	26-27						4		Rain	Damage from flooding.
	27									Minor storm reported at Pauls Valley, Okla.
DELAYED REPORT										
November 1957										
KANSAS Lyon County	17	8 p.m.							Wind	Gusts of wind up to 54 m.p.h., recorded at Emporia CAA office. Streets littered with fallen trees and branches. Numerous interruptions of electrical and communication lines resulted. Storm moved southeastward.

* Miles instead of yards.

° Includes crop damage.

C Crop damage.

† Storm damages are placed in categories varying from 1 to 9 as follows:

1	Less than $50
2	$50 to $500
3	$500 to $5,000
4	$5,000 to $50,000
5	$50,000 to $500,000
6	$500,000 to $5,000,000
7	$5,000,000 to $50,000,000
8	$50,000,000 to $500,000,000
9	$500,000,000 to $5,000,000,000.

GENERAL SUMMARY OF RIVER AND FLOOD CONDITIONS

DECEMBER 1957

The most significant flooding during the month occurred in the Wabash and White River Basins in Indiana. Streams in this area rose to their highest levels in 6 or 7 years. Actual damage was small considering the magnitude of the flood, as most crops are normally gathered by December. Flooding elsewhere was mostly light.

ST. LAWRENCE DRAINAGE

There were two periods of flooding in the Lake Erie Drainage during December. The first rise was due to 1.5 inches of rainfall on the 6th and 7th and the second to 2 inches of rain during the latter part of the second decade of the month. During the first rise, the only flooding reported was on the St. Marys River at Decatur, Ind. The second rise was the more significant with flooding on the St. Marys, St. Joseph, and Maumee Rivers between the 17th and 28th.

ATLANTIC SLOPE DRAINAGE

Moderate to heavy rain (1/2 to 1-1/2-inches) on the 20th and 21st over the State of Maine caused a general rise in all streams. Abnormally high temperatures which accompanied and followed these rains added considerable water from the snowmelt. There was some flooding of the flood plains, but there was very little damage. On the Androscoggin River the peak flow was about 40,000 c.f.s. on the 22d. There was considerable ice jamming in the vicinity of Rumford, Maine, which caused considerable anxiety as water backed over low points. Little, if any, losses resulted other than inconvenience due to inaccessible roads. The Saco River peaked at about 12,000 c.f.s. at Buxton and the Penobscot at about 41,000 c.f.s. at Skowhegan. There were no reports of damage along these streams. On the Kennebec River near Waterville, a paper mill was closed down temporarily. The most severe ice jams occurred on the St. John River, which were dynamited after causing some flooded cellars in the vicinity of Fort Kent. The greatest damage due to ice and high water was confined to the Canadian side along the Madawaska River (St. John tributary).

The flooding on streams in New Hampshire was due to rainfall on the 20th and 21st, which ranged from 3 inches in the headwaters of the Pemigewasset and Baker Rivers to 1 inch in the lower Merrimack. There was considerable runoff from snowmelt, which together with the rain combined to make the peak stages of the Pemigewasset the highest since March 1953 and the second highest since the major flood of September 1938. Flooding was confined to the Pemigewasset area, and the principal damage was reported to highways and railroad bed. Practically all the snow in the mountains disappeared as temperatures rose to the middle and upper fifties. There was no flooding in the Merrimack Basin below Plymouth, N. H., as rainfall and snow cover was light. Also, Franklin Falls Reservoir went into regulation to hold flows below the overflow level of the main stem from Franklin, N. H., to Haverhill, Mass. Runoff from the lower tributaries was not excessive.

There were two rises on streams in New Jersey, with flooding reported on the Raritan, Millstone, and Ramapo Rivers. The first rise was due to heavy rainfall on the 20th-21st which ranged from 4 to over 5 inches over the Ramapo Valley and 2 to 3 inches over the Raritan Basin. The second rise was due to general rains on the 26th and 27th which averaged from 1.5 inches in central New Jersey to a little over 2 inches in the north. Underpasses and roads were flooded in the Blackwells Mills-Manville-Bound Brook area, and some evacuation in the upper reaches of the Raritan was necessary. About 40 families were evacuated in the vicinity of Oakland, N. J. No heavy damage was reported.

Heavy rain over 48 hours produced minor flooding of small streams in eastern New York on the 20th and 21st. Storm totals ranged from 0.31 inch at Utica, N. Y., to 5.82 inches at Tannersville, N. Y. Runoff was low as the weather previous to this storm had been very dry. Rondout Creek at Rosendale, N. Y., was out of its banks for about 6 hours and crested 2.2 feet above flood stage on the 21st.

Heavy rains totaling 2 to 4 inches fell in the Delaware River Basin during the day and early evening of the 20th. The Lackawaxen River at Hawley, Pa., exceeded bankfull stage on the 21st and crested about 1.5 feet above flood stage.

There was general flooding along the Lehigh River from Lehighton to Bethlehem, Pa. The rainfall averaged about 4 inches over the Basin. Very little damage was reported. Minor flooding occurred on Perkiomen Creek, Neshaminy Creek, and smaller tributaries of the upper Delaware above Port Jervis, N. Y. Several roads were inundated in the Neshaminy Creek area for a short period on the night of the 20th to 21st. Except for some overflow in the upper Delaware River branches above Port Jervis, N. Y., there was no flooding along the Delaware and no damage resulted except for minor inconveniences.

There were two periods of minor flooding in the Monocacy Basin in Maryland during December. The first was due to heavy rain (up to 2 inches) on the 20th and 21st and the second to rain averaging 1.5 inches on the 25th and 26th. No damage was reported.

A series of moderate general rains during December caused flooding along the Tar, Cape Fear, and Neuse Rivers in North Carolina. Stages on the Roanoke River below John H. Kerr Dam were controlled by the dam and were maintained at rather high levels due to the moderately rainy December weather. Stages at Scotland Neck and Weldon, N. C., were maintained at slightly below flood stage except for occasional very brief rises to less than a foot above flood. Downstream at Williamston, N. C., the river remained from 0.2 to 1.2 feet above flood stage throughout December. These stages are not destructive, but they do stop logging operations near and below Williamston. Some pastures and hunting preserves in the Weldon-Scotland Neck areas were flooded.

The Pee Dee River crested at Peedee, S. C., at a stage of 24.6 feet on the 1st and 2d, 5.6 feet above flood stage. This flood was prolonged by moderate rains on the 8th and 9th, which kept the river out of its banks until the 15th. This was the highest crest at this point since January 1954. The Lumber River which was out of its banks at Lumberton, N. C., in the beginning of the month was back within its banks on the 7th. No damage was reported from the flooding along the Pee Dee River. Damage along the Lumber River was minor.

Streams and reservoirs in the Santee River Basin in South Carolina were at relatively high levels at the beginning of the month due to flood conditions experienced during November. One to 2 inches of rain on the 20th and 21st caused slight rises on the Broad and Saluda with Bankfull stage reached at Pelzer, S. C., on the 25th. No damage was reported from the flooding.

The Savannah, Ogeechee, and Ocmulgee Rivers in Georgia were above flood stage and rising in the beginning of the month from the frequent heavy rains during November. The moderate to heavy rain on several occasions during December kept the Savannah River near the extreme lower portion in flood most of December. No damages were reported.

EAST GULF OF MEXICO DRAINAGE

The Apalachicola River at Blountstown, Fla., was in flood from November 22 to December 4 and was due to heavy rain during the latter part of November. No damages were reported.

The lower Tombigbee River was above flood stage at the beginning of the month due to heavy rains in late November. Flooding continued in this reach up to the 14th at Whitfield, Ala. Heavy rains (1.5 inches) on the 20th caused sharp rises. with some flooding in the headwaters. Near bankfull stage occurred at most stations on the lower Tombigbee, with a slight overflow at Whitfield, Ala. No damage was reported.

The flooding on the Pearl River, which began around the middle of November, continued until the middle of December. A resume of the flooding is given in the November report.

MISSISSIPPI SYSTEM

Upper Mississippi Basin.--Floods developed in the Meramec River in Missouri between the 18th and 20th and in portions of the Kaskaskia and Sangamon Rivers in Illinois from the 22d to the 27th. These floods were due to heavy rains during the period from the 16th to the 21st. The greatest amounts were reported over the south-central and southeastern portions of Missouri where several stations reported 3 to 5 inches of precipitation during the 24 hours ending at 7 a.m. on the 17th. Flooding was generally limited to lowlands not in use. Flood damage was minor.

The monthly mean stage of the Mississippi River at St. Paul, Minn., for December was 3.0 feet, 0.1 foot above normal. At LaCrosse, Wis., the monthly mean stage was 5.2 feet, 0.7 foot above normal.

A comparison of snow depths on December 31 with that of other years is given in the following table:

Comparative Snow Depths (Inches)

Station	1957	1956	1955	1954
(Minnesota)				
Bimidji	T	6	17	1
International Falls	2	6	14	4
Duluth	6	11	26	4
Fargo, N. Dak.	1	T	T	1
Alexandria	2	2	10	1
New Ulm	T	T	5	1
Minneapolis	T	0	11	2
Rochester	1	T	7	1
Park Falls, Wisc.	7	11	23	11

Missouri Basin.--Streams in the Missouri Basin remained within banks throughout the month, except for minor flooding on Gasconade River in Missouri. Ice formed on the smaller tributaries and by the end of the month the ice on the James in South Dakota and the Big Sioux River in Iowa was 3 to 4 inches thick. There was considerable floating ice and shore ice in the Missouri in the reach above Sioux City, Iowa.

Ohio Basin.--Heavy precipitation over the Scioto Drainage in Ohio from the 6th to the 8th, the 17th to the 20th, and from the 25th to the 26th caused minor flooding along the Scioto and Paint Creek on three different occasions. Residential and industrial property was not affected.

The minor flooding on the Rough and the middle and lower reaches of the Green River in Kentucky between the 8th and 14th was due to rains averaging 1.5 inches on the 6th and 7th. Additional heavy rains (2.5 to 3 inches) from the 17th to the 20th caused another rise with minor flooding on the Green. There was no additional damage reported along the Green from that of the last month.

December was one of the wettest, if not the wettest of record for much of the Wabash and White River Basins in Indiana. At Indianapolis, near the center of these basins, the precipitation for the month was the greatest for any December since records began in 1871. As a result of these rains the streams rose to the highest stages in 6 or 7 years at several points. At Covington and Vincennes, the Wabash crests were the highest since 1951; at Petersburg and Hazleton on the White, the crests were the highest since the great flood of 1950. Large areas of bottom land were inundated and many state and secondary roads were closed. One or two railroads were threatened with stoppages and were possibly forced to reroute trains around critical areas. Actual damage was small, considering the magnitude of the flood, as most crops are normally gathered by December. However, considerable corn remained to be picked in some areas due to the inclement weather in October and November.

Moderate to locally heavy rain during the 24 hours ending on the morning of the 20th over the Tennessee River Basin, combined with the annual drawdown of the tributary reservoirs, resulted in minor flooding below the dams at Gilbertsville, Ky., and Whitesburg, Ala. This storm also caused slight flooding on South Chickamauga Creek near Chattanooga, Tenn. No damages were reported.

Minor flooding occurred along the main stem of the Ohio River from Mt. Vernon, Ind., to Mound City, Ill., beginning at Fords Ferry, Ky., on the 23d.

White Basin.--Flooding in the White Basin during the month was confined to the Black River at Black Rock, Ark., and the lower White at Clarendon, Ark., and below. The Black River was in flood from November 14 to December 1 and again from the 22d to the 24th. The lower White River continued above flood stage from November 17 to December 18. Damage from this flooding was negligible.

Red Basin.--The flooding on the Sulphur River at Hagansport, Tex., on the 26th was due to moderately heavy rain on the 24th and 25th. Rainfall ranged from 0.3 inch to 1.26 inches at Honey Grove, Tex. Flood damage was insignificant.

Lower Mississippi Basin.--The St. Francis River was above flood at St. Francis and Parkin, Ark., as the month began, but receded within its banks shortly afterward. Moderate to heavy rain between the 17th and 20th caused the St. Francis to overflow again at the same points and also at Fisk, Mo. Damage from the overflows in December was negligible.

WEST GULF OF MEXICO DRAINAGE

The Sabine River was above flood stage at Bon Weir, Tex., from November 22 to December 10 and at Deweyville, Tex., from November 11 to December 17. No damage was reported.

Releases from Lavon Reservoir caused a high flow in the East Fork of the Trinity River most of the month with slight overflow at Rockwall, Tex., on the 18th and 19th. There was some flooding of lowlands near the channel, but no appreciable damage was reported. The main stem of the Trinity continued above flood stage at Liberty, Tex., until the 4th. Heavy rain in the lower Trinity on the 26th and 27th caused a sharp rise at Riverside and Liberty, Tex. At Liberty, Tex., the river rose from 11 feet on the 27th to 23.6 feet (0.4 foot below flood stage) on the 30th. No damage was reported.

PACIFIC SLOPE DRAINAGE

Several minor rises occurred on the Sacramento River and its tributaries during the last 2 weeks of December. Three of these rises caused overflow over Tisdale Weir, Calif., into Suter Bypass. The overflow depth did not much exceed 1 foot over the weir sill on any of the rises.

Heavy rainfall (8 to 9 inches) during the period from the 15th to the 21st caused some flooding along the Umpqua and Coquille Rivers in Oregon on the 21st and 22d. In the Coquille Basin, the south and middle forks were overflowing their banks during the evening of the 20th, below their confluence near Myrtle Point, Oreg., where low pastureland is flooded most of the winter. Considerable lowland inundation occurred but no damage resulted.

Columbia Basin.--There was some flooding on the Santiam River at Jefferson, Oreg., on the 7th due to heavy precipitation. Additional heavy rain from the 18th to the 22d and on the 26th and 27th caused more general flooding in the Willamette Basin. The average December precipitation over the Willamette Basin was near 9.5 inches. Rainfall on the east slope of the Coast Range and west slope of the Cascades averaged much heavier. Snow melt was a contributing factor to the floods of the 21st to the 23d. Temperatures were comparatively high during the month. Monthly mean temperatures ranged from 20° to 60° above normal. Flooding was minor except in the lower reaches of the Santiam and Yamhill Rivers. There was very little damage.

FLOOD STAGE DATA

(All dates in December unless otherwise specified)

River and station	Flood stage	Above flood stages -dates		Crest*	
		From–	To–	Stage	Date
	Ft.			Ft.	
ST. LAWRENCE DRAINAGE Lake Erie					
St. Marys: Decatur, Ind.	13	7 19	10 24	15.7 16.2	8 21
St. Joseph: Montpelier, Ohio	10	20 27	24 28	12.1 10.05	22 27
Maumee: Ft. Wayne, Ind.	15	19	22	16.6	21
ATLANTIC SLOPE DRAINAGE					
Bakers: West Rumney, N. H.	7	21	21	9.8	21
Pemigewasset: Woodstock, N. H.	9	21	21	12.5	21
Plymouth, N. H.	11	21	22	17.0	21
Raritan: Bound Brook, N. J.	8	21 27	21 27	9.4 8.1	21 27
Millstone: Blackwells Mills, N.J.	7	21 26	21 26	8.0 7.1	21 26
Ramapo: Mahwah, N. J.	8	21 27	22 27	9.5 7.9	21 27
Pompton Lakes, N. J.	2	21	22	2.5	21
Rondout: Rosendale, N. Y.	12	21	21	14.2	21
Lackawaxen: Hawley, Pa.	9	21	21	E10.5	21
Lehigh: Lehighton, Pa.	9	20	21	12.5	21
Allentown, Pa.	14	21	21	16.7	21
Bethlehem, Pa.	16	21	21	16.6	21
Perkiomen Creek: Graterford, Pa.	8	20	21	8.8	22
Monocacy: Frederick, Md.	15	21 27	21 27	16.0 15.5	21 27
Tar: Greenville, N. C.	13	14	17	13.8	15
Neuse: Neuse, N. C.	14	11	12	14.6	11
Smithfield, N. C.	13	Nov. 25 10	4 13	15.7 15.7	1 11
Goldsboro, N. C.	14	Nov. 28 13	9 19	19.2 16.9	3 16
Kinston, N. C.	14	2	21	16.4	7
Cape Fear: Lock 2, Elizabethtown, N. C.	20	Nov. 25 11	5 13	#27.2 22.0	1,2 11
Pee Dee: Peedee, S. C.	19	Nov. 22	14	24.6	1-2
Saluda, Pelzer, S. C.	6	25	25	6.0	25
Savannah: Clyo, Ga.	11	Nov. 30	27	13.1	8-9
Ogeechee: Dover, Ga.	7	Nov. 27	Dec. 9	7.8 7.3	Nov. 30 Dec. 6
Ocmulgee: Abbeville, Ga.	12	Nov. 29	Dec. 5	12.7	2
Altamaha: Charlotte, Ga.	15	7	10	15.0	7
Satilla: Atkinson, Ga.	12.5	10	21	13.9	16
EAST GULF OF MEXICO DRAINAGE					
Apalachicola: Blountstown, Fla.	15	Nov. 22	4	15.9	1
Tombigbee: Amory, Miss.	A20	21	21	20.7	21
Fulton, Miss.	A16	22	23	16.7	22
Gainesville, Ala.	36	Nov. 22	5	46.5	Nov. 29
Lock 4, Demopolis, Ala.	42	Nov. 18	7	57.5	Nov. 27
Lock 3, Whitfield, Ala.	33	Nov. 16	14	55.9 36.5	Nov. 28 24
Lock 2, Pennington, Ala.	46	Nov. 20	8	56.8	Nov.28,30
Lock 1, Jackson, Ala.	31	Nov. 20	13	37.8	3,4
Pearl: Jackson, Miss.	20	Nov. 14	11	29.1 24.4	Nov. 26 1
Monticello, Miss.	19	Nov. 19	3	20.2	1
Bogalusa, La.	15	Nov. 14	16	19.9	1
Pearl River, La.	12	Nov. 16	16	14.9 14.6	Nov. 27 1
MISSISSIPPI SYSTEM Upper Mississippi Basin					
Kaskaskia: Carlyle, Ill.	21	21	Jan. 6	#24.3	24

River and station	Flood stage	Above flood stages -dates		Crest *	
		From–	To–	Stage	Date
	Ft.			Ft.	
MISSISSIPPI SYSTEM (Cont'd.) Upper Mississippi Basin (Cont'd.)					
Kaskaskia (Cont'd.) Vandalia, Ill.	18	20	23	#19.1	22
Sangamon: Riverton, Ill.	13	26	27	#13.5	27
Meramec: Sullivan, Mo.	11	18	19	14.8	18
Pacific, Mo.	11	19	20	13.5	20
Missouri Basin					
Gasconade: Hazlegreen, Mo.	21	18	18	26.8	18
Jerome, Mo.	15	20	20	#17.5	20
Ohio Basin					
Paint Creek: Bourneville, Ohio	10	7 20 26	8 20 26	12.2 11.2 11.75	7 20 26
Scioto: La Rue, Ohio	11	8 20	8 21	11.0 11.2	8 21
Circleville, Ohio	14	21	21	#14.3	21
Piketon, Ohio	16	20 27	23 27	17.9 17.0	21 27
Rough: Dundee, Ky.	25	8 21	11 23	26.3 25.5	9 22
Green: Lock 6, Brownsville, Ky.	28	21	23	30.1	22
Lock 4, Woodbury, Ky.	33	9 20	12 25	35.8 38.3	10 23
Lock 2, Calhoun, Ky.	23	Nov. 19 12 22	5 15 1/	31.1 25.9	Nov. 27 27
Vermillion: Danville, Ill.	18	20	21	19.6	21
Embarass: Ste. Marie, Ill.	18	20	28	20.9	22
Eel: Bowling Green, Ind.	17	21	21	19.7	21
East Fork: Columbus, Ind.	10	21	21	11.0	21
Seymour, Ind.	14	20 26	23 28	17.2 15.2	21 26
Bedford, Ind.	20	23	30	24.6	24
Williams, Ind.	10	24	27	12.5	25,26
White: Anderson, Ind.	10	18	21	12.6	20
Noblesville, Ind.	14	20	21	15.0	20
Spencer, Ind.	14	19	30	20.8 18.0	22 27
Elliston, Ind.	18	19	1/	26.65	23
Newberry, Ind.	18	21	29	20.8	24
Edwardsport, Ind.	12	8 19	12 1/	14.6 23.3	9 24
Petersburg, Ind.	17	20	1/	24.2	26
Hazleton, Ind.	16	20	1/	25.5	27
Skillet Fork: Wayne City, Ill.	15	18 25	25 29	21.6	21
Little Wabash: Wilcox, Ill.	16	17	30		
Wabash: Bluffton, Ind.	10	19	23	13.0	21
Wabash, Ind.	12	8 19 26	10 23 27	15.8 18.5 13.6	8 20 26
Lafayette, Ind.	11	9 19	11 30	15.05 19.8	10 22
Covington, Ind.	16	10 20	20 1/	17.4 23.6 19.1	11 23 29
Montezuma, Ind.	14	10 19	12 1/	14.85 24.2	11 23
Clinton, Ind.	18	20	28	23.05	26
Terre Haute, Ind.	14	20	1/	19.8	23,24
Hutsonville, Ill.	A20	21	1/	23.8	25,26
Riverton, Ind.	18	21	1/	21.2	27
Vincennes, Ind.	16	21	1/	22.9	28

FLOOD STAGE DATA

(All dates in December unless otherwise specified)

DECEMBER 1957

River and station	Flood stage	Above flood stages -dates		Crest*	
		From–	To–	Stage	Date
	Ft.			*Ft.*	
MISSISSIPPI SYSTEM (Cont'd.) Ohio Basin (Cont'd.)					
Wabash (Cont'd.) Mt. Carmel, Ill.	17	21	1/	24.5	28
New Harmony, Ind	15	22	1/		
Cumberland: Williamsburg, Ky.	21	9	9	21.05	9
South Chickamauga Creek: Chickamauga (Nr.), Tenn.	10	20	22	11.8	21
Tennessee: Paducah (Nr.), Ky.	34	11 21	14 1/	36.0 38.7	13 27
Whitesburg, Ala.	560	8 21	12 25	562.6 562.9	11 24
Ohio: Mt. Vernon, Ind.	35	29	1/		
Dam 49, Uniontown, Ky.	37	28	1/		
Shawneetown, Ill.	33	24	1/		
Dam 50, Fords Ferry, Ky.	34	23	1/		
Dam 52, Brookport, Ill.	37	26	Jan 4	38.2	Jan. 3
Dam 53, Mound City (Nr.), Ill.	42	27	Jan. 4	42.5	Jan. 2
White Basin					
Black River: Black Rock, Ark.	14	Nov. 14 22	1 24	20.9 14.3	Nov. 19 Nov. 23
White: Clarendon, Ark.	26	Nov. 17	15	30.1	Nov. 25
St. Charles, Ark.	25	Nov. 21	18	28.0	Nov. 29
Red Basin					
Sulphur: Hagansport, Tex.	38	26	26	40.35	26
Lower Mississippi Basin					
St. Francis: Fisk, Mo.	20	19	31	24.2	23
St. Francis, Ark.	18	Nov. 14 23	1 Jan. 5	18.9 20.6 20.8 21.2	Nov. 15 Nov. 19 Nov. 24 27-28
Parkin, Ark.	28	Nov. 23	14	31.2 30.2	Nov. 29-1 7
Coldwater: Sarah, Miss.	18	19	19	19.4	19
Tallahatchie: Swan Lake, Miss.	26	Nov. 16	4	29.0	Nov. 21
Yazoo: Yazoo City, Miss.	29	Nov. 22	29	31.85	7
Big Black: Bovina, Miss.	28	Nov. 18	10	38.5	Nov. 25
Pickens, Miss.	16	Nov. 14	5	19.7	Nov. 20

River and station	Flood stage	Above flood stages -dates		Crest *	
		From–	To–	Stage	Date
	Ft.			*Ft.*	
WEST GULF OF MEXICO DRAINAGE					
Sabine: Logansport, La.	25	Nov. 21	4	29.1	Nov. 26
Bon Wier, Tex.	17	Nov. 22	10	19.3	Nov. 26
Deweyville, Tex.	14	Nov. 11	17	15.6	Nov. 26
East Fork: Rockwall, Tex.	10	18	19	10.1	18-19
Trinity: Liberty, Tex.	24	Nov. 14	4	#28.0	Nov. 27
PACIFIC SLOPE DRAINAGE					
Sacramento: Tisdale Weir, Calif.	45.5	19 23 30	20 24 31	46.2 46.8 46.1	19 23 30
Umpqua: Kellogg, Oreg.	31	21	21	31+	21
Coquille: Myrtle Point, Oreg.	A22	21	22	E23	21
Columbia Basin					
McKenzie: Leaburg, Oreg.	12	20	21	19.0	20
Coburg, Oreg.	11	20	21	14.2	21
Calapooya: Holley, Oreg.	10.5	20	20	11.2	20
Santiam: Jefferson, Oreg.	13	7 20 26	7 22 26	16.0 19.9 13.1	7 21 26
South Yamhill: Whiteson, Oreg.	38	20	23	41.6	20
Pudding: Aurora, Oreg.	15	20	31	18.15	22
Tualatin: Dilley, Oreg.	12	20	22	13.0	20
Willamette: Harrisburg, Oreg.	12	20	22	14.9	21
Corvallis, Oreg.	20	22	22	21.25	22
Albany, Oreg.	20	22	23	21.7	22
Oregon City, Oreg.	12	22	24	13.2	23

* Provisional
# Highest observed stage
1/ Continued at end of month
Ā Tentative
E Estimated

RAWINSONDE DATA

Average monthly values

DECEMBER 1957

ALBANY, N. Y. (1006 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	86	-0.9	83	249	2.9
1,000--	31	135			225	3.3
950----	31	542	-1.4	71	251	9.9
900----	31	975	-2.6	67	270	15.0
850----	31	1,428	-4.0	67	274	20.2
800----	31	1,905	-5.9	65	272	23.3
750----	31	2,407	-7.6	57	266	28.2
700----	31	2,945	-10.0	50	264	32.1
650----	31	3,510	-12.9	44	261	38.9
600----	31	4,121	-15.9	41	260	42.6
550----	31	4,766	-19.7	42	261	48.2
500----	31	5,473	-24.3	45	258	51.7
450----	31	6,227	-29.1	47	259	55.4
400----	31	7,067	-34.7	50	257	60.4
350----	31	7,988	-40.4		255	68.0
300----	31	9,025	-47.2		253	69.4
250----	31	10,214	-53.7		260	74.2
200----	31	11,637	-56.7		262	65.9
175----	31	12,484	-56.8		259	62.0
150----	30	13,465	-56.7		263	58.7
125----	27	14,608	-57.0		254	53.8
100----	18	15,996	-57.6			
80-----	12	17,395	-58.6			
60-----	9	19,184	-58.8			
50-----	9	20,327	-59.4			
40-----	6	21,725	-59.3			
30-----	5	23,525	-59.1			
25-----						
20-----						
15-----						

ALBUQUERQUE, N. MEX. (841 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,619	-0.5	62	351	3.3
1,000--	31	212				
950----	31	629				
900----	31	1,072				
850----	31	1,533				
800----	31	2,021	1.9	45	317	7.0
750----	31	2,539	.3	42	300	11.3
700----	31	3,092	-1.2	36	293	16.9
650----	31	3,679	-3.6		288	19.8
600----	31	4,310	-7.2		291	24.1
550----	31	4,978	-11.6		285	24.7
500----	31	5,707	-16.7		276	25.5
450----	31	6,485	-22.3		279	22.5
400----	31	7,347	-28.5		283	15.9
350----	31	8,291	-35.3		297	20.8
300----	31	9,347	-42.8		282	23.5
250----	31	10,553	-52.0		283	29.0
200----	31	11,972	-59.0		287	38.7
175----	31	12,807	-60.3			
150----	30	13,762	-61.3			
125----	30	14,887	-64.3			
100----	30	16,245	-66.0			
80-----	30	17,597	-66.3			
60-----	25	19,351	-64.0			
50-----	25	20,472	-62.1			
40-----	24	21,863	-59.6			
30-----	23	23,670	-57.1			
25-----	22	24,825	-55.4			
20-----	19	26,246	-55.1			
15-----	9	28,104	-53.4			

AMARILLO, TEX. (892 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,095	-0.1	62	275	6.6
1,000--	31	169				
950----	31	586				
900----	31	1,025				
850----	31	1,491	7.4	29	281	9.3
800----	31	1,988	5.8	23	292	12.0
750----	31	2,512	3.3	24	286	16.3
700----	31	3,071	.8		285	18.5
650----	31	3,662	-2.6		290	22.3
600----	31	4,293	-6.8		290	25.8
550----	31	4,959	-11.5		290	29.3
500----	31	5,691	-16.5		288	31.7
450----	31	6,462	-22.1		284	36.3
400----	31	7,331	-28.5		284	40.6
350----	30	8,285	-35.3		281	45.9
300----	30	9,341	-43.1		281	52.3
250----	29	10,549	-52.1		281	56.5
200----	28	11,972	-58.9		283	65.5
175----	28	12,807	-60.1		282	62.0
150----	27	13,769	-60.6		283	54.0
125----	27	14,896	-63.5		284	50.5
100----	25	16,251	-66.3		286	42.2
80-----	22	17,597	-66.8		285	35.4
60-----	21	19,348	-63.3		284	22.7
50-----	21	20,474	-61.4		285	11.7
40-----	19	21,865	-59.7		280	12.2
30-----	12	23,671	-57.3		275	19.6
25-----	10	24,832	-55.5			
20-----						
15-----						

ANCHORAGE, ALASKA ([illegible] MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	30	-12.1	78	13	2.5
1,000--	31	42				
950----	31	354	-10.0	66	9	4.1
900----	31	769	-9.8	63	36	3.7
850----	31	1,209	-11.5	64	70	3.5
800----	31	1,673	-13.6	63	111	4.3
750----	31	2,156	-16.9	63	143	5.2
700----	31	2,675	-20.2	58	165	5.2
650----	31	3,216	-23.8	53	168	5.1
600----	31	3,800	-27.9	51	174	6.0
550----	31	4,415	-32.2	46	182	8.2
500----	31	5,086	-36.7		183	8.9
450----	31	5,803	-41.7		193	8.4
400----	31	6,599	-46.6		203	11.3
350----	31	7,477	-50.9		225	10.7
300----	31	8,474	-53.4		241	16.7
250----	31	9,648	-53.1		258	19.6
200----	31	11,091	-51.7		263	26.2
175----	31	11,959	-51.0		268	27.2
150----	30	12,965	-51.1		270	33.0
125----	29	14,151	-51.9		272	37.7
100----	29	15,594	-52.7		272	41.0
80-----	29	17,033	-53.4		274	47.6
60-----	28	18,887	-54.6		275	54.6
50-----	27	20,057	-55.2		276	54.0
40-----	26	21,492	-56.2		277	57.9
30-----	23	23,320	-58.6			
25-----	13	24,517	-58.2			
20-----						
15-----						

ANNETTE, ALASKA (998 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	37	2.5	86	147	[illegible]
1,000--	31	17			141	[illegible]
950----	[illegible]	429	.7	83	178	[illegible]
900----	31	863	-2.3	84	203	11.5
850----	31	1,315	-5.1	83	220	[illegible]
800----	31	1,789	-8.1	[illegible]	[illegible]	15.3
750----	31	2,288	-11.2	69	232	16.3
700----	31	2,814	-14.5	61	238	[illegible]
650----	31	3,373	-18.2	59	242	18.1
600----	31	3,966	-22.1	57	[illegible]	22.9
550----	31	4,599	-26.3	55	[illegible]	24.5
500----	31	5,285	-30.6	[illegible]	240	24.7
450----	30	6,020	-35.5	55	241	23.5
400----	30	6,837	-41.4		253	31.5
350----	30	7,732	-47.6			
300----	30	8,737	-52.9			
250----	28	9,889	-55.1			
200----	27	11,328	-53.4			
175----	26	12,181	-52.2			
150----	26	13,178	-52.5			
125----	26	14,354	-53.3			
100----	26	15,791	-53.5			
80-----	26	17,226	-53.8			
60-----	26	19,065	-55.6			
50-----	26	20,225	-56.5			
40-----	25	21,643	-57.3			
30-----	21	23,470	-58.2			
25-----	19	24,614	-59.2			
20-----	12	26,021	-61.0			
15-----	7	27,809	-64.1			

ATHENS, GA. (992 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	246	3.8	83	286	2.3
1,000--	31	178				
950----	31	601	6.9	60	283	7.2
900----	31	1,042	5.8	55	279	10.7
850----	31	1,509	4.7	50	278	14.0
800----	31	2,002	2.5	47	281	16.3
750----	31	2,522	.3	44	275	17.5
700----	31	3,073	-1.7	36	265	19.8
650----	31	3,655	-4.7		264	27.4
600----	31	4,286	-8.2		256	26.6
550----	31	4,953	-12.1		256	25.1
500----	31	5,680	-16.7		257	27.8
450----	31	6,457	-22.0		254	31.9
400----	30	7,326	-28.1		266	32.1
350----	30	8,272	-34.7		276	33.6
300----	30	9,332	-42.4			
250----	30	10,542	-50.9			
200----	30	11,970	-57.7			
175----	29	12,808	-58.8			
150----	29	13,775	-59.5			
125----	29	14,910	-62.0			
100----	29	16,281	-64.7			
80-----	28	17,643	-65.7			
60-----	27	19,406	-62.7			
50-----	26	20,540	-60.5			
40-----	24	21,932	-58.1			
30-----	23	23,760	-55.1			
25-----	22	24,930	-53.6			
20-----	19	26,372	-51.3			
15-----	12	28,260	-48.6			
10-----	5	30,910	-44.7			

BARROW, ALASKA (1014 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	8	-29.1	63	60	6.0
1,000--	31	108	-28.3	67	67	6.0
950----	31	483	-23.6	71	76	9.5
900----	31	876	-21.3	68	72	9.9
850----	31	1,298	-20.8	63	76	9.7
800----	31	1,746	-21.9	58	79	9.9
750----	31	2,216	-23.8	56	86	9.1
700----	31	2,721	-26.2	52	86	6.8
650----	31	3,251	-29.2	48	105	3.1
600----	31	3,822	-32.7	48	140	2.1
550----	31	4,425	-36.8	46	176	2.1
500----	31	5,084	-41.2		188	2.7
450----	31	5,787	-45.8		222	2.3
400----	31	6,569	-51.1		183	3.7
350----	31	7,429	-55.7		208	1.6
300----	31	8,400	-60.0		250	4.9
250----	31	9,535	-60.2		251	7.8
200----	31	10,934	-58.4		266	16.5
175----	30	11,778	-58.3		261	18.5
150----	29	12,745	-58.7		270	23.1
125----	29	13,888	-59.5		266	25.8
100----	29	15,279	-61.0		267	34.4
80-----	27	16,661	-62.4		274	42.6
60-----	26	18,424	-64.4		275	50.5
50-----	25	19,531	-65.7		275	57.7
40-----	23	20,871	-66.8		279	64.9
30-----	12	22,673	-68.0			
25-----	9	23,762	-69.4			
20-----						
15-----						
10-----						

BARTER ISLAND, ALASKA (1011 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	15	-29.8	59	76	3.1
1,000--	31	95	-28.8	64	80	5.4
950----	31	466	-25.2	73	95	12.0
900----	31	862	-20.9	70	101	12.8
850----	31	1,285	-19.5	65	101	11.7
800----	31	1,735	-20.6	63	102	10.9
750----	31	2,207	-22.5	64	107	7.2
700----	31	2,715	-24.5	61	113	6.0
650----	31	3,246	-27.5	58	140	4.5
600----	31	3,824	-31.0	56	160	3.7
550----	31	4,429	-34.9	53	218	5.6
500----	31	5,096	-39.3		232	6.4
450----	31	5,803	-44.0		242	7.4
400----	31	6,594	-49.1		251	9.5
350----	31	7,460	-54.0		243	11.9
300----	31	8,440	-58.3		247	13.2
250----	31	9,584	-59.1		255	14.2
200----	31	10,988	-57.5		263	18.7
175----	31	11,832	-57.5		266	19.6
150----	30	12,806	-57.8		270	22.7
125----	29	13,955	-58.6		270	28.4
100----	28	15,349	-60.2		276	35.9
80-----	26	16,744	-61.4		277	42.6
60-----	26	18,521	-63.2		281	54.0
50-----	22	19,636	-64.4		283	58.3
40-----	18	20,980	-65.1		285	63.7
30-----	11	22,769	-65.4		286	69.9
25-----	8	23,888	-64.8			
20-----						
15-----						
10-----						

BETHEL, ALASKA (1000 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	4	-19.1	80	84	0.6
1,000--	31	4			17	3.1
950----	31	394	-13.9	69	38	6.2
900----	31	803	-13.9	66	359	5.8
850----	31	1,237	-14.7	61	339	8.0
800----	31	1,695	-15.8	56	304	8.4
750----	31	2,181	-18.0	51	295	9.9
700----	31	2,693	-21.1	49	304	11.9
650----	31	3,235	-24.8	46	300	12.8
600----	31	3,814	-28.7	45	301	15.0
550----	31	4,429	-32.7	43	307	15.3
500----	31	5,099	-37.1		297	14.0
450----	31	5,819	-41.8		299	16.3
400----	31	6,611	-46.9		287	13.8
350----	31	7,487	-51.6		280	17.5
300----	31	8,482	-53.4		277	19.0
250----	31	9,658	-52.4		263	21.8
200----	31	11,108	-50.4		266	25.3
175----	31	11,980	-50.4		270	29.5
150----	30	12,986	-50.4		273	30.3
125----	30	14,173	-51.1		267	35.2
100----	30	15,623	-51.6		270	42.2
80-----	30	17,069	-52.3		269	45.9
60-----	30	18,926	-53.4		273	52.3
50-----	28	20,095	-54.0		274	55.8
40-----	26	21,538	-54.5			
30-----	13	23,383	-55.5			
25-----						
20-----						
15-----						
10-----						

BISMARCK, N. DAK. (952 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	505	-6.6	72	294	2.1
1,000--	31	120				
950----	31	525				0
900----	31	951	-2.3	57	276	9.7
850----	31	1,405	-2.1	51	281	14.2
800----	31	1,886	-4.0	51	292	20.0
750----	31	2,391	-6.7	51	301	23.3
700----	31	2,929	-9.8	49	298	28.0
650----	31	3,494	-13.2	47	293	29.0
600----	31	4,103	-17.1	48	292	29.5
550----	31	4,746	-21.2	46	284	33.2
500----	31	5,448	-26.2	44	278	36.7
450----	31	6,196	-31.8	45	271	37.1
400----	31	7,025	-37.8	46	255	[illegible]
350----	31	7,934	-44.2		269	37.7
300----	31	8,953	-50.6		270	40.2
250----	31	10,127	-55.8			
200----	31	11,541	-56.9			
175----	31	12,389	-55.7			
150----	31	13,372	-55.3			
125----	31	14,536	-55.5			
100----	31	15,955	-56.7			
80-----	31	17,366	-57.5			
60-----	31	19,176	-59.3			
50-----	31	20,317	-59.4			
40-----	28	21,712	-59.8			
30-----	26	23,503	-61.3			
25-----	25	24,640	-61.5			
20-----	17	26,029	-61.7			
15-----	8	27,830	-62.5			
10-----						

BOISE, IDAHO (920 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	868	0.0	83	158	4.7
1,000--	31	193				
950----	31	608				
900----	31	1,042	1.2	73	164	4.9
850----	31	1,503	.9	65	214	7.0
800----	31	1,990	-.5	59	244	11.9
750----	31	2,505	-3.2	56	264	16.1
700----	31	3,047	-6.3	57	280	20.2
650----	31	3,621	-9.4	55	282	25.3
600----	31	4,238	-12.8	52	288	30.1
550----	31	4,893	-17.1	52	283	33.4
500----	31	5,607	-21.7	49	284	36.1
450----	31	6,371	-27.2	46	282	33.2
400----	31	7,214	-33.6	44		
350----	31	8,138	-40.6			
300----	31	9,171	-48.3			
250----	31	10,352	-55.8			
200----	30	11,761	-58.6			
175----	29	12,600	-57.9			
150----	29	13,574	-57.4			
125----	27	14,716	-58.3			
100----	25	16,106	-59.1			
80-----	23	17,490	-59.8			
60-----	21	19,295	-59.3			
50-----	21	20,437	-59.9			
40-----	20	21,835	-59.3			
30-----	19	23,631	-59.1			
25-----	15	24,788	-58.7			
20-----	[illegible]	26,207	-58.4			
15-----						

BROWNSVILLE, TEX. (1019 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	7	14.5	87	130	1.7
1,000--	31	165	17.1	73	149	8.0
950----	31	601	15.0	71	165	16.3
900----	31	1,059	13.1	64	175	13.6
850----	31	1,539	11.9	50	186	8.7
800----	31	2,046	10.4	40	240	2.9
750----	31	2,579	8.1	39	275	7.4
700----	31	3,149	5.3	36	269	11.7
650----	31	3,746	2.3	33	274	12.8
600----	31	4,395	-1.6		272	14.2
550----	31	5,071	-6.0		267	16.5
500----	31	5,823	-10.8		272	20.8
450----	31	6,619	-16.3		273	27.6
400----	31	7,503	-22.5		276	36.1
350----	31	8,469	-29.6		275	44.5
300----	31	9,551	-38.1		280	51.3
250----	31	10,781	-47.5			
200----	31	12,222	-57.8			
175----	31	13,054	-62.6			
150----	31	13,997	-66.3			
125----	31	15,092	-69.7			
100----	31	16,412	-72.9			
80-----	30	17,718	-73.0			
60-----	30	19,422	-68.2			
50-----	30	20,528	-63.8			
40-----	29	21,916	-58.3			
30-----	26	23,741	-53.7			
25-----	20	24,922	-50.6			
20-----	10	26,386	-47.5			
15-----						

BUFFALO, N. Y. (993 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	182	0.2	79	233	8.4
1,000--	31	127				
950----	31	536	-.9	74	243	15.2
900----	31	968	-2.8	69	247	20.6
850----	31	1,420	-4.3	62	254	22.2
800----	31	1,896	-6.2	54	262	23.9
750----	31	2,401	-7.8	51	262	27.2
700----	31	2,934	-10.5	52	263	29.1
650----	31	3,500	-13.4	52	262	32.3
600----	31	4,108	-16.6	50	262	33.8
550----	31	4,753	-20.6	50	260	36.1
500----	31	5,456	-25.2	48	260	41.0
450----	31	6,206	-30.3	46	258	45.1
400----	31	7,042	-36.0	44	257	49.2
350----	31	7,958	-42.1		254	50.5
300----	31	8,988	-48.2		258	53.0
250----	31	10,173	-53.9		258	60.4
200----	31	11,598	-55.6		258	57.7
175----	29	12,443	-54.8		257	49.9
150----	27	13,437	-55.2		259	48.2
125----	25	14,602	-56.3		261	45.5
100----	24	16,011	-57.5		263	41.4
80-----	18	17,417	-57.8		260	30.9
60-----	17	19,225	-58.4		265	25.1
50-----	14	20,377	-58.9		265	22.5
40-----	14	21,775	-59.3		260	24.5
30-----	10	23,576	-59.0			
25-----	10	24,717	-60.1			
20-----	9	26,092	-61.4			
15-----	8	27,903	-60.9			

BURRWOOD, LA. (1021 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	3	12.1	88	348	7.0
1,000--	31	179	14.5	71	75	1.9
950----	31	611	12.1	62	207	1.0
900----	31	1,063	10.2	53	224	2.9
850----	31	1,537	9.0	39	277	6.4
800----	31	2,037	7.2	36	283	9.9
750----	31	2,564	5.0	29	268	12.0
700----	31	3,126	2.7		282	14.4
650----	31	3,719	-.4		279	16.5
600----	31	4,357	-4.2		278	21.4
550----	31	5,024	-8.5		282	21.8
500----	31	5,769	-13.5		281	25.8
450----	31	6,555	-19.2		278	29.5
400----	31	7,427	-25.7		278	35.4
350----	31	8,382	-32.4		283	40.2
300----	31	9,452	-40.1		290	46.0
250----	30	10,673	-49.1		290	48.8
200----	27	12,112	-56.8		292	52.1
175----	26	12,950	-60.3			
150----	25	13,899	-62.9			
125----	24	15,011	-65.7			
100----	22	16,350	-67.7			
80-----	20	17,691	-68.8			
60-----	16	19,423	-65.1			
50-----	15	20,543	-61.4			
40-----	13	21,941	-58.5			
30-----	12	23,766	-54.8			
25-----	10	24,943	-53.0			
20-----	9	26,383	-49.1			
15-----	5	28,290	-44.3			

CAPE HATTERAS, N. C. (1019 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	4	8.7	80	312	4.3
1,000--	31	160	10.1	68	314	6.4
950----	31	580	8.2	62	279	6.8
900----	31	1,031	6.5	58	249	11.1
850----	31	1,499	4.5	52	250	13.2
800----	31	1,991	2.5	49	243	17.5
750----	31	2,505	.7	37	242	19.8
700----	31	3,063	-1.7	36	249	23.1
650----	30	3,647	-4.8		248	26.6
600----	30	4,281	-8.6		249	31.3
550----	28	4,937	-13.0		249	33.4
500----	28	5,667	-18.0		252	38.3
450----	28	6,437	-23.4	40	253	41.2
400----	28	7,299	-29.3	41	255	45.7
350----	28	8,241	-35.9	[illegible]	255	50.3
300----	28	9,297	-42.8		258	57.9
250----	28	10,506	-50.7		261	61.0
200----	28	11,937	-57.3		263	63.1
175----	28	12,780	-58.1		263	[illegible]
150----	28	13,748	-59.6		[illegible]	56.2
125----	28	14,883	-61.7		262	52.3
100----	28	16,259	-63.9		259	43.9
80-----	28	17,628	-63.6		257	31.7
60-----	28	19,402	-61.1		264	25.1
50-----	28	20,539	-59.5		261	17.1
40-----	28	21,943	-57.3		266	20.0
30-----	27	23,775	-54.4		264	22.5
25-----	26	24,946	-53.1		270	28.2
20-----	20	26,391	-50.9		272	35.4
15-----	10	28,287	-48.1			

See reference note at end of table

RAWINSONDE DATA

Average monthly values

DECEMBER 1957

CARIBOU, ME. (990 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	191	- 6.8	81	258	4.1
1,000	31	106				
950	31	505	- 5.0	76	244	9.7
900	31	932	- 5.9	73	259	13.2
850	31	1,380	- 6.2	72	263	16.3
800	31	1,854	- 7.4	70	266	19.8
750	30	2,360	- 9.4	66	266	25.5
700	30	2,890	-11.7	67	266	28.0
650	30	3,454	-14.5	62	263	30.9
600	30	4,058	-18.2	56	262	34.4
550	30	4,700	-22.2	56	262	39.4
500	30	5,399	-26.6	52	259	39.2
450	30	6,149	-31.7	49	257	42.9
400	30	6,977	-37.3		257	49.2
350	30	7,888	-42.8		257	50.7
300	30	8,916	-48.2		249	61.6
250	28	10,105	-52.1		257	66.6
200	27	11,534	-54.2		254	56.7
175	26	12,383	-53.7		254	50.5
150	25	13,371	-53.6		255	46.6
125	25	14,541	-54.9		254	41.6
100	24	15,971	-55.9		250	41.0
80	23	17,390	-57.1		257	35.0
60	23	19,206	-57.9		259	30.5
50	21	20,355	-58.1		256	27.4
40	20	21,763	-58.8		254	26.2
30	19	23,575	-59.4		261	35.6
25	18	24,722	-59.7		255	42.6
20	18	26,116	-60.5		259	46.8
15	16	27,894	-61.7		261	53.2
10	6	30,367	-60.8			

CHARLESTON, S. C. (1020 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	13	5.7	90	288	3.1
1,000	31	176	9.8	73	286	4.7
950	31	599	8.9	61	275	7.2
900	31	1,049	7.3	56	264	9.3
850	31	1,519	5.6	53	255	10.9
800	31	2,012	3.5	47	261	15.0
750	31	2,534	1.8		263	17.7
700	31	3,089	- .9		259	20.8
650	31	3,675	- 3.8		259	25.8
600	31	4,306	- 7.2		261	29.5
550	31	4,973	-11.5		262	33.0
500	31	5,703	-16.4		260	35.9
450	31	6,484	-21.8		261	41.8
400	31	7,347	-27.7		264	45.3
350	31	8,294	-34.2		262	50.9
300	31	9,357	-41.8		265	56.3
250	31	10,570	-50.3		266	61.0
200	31	12,001	-57.6		264	60.4
175	31	12,840	-59.2		264	58.5
150	31	13,804	-60.5		264	55.0
125	31	14,934	-63.1		265	51.3
100	31	16,300	-65.3		265	39.4
80	31	17,656	-66.1		263	35.9
60	31	19,416	-62.3		263	22.3
50	31	20,549	-60.2		268	22.0
40	31	21,951	-57.0		266	18.5
30	31	23,789	-53.4		267	20.0
25	26	24,969	-51.3		268	25.3
20	9	26,441	-48.8			
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COLD BAY, ALASKA (998 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	27	- 2.0	83	307	6.8
1,000	31	8			305	7.0
950	31	409	- 3.8	75	302	11.3
900	31	839	- 7.0	78	299	13.4
850	31	1,282	-10.3	80	293	15.7
800	31	1,746	-13.2	75	286	18.5
750	31	2,233	-15.9	66	281	22.0
700	31	2,752	-18.8	52	277	21.0
650	31	3,297	-21.9	45	269	25.8
600	31	3,885	-25.4	42	264	24.3
550	31	4,507	-29.4	43	269	25.3
500	31	5,186	-33.6		247	25.6
450	31	5,911	-38.4		261	28.0
400	31	6,719	-43.5		263	32.1
350	31	7,610	-47.4		268	21.8
300	30	8,608	-50.9		249	30.1
250	30	9,792	-51.4		258	36.3
200	30	11,249	-49.0			
175	30	12,127	-49.0			
150	30	13,137	-49.5			
125	30	14,332	-49.1			
100	30	15,796	-49.6			
80	30	17,258	-49.7			
60	30	19,138	-50.8			
50	29	20,330	-50.5			
40	29	21,784	-51.0			
30	26	23,648	-51.3			
25	16	24,854	-50.5			
20						
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COLUMBIA, MO. (987 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	238	1.7	78	235	3.3
1,000	31	134				
950	31	550	3.7	61	250	7.8
900	31	990	3.4	53	276	14.4
850	31	1,453	1.9	48	285	17.5
800	31	1,940	- .4	45	281	17.5
750	31	2,449	- 2.7	43	277	21.6
700	31	2,999	- 5.4	41	276	24.3
650	31	3,571	- 8.5	39	285	29.3
600	31	4,194	-12.1	36	287	36.3
550	31	4,850	-16.5	33	288	36.3
500	31	5,565	-21.5		284	41.2
450	31	6,325	-27.0		282	46.2
400	31	7,174	-33.1		286	50.5
350	31	8,101	-39.5		279	56.2
300	31	9,141	-46.2		280	63.5
250	31	10,335	-52.9		281	64.7
200	31	11,761	-55.9		281	65.7
175	31	12,609	-56.9		280	65.7
150	31	13,584	-57.6		279	61.4
125	31	14,732	-58.9		279	53.6
100	31	16,129	-60.4		279	42.7
80	31	17,515	-61.4		278	31.3
60	30	19,302	-60.9		282	23.3
50	30	20,438	-60.3		282	20.0
40	27	21,830	-59.8		283	18.3
30	23	23,633	-58.0		284	23.1
25	16	24,769	-57.4		272	23.1
20	5	26,180	-56.6			
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DAYTON, OHIO (981 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	297	0.5	77	200	3.9
1,000	31	144				
950	31	557	.5	68	225	9.5
900	31	990	.3	58	244	18.5
850	31	1 448	- 1.2	55	253	22.5
800	31	1,930	- 3.3	55	259	24.3
750	31	2,432	- 5.3	52	262	27.2
700	31	2,978	- 7.8	49	263	29.7
650	31	3,542	-10.7	48	265	33.2
600	31	4,163	-14.6	46	263	39.1
550	31	4,808	-18.4	38	264	41.4
500	31	5,522	-22.8	40	266	46.8
450	31	6,280	-28.3	42	265	47.6
400	30	7,122	-34.3	44	265	50.5
350	30	8,043	-40.4		266	55.6
300	30	9,080	-46.6		267	59.5
250	30	10,272	-52.9		267	64.3
200	30	11,697	-56.2		267	64.1
175	30	12,545	-56.5		269	59.8
150	30	13,521	-57.3		269	55.2
125	30	14,673	-57.8		270	48.8
100	29	16,073	-59.7		272	42.4
80	27	17,461	-60.4		269	33.4
60	25	19,252	-59.8		272	26.6
50	25	20,393	-59.5		273	22.5
40	25	21,792	-59.0		275	21.0
30	20	23,600	-58.0		274	27.2
25	11	24,757	-57.9			
20						
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DENVER, COLO. (836 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,611	- 1.4	48	234	4.3
1,000	31	166				
950	31	579				
900	31	1,020				
850	31	1,481				
800	31	1,971	4.4	28	276	10.7
750	31	2,490	1.4	29	300	16.1
700	31	3,046	- 2.1	31	302	20.0
650	31	3,627	- 6.1	32	306	25.1
600	31	4,253	-10.3	33	308	29.7
550	31	4,911	-15.0	33	306	34.2
500	31	5,632	-19.8	34	305	38.3
450	31	6,398	-25.6	35	302	38.3
400	31	7,251	-31.8		300	43.7
350	31	8,181	-38.8		298	48.6
300	31	9,223	-46.2		296	59.1
250	31	10,415	-53.4		292	63.9
200	31	11,834	-58.3		288	63.9
175	31	12,673	-59.3		288	63.9
150	30	13,638	-59.1		288	60.2
125	29	14,786	-60.1		290	54.2
100	29	16,172	-62.6		289	40.8
80	27	17,546	-62.1		284	30.1
60	25	19,332	-60.9		285	16.9
50	24	20,469	-59.8		287	15.2
40	24	21,866	-58.6		306	13.8
30	20	23,697	-58.0		306	15.9
25	18	24,850	-57.5		303	21.2
20	13	26,257	-57.2		299	29.9
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DODGE CITY, KANS. (925 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	792	- 0.7	66	283	4.9
1,000	31	158				
950	31	576				
900	31	1,009	5.8	41	279	6.6
850	31	1,478	6.0	27	289	8.5
800	31	1,972	3.9	24	297	12.8
750	31	2,493	1.3	24	302	16.7
700	31	3,045	- 2.0	25	294	19.4
650	31	3,628	- 5.7		291	23.3
600	31	4,253	- 9.6		291	30.1
550	31	4,915	-13.6		275	33.2
500	31	5,638	-18.5		276	39.4
450	31	6,406	-24.3		279	41.4
400	31	7,264	-30.6		272	45.7
350	30	8,196	-37.3		278	52.7
300	30	9,245	-44.9			
250	30	10,443	-52.5			
200	30	11,867	-57.4			
175	29	12,710	-58.2			
150	29	13,681	-58.6			
125	29	14,822	-60.5			
100	29	16,202	-63.2			
80	28	17,577	-63.7			
60	25	19,346	-61.3			
50	24	20,483	-60.6			
40	23	21,875	-59.1			
30	19	23,689	-57.2			
25	9	24,834	-57.0			
20						
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EL PASO, TEX. (885 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,197	2.2	56	354	2.7
1,000	31	196				
950	31	615				
900	31	1,059				
850	31	1,529	8.3	36	323	1.9
800	31	2,029	7.4	37	281	8.9
750	31	2,556	6.0	36	273	13.6
700	31	3,121	3.3		270	17.5
650	31	3,714	.0		274	17.5
600	31	4,356	- 4.1		280	17.5
550	31	5,030	- 8.6		282	19.8
500	30	5,774	-13.8		281	24.3
450	30	6,559	-19.1		280	25.6
400	30	7,435	-25.4		282	28.6
350	29	8,393	-32.6		276	30.9
300	29	9,461	-40.9		277	35.9
250	29	10,678	-49.8		289	37.5
200	29	12,110	-58.2		278	45.1
175	28	12,945	-60.5		283	46.6
150	28	13,898	-62.9		279	44.7
125	28	15,015	-65.9		289	36.1
100	27	16,358	-69.1		285	32.1
80	27	17,688	-69.9		286	25.5
60	27	19,415	-66.0			
50	27	20,527	-63.7			
40	26	21,909	-60.2			
30	23	23,719	-56.9			
25	19	24,886	-54.9			
20	9	26,308	-53.2			
15						

ELY, NEV. (811 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,908	- 5.9	75	192	8.0
1,000	31	236				
950	31	649				
900	31	1,086				
850	31	1,536				
800	31	2,016	- .6	64	199	7.0
750	31	2,534	- .1	49	215	5.2
700	31	3,084	- 2.5	45	273	10.3
650	31	3,666	- 5.2	42	282	17.1
600	31	4,294	- 8.8	42	289	22.2
550	31	4,959	-13.1	40	288	24.9
500	31	5,683	-17.9	37	281	31.3
450	31	6,456	-23.6	35	277	27.6
400	31	7,313	-30.1	33	268	27.8
350	31	8,249	-37.6		275	24.3
300	31	9,295	-45.8		294	24.3
250	31	10,488	-53.6			
200	31	11,902	-59.3			
175	31	12,736	-60.1			
150	31	13,700	-59.7			
125	31	14,839	-60.0			
100	31	16,225	-62.1			
80	31	17,602	-63.0			
60	31	19,378	-61.2			
50	31	20,514	-59.6			
40	31	21,913	-58.3			
30	27	23,733	-57.6			
25	24	24,880	-56.5			
20	13	26,296	-57.3			
15						

FAIRBANKS, ALASKA (987 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	135	-26.9	71		0.0
1,000	31	41				
950	31	422	-20.4	57	76	3.1
900	31	817	-18.6	60	89	5.2
850	31	1,245	-17.0	62	105	3.7
800	31	1,700	-16.8	61	117	3.3
750	31	2,182	-18.2	58	125	3.7
700	31	2,695	-21.1	58	160	5.6
650	31	3,234	-24.6	56	159	6.0
600	31	3,816	-28.8	55	170	8.0
550	31	4,426	-33.4	55	182	9.5
500	31	5,096	-37.9		196	10.9
450	31	5,806	-42.9		208	12.0
400	30	6,596	-48.8		202	14.0
350	30	7,463	-54.1		204	14.6
300	30	8,443	-57.7		211	13.8
250	30	9,593	-57.4		241	13.8
200	30	11,011	-55.0		261	19.0
175	30	11,865	-54.5		259	21.6
150	29	12,851	-54.9		265	27.4
125	27	14,023	-55.5		265	28.8
100	25	15,450	-56.4		273	38.1
80	21	16,849	-57.9		273	43.9
60	20	18,675	-58.8		284	48.2
50	18	19,835	-59.2		274	54.6
40	16	21,232	-60.5			
30	14	23,070	-62.0			
25	12	24,197	-62.5			
20	8	25,559	-63.2			
15	5	27,424	-65.0			

FLINT, MICH. (986 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	234	- 2.0	85	210	3.7
1,000	31	122				
950	31	530	- 2.4	75	238	8.4
900	31	960	- 2.8	63	256	16.3
850	31	1,412	- 4.4	60	267	20.2
800	31	1,889	- 5.7	54	266	24.7
750	31	2,391	- 7.6	50	268	27.6
700	31	2,928	-10.0	47	268	30.1
650	31	3,494	-13.3	47	267	32.1
600	31	4,102	-16.7	47	266	34.2
550	31	4,746	-21.0	47	268	37.7
500	31	5,448	-25.7	45	270	38.1
450	31	6,198	-30.7	44	269	44.5
400	31	7,033	-36.1		268	48.0
350	31	7,948	-42.5		268	54.4
300	31	8,976	-48.5		267	58.5
250	31	10,163	-52.9		265	62.4
200	30	11,594	-54.9		270	58.3
175	30	12,448	-54.9		269	52.8
150	29	13,432	-55.2		272	50.7
125	28	14,598	-55.9		272	46.4
100	27	16,012	-57.3		275	42.0
80	26	17,417	-58.2		273	34.8
60	25	19,232	-59.3		274	28.4
50	25	20,374	-59.4		277	26.6
40	22	21,774	-59.4		276	28.8
30	13	23,571	-60.0		277	30.1
25	12	24,701	-60.6		275	35.8
20	7	26,067	-61.8			
15	5	27,811	-62.1			
10						

FORT WORTH, TEX. (998 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	180	7.7	70	226	2.1
1,000	30	164			291	2.1
950	30	590	10.2	56	240	14.4
900	30	1,039	9.7	44	256	15.9
850	30	1,512	7.6	40	271	14.6
800	30	2,010	5.5	38	281	15.2
750	30	2,534	3.4	36	280	18.7
700	30	3,093	1.0	32	278	21.4
650	30	3,682	- 2.0		280	24.1
600	30	4,318	- 5.9		277	28.0
550	30	4,988	-10.3		280	31.1
500	30	5,723	-15.2		280	34.2
450	30	6,501	-20.9		281	38.7
400	30	7,371	-27.2		282	43.3
350	30	8,318	-34.3		281	47.8
300	30	9,378	-42.7		282	55.2
250	30	10,585	-51.4		281	63.0
200	28	12,006	-58.3		286	72.3
175	28	12,843	-60.1		285	68.0
150	28	13,802	-61.7		284	61.4
125	27	14,924	-63.8		283	50.5
100	25	16,283	-67.3		278	47.4
80	22	17,619	-67.6		279	31.5
60	22	19,362	-64.9		277	19.2
50	21	20,480	-62.3		275	17.5
40	19	21,863	-59.1		274	16.9
30	17	23,677	-56.0		280	17.3
25	16	24,841	-54.5		273	21.8
20	14	26,279	-52.1		270	28.4
15	13	28,161	-49.6		268	42.0
10	5	30,881	-44.2			

GLASGOW, MONT. (929 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	696	- 4.3	71	279	1.4
1,000	31	112				
950	31	518				
900	31	950	- .7	58	281	7.6
850	31	1,408	.1	49	290	17.9
800	31	1,892	- 2.4	49	293	23.3
750	31	2,396	- 5.8	51	294	26.4
700	31	2,938	- 9.4	53	297	30.9
650	31	3,501	-13.3	54	296	32.8
600	31	4,111	-17.0	51	297	36.1
550	31	4,754	-21.3	48	288	31.9
500	31	5,456	-26.1	44	283	32.4
450	31	6,198	-31.4	40	281	32.8
400	31	7,035	-37.6		285	38.5
350	31	7,943	-44.3			
300	31	8,961	-51.0			
250	31	10,133	-56.0			
200	30	11,551	-57.1			
175	29	12,396	-55.7			
150	29	13,379	-55.2			
125	29	14,542	-55.8			
100	28	15,963	-56.9			
80	26	17,365	-57.6			
60	25	19,171	-57.9			
50	25	20,317	-58.9			
40	24	21,713	-59.7			
30	19	23,505	-60.5			
25	13	24,642	-61.5			
20	[illegible]	26,060	-62.5			
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GRAND JUNCTION, COLO. (856 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,474	- 3.3	75	115	2.9
1,000	31	233				
950	31	644				
900	31	1,078				
850	31	1,536			108	3.7
800	31	2,019	- 1.3	56	148	4.7
750	31	2,530	- 2.3	51	213	6.8
700	31	3,078	- 4.6	51	263	13.8
650	31	3,654	- 7.6	48	282	18.3
600	31	4,278	-10.6	43	290	23.3
550	31	4,936	-14.3	36	285	28.6
500	31	5,658	-19.1	34	294	33.2
450	31	6,425	-24.9		294	35.6
400	31	7,279	-31.4		282	33.6
350	31	8,211	-38.6		281	36.7
300	31	9,253	-46.2		282	41.6
250	31	10,443	-54.1			
200	31	11,855	-59.1			
175	31	12,691	-59.8			
150	31	13,657	-59.2			
125	31	14,795	-61.0			
100	31	16,173	-63.9			
80	31	17,539	-64.4			
60	30	19,314	-62.0			
50	30	20,447	-60.9			
40	29	21,846	-59.2			
30	20	23,671	-57.9			
25	9	24,830	-57.7			
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GREAT FALLS, MONT. (883 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,123	1.6	51	227	19.8
1,000	31	104				
950	31	523				
900	31	968				
850	31	1,426	2.1	41	245	27.2
800	31	1,913	- 1.2	42	263	26.6
750	31	2,422	- 4.9	45	276	28.6
700	31	2,962	- 8.6	47	285	31.3
650	31	3,533	-11.7	42	290	34.8
600	31	4,144	-15.7	44	291	35.9
550	31	4,794	-19.9	41	286	38.3
500	31	5,496	-24.9	41	284	43.1
450	31	6,249	-30.2	40	286	46.6
400	31	7,084	-36.1	40	288	50.7
350	31	7,997	-43.2		293	57.5
300	31	9,019	-50.6		290	58.3
250	31	10,190	-56.5		288	61.0
200	31	11,600	-58.0		285	58.5
175	30	12,430	-57.4		278	56.7
150	30	13,407	-56.3		280	54.8
125	30	14,567	-55.5		281	48.6
100	29	15,985	-56.6		282	42.6
80	29	17,395	-58.0		280	34.6
60	28	19,210	-57.6		283	30.9
50	27	20,366	-58.3		287	32.3
40	26	21,762	-58.3		292	30.9
30	26	23,564	-59.7		295	31.9
25	23	24,715	-60.1		300	33.8
20	14	26,092	-62.0		309	39.2
15	8	27,909	-60.4			
10						

See reference note at end of table

RAWINSONDE DATA

Average monthly values

DECEMBER 1957

GREEN BAY, WIS.
(988 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	210	- 4.7	84	284	3.3
1,000	31	110				
950	31	515	- 4.5	73	272	7.2
900	31	939	- 5.4	64	275	9.9
850	31	1,388	- 5.2	53	286	13.2
800	31	1,863	- 6.7	48	293	16.7
750	31	2,365	- 9.1	48	289	19.0
700	31	2,896	-11.9	49	286	21.6
650	31	3,456	-14.5	47	286	23.7
600	31	4,064	-17.9	47	282	28.2
550	31	4,704	-21.8	46	283	27.6
500	31	5,405	-26.5	44	284	29.3
450	31	6,152	-31.9	44	274	32.3
400	31	6,982	-37.8		257	32.8
350	31	7,890	-44.0		250	35.9
300	31	8,911	-49.9		240	38.9
250	31	10,092	-54.0		243	41.8
200	31	11,520	-54.6			
175	31	12,377	-54.2			
150	31	13,366	-54.3			
125	31	14,534	-55.0			
100	31	15,955	-56.8			
80	31	17,366	-58.0			
60	31	19,177	-59.2			
50	30	20,318	-59.9			
40	26	21,728	-60.2			
30	18	23,516	-60.1			
25	11	24,652	-60.1			
20	5	26,019	-61.6			
15						

GREENSBORO, N. C.
(988 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	273	1.9	79	289	2.5
1,000	31	177				
950	31	595	5.3	60	266	7.0
900	31	1,036	4.3	53	265	11.1
850	31	1,500	2.8	52	272	13.4
800	31	1,990	1.2	48	276	14.4
750	31	2,509	- 1.4	45	271	17.1
700	31	3,055	- 3.5	38	265	22.9
650	31	3,634	- 6.7		257	26.4
600	31	4,259	-10.6		260	27.6
550	31	4,920	-14.6	39	258	32.1
500	31	5,640	-19.1	38	261	33.6
450	31	6,412	-24.2	41	257	35.0
400	31	7,267	-30.0	44	263	34.4
350	31	8,205	-36.4	46	268	33.2
300	31	9,259	-43.3		270	33.4
250	31	10,466	-51.1			
200	31	11,896	-57.0			
175	31	12,739	-58.0			
150	31	13,710	-58.6			
125	31	14,852	-60.1			
100	31	16,237	-62.9			
80	29	17,606	-62.9			
60	27	19,391	-61.0			
50	27	20,529	-59.3			
40	26	21,933	-57.8			
30	25	23,758	-55.0			
25	16	24,939	-53.8			
20						
15						

HILO, T. H.
(1016 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	11	20.4	87	293	2.5
1,000	31	148	21.1	80	341	2.3
950	31	591	18.5	80	61	7.8
900	31	1,054	15.3	83	67	9.5
850	31	1,538	12.4	85	67	8.0
800	31	2,045	9.6	83	66	7.4
750	31	2,584	8.2	61	71	6.6
700	31	3,149	6.3	49	84	4.7
650	31	3,751	3.3	46	90	3.9
600	31	4,400	- .2	44	255	.6
550	31	5,090	- 4.1	43	276	5.2
500	31	5,838	- 8.3	40	276	11.1
450	31	6,646	-13.3	39	277	17.5
400	31	7,537	-19.4		280	24.1
350	31	8,517	-26.0		271	33.8
300	31	9,616	-33.7		271	44.5
250	31	10,871	-42.8		279	52.5
200	31	12,341	-53.7		285	55.8
175	31	13,188	-59.6		285	54.8
150	31	14,139	-65.8		284	40.6
125	31	15,230	-71.7		281	28.0
100	31	16,530	-76.7		301	17.9
80	31	17,809	-76.9		339	3.7
60	29	19,495	-68.6		68	3.1
50	29	20,600	-64.4		84	5.8
40	28	21,980	-59.9		14	2.1
30	27	23,802	-54.3		115	1.2
25	21	24,978	-51.8			
20	8	26,417	-49.7			
15						

INTERNAT. FALLS, MINN.
(968 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	360	-11.5	68	239	2.7
1,000	31	108				
950	31	502	-10.3	68	241	5.4
900	31	918	- 9.7	67	267	11.9
850	31	1,360	- 9.2	65	288	14.2
800	31	1,828	- 9.4	59	296	18.3
750	31	2,325	-11.3	51	294	22.2
700	31	2,852	-13.6	42	295	25.6
650	31	3,409	-16.3	39	294	27.6
600	31	4,011	-19.8	39	291	32.1
550	31	4,647	-23.9	40	293	33.8
500	31	5,341	-28.9	41	294	37.1
450	31	6,081	-34.2		292	39.6
400	31	6,903	-39.8		292	47.4
350	31	7,804	-45.9		292	49.7
300	31	8,817	-51.5		293	53.2
250	31	9,990	-55.2		295	55.6
200	31	11,414	-54.6		290	52.7
175	30	12,271	-53.5		283	51.1
150	30	13,264	-53.4		285	49.0
125	30	14,435	-54.2		285	44.9
100	30	15,864	-55.3		284	43.9
80	30	17,284	-56.5		284	43.1
60	29	19,105	-58.7		286	39.6
50	28	20,248	-59.4		286	41.6
40	28	21,641	-60.6		287	37.9
30	23	23,427	-62.0		284	44.5
25	18	24,565	-62.6		281	47.2
20	12	25,925	-62.2			
15	5	27,743	-63.9			

JACKSON, MISS.
(1010 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	101	5.9	85	184	1.7
1,000	31	181	7.7	72	198	3.9
950	31	609	8.7	57	242	10.7
900	31	1,052	6.9	51	257	14.4
850	31	1,521	5.0	48	270	15.2
800	31	2,015	3.8	41	271	15.5
750	31	2,540	1.9	39	276	17.5
700	31	3,092	- .2		277	21.2
650	31	3,683	- 3.5		282	24.5
600	31	4,311	- 7.4		282	28.6
550	31	4,982	-11.3		283	32.6
500	31	5,710	-16.2		280	37.5
450	31	6,489	-21.7		280	42.9
400	31	7,353	-27.8		279	45.7
350	31	8,300	-34.1		282	49.2
300	31	9,363	-41.6		279	53.4
250	31	10,577	-50.1		274	59.8
200	31	12,009	-57.2		279	67.6
175	31	12,850	-58.9		283	63.3
150	31	13,813	-61.0		281	59.3
125	31	14,940	-63.6		279	53.6
100	31	16,300	-66.5		280	39.4
80	31	17,647	-67.4		273	30.9
60	31	19,393	-64.1		274	20.8
50	30	20,521	-61.3		276	18.8
40	30	21,915	-58.4		277	10.9
30	28	23,745	-54.9		270	15.9
25	23	24,912	-52.5		276	18.7
20	12	26,357	-48.7			
15						

JACKSONVILLE, FLA
(1022 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	6	7.4	88	305	3.5
1,000	31	187	11.2	71	311	2.7
950	31	610	10.5	64	265	3.3
900	31	1,065	9.0	59	263	5.2
850	31	1,537	6.6	59	270	7.8
800	31	2,034	5.1	44	271	10.9
750	31	2,555	3.5	36	267	13.6
700	31	3,118	1.3		266	17.3
650	31	3,702	- 1.7		266	21.2
600	31	4,344	- 5.4		265	26.4
550	31	5,013	- 9.6		262	28.4
500	31	5,753	-14.4		264	33.4
450	31	6,535	-19.9		269	40.6
400	31	7,408	-26.3		271	44.9
350	31	8,361	-32.8		273	49.0
300	31	9,429	-41.0		275	49.7
250	31	10,644	-50.0		275	54.2
200	31	12,076	-57.8		276	60.2
175	30	12,915	-59.7		275	59.8
150	29	13,875	-62.2		272	60.0
125	29	14,993	-65.1		271	54.4
100	26	16,342	-67.9		270	45.5
80	26	17,683	-68.2		271	37.3
60	26	19,425	-64.3		267	23.9
50	25	20,548	-61.1		265	17.9
40	25	21,944	-58.4		266	16.1
30	24	23,775	-54.4		272	19.8
25	23	24,951	-52.1		272	23.3
20	18	26,412	-49.2		275	31.3
15	15	28,304	-45.9		274	35.6
10	5	30,979	-41.3			

KING SALMON, ALASKA
(998 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	15	-17.1	69	12	1.9
1,000	31				327	2.9
950	31	390	-13.1	68	350	6.6
900	31	801	-13.8	66	336	8.7
850	31	1,236	-13.5	63	319	9.5
800	31	1,697	-14.4	56	300	11.9
750	31	2,182	-17.1	52	296	12.8
700	31	2,699	-20.3	49	298	13.8
650	31	3,239	-23.9	49	290	13.4
600	31	3,824	-27.7	45	283	15.7
550	31	4,440	-31.6	45	282	18.5
500	31	5,114	-36.1		280	19.4
450	31	5,832	-40.9		272	19.2
400	31	6,633	-45.8		270	22.3
350	31	7,514	-49.9		268	25.5
300	31	8,517	-51.5		270	29.1
250	31	9,702	-50.8		270	32.8
200	31	11,160	-49.6		267	34.6
175	31	12,035	-49.6		266	37.1
150	31	13,045	-49.3		268	39.4
125	31	14,239	-49.9		265	41.6
100	30	15,684	-50.5		268	43.5
80	29	17,134	-50.7		270	50.5
60	29	19,010	-51.4		269	52.1
50	27	20,187	-52.3		271	56.0
40	26	21,620	-53.1		273	64.7
30	23	23,478	-53.4		275	74.8
25	20	24,661	-53.9		277	78.1
20	14	26,073	-54.3		278	91.5
15	6	27,952	-53.9			
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KOTZEBUE, ALASKA
(1006 MB)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	5	-24.1	77	70	5.4
1,000	31	47			61	4.3
950	31	430	-17.6	60	52	4.5
900	31	835	-16.9	61	40	3.7
850	31	1,264	-17.5	59	15	5.8
800	31	1,717	-18.7	54	68	3.3
750	31	2,195	-20.7	51	61	3.3
700	31	2,705	-23.7	49	42	3.7
650	31	3,240	-27.2	47	42	4.5
600	31	3,816	-30.9	43	31	2.3
550	31	4,426	-34.9	39	23	2.5
500	31	5,089	-39.5		350	5.1
450	31	5,800	-44.0		339	4.9
400	31	6,588	-48.8		318	5.6
350	31	7,456	-53.7		306	8.0
300	31	8,437	-57.4		296	4.9
250	31	9,589	-57.0		282	6.0
200	29	11,003	-54.9		269	12.8
175	28	11,860	-54.6		264	16.3
150	28	12,846	-55.0		271	16.5
125	28	14,010	-55.7		265	26.0
100	22	15,458	-56.4		260	33.4
80	18	16,895	-57.1		258	36.5
60	14	18,701	-59.8			
50	12	19,804	-62.2			
40	11	21,205	-63.2			
30	10	22,986	-64.1			
25	7	24,071	-64.6			
20						
15						
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LAKE CHARLES, LA.
(1021 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	5	9.6	85	68	1.4
1,000	31	176	12.6	70	122	1.9
950	31	605	11.2	61	238	3.1
900	31	1,056	9.1	51	275	4.7
850	31	1,529	7.5	42	289	7.8
800	31	2,027	6.5	35	276	11.1
750	31	2,553	4.3	31	275	13.6
700	31	3,114	1.8	30	266	16.3
650	31	3,704	- 1.3		268	19.2
600	31	4,342	- 4.8		270	23.9
550	31	5,015	- 9.0		278	26.0
500	31	5,753	-14.3		285	28.8
450	31	6,538	-20.0		283	29.0
400	31	7,407	-26.2		285	36.7
350	31	8,359	-33.2		282	38.1
300	31	9,425	-41.1		290	43.7
250	31	10,641	-49.9		290	53.4
200	31	12,074	-57.6			
175	31	12,912	-59.8			
150	31	13,871	-62.2			
125	31	14,989	-65.5			
100	31	16,337	-68.0			
80	31	17,674	-69.0			
60	31	19,408	-65.4			
50	30	20,528	-61.9			
40	30	21,921	-58.5			
30	29	23,748	-54.7			
25	24	24,902	-53.1			
20	9	26,342	-50.7			
15						
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LANDER, WYO.
(827 MB)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	1,696	- 4.7	59	235	1.4
1,000	31	176				
950	31	584				
900	31	1,023				
850	31	1,477				
800	31	1,959	.1	40	287	2.1
750	31	2,472	- 1.2	35	285	8.2
700	31	3,023	- 4.7	37	282	17.3
650	31	3,593	- 8.3	38	292	27.0
600	31	4,219	-11.9	34	295	31.9
550	31	4,870	-16.2	33	290	32.6
500	31	5,591	-21.4		286	34.4
450	31	6,350	-27.3		280	35.0
400	31	7,198	-33.7		279	41.8
350	30	8,115	-41.2		283	40.4
300	30	9,144	-49.3		284	43.3
250	30	10,318	-56.4			
200	30	11,722	-59.6			
175	30	12,559	-59.1			
150	30	13,526	-58.6			
125	30	14,671	-59.3			
100	29	16,066	-60.8			
80	29	17,452	-61.5			
60	29	19,239	-60.6			
50	28	20,373	-60.5			
40	23	21,771	-60.3			
30	15	23,569	-59.0			
25	7	24,740	-59.7			
20						
15						
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LAS VEGAS, NEV.
(944 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	660	3.7	53	226	3.3
1,000	31	186				
950	31	608				
900	31	1,053	9.2	32	1	2.1
850	31	1,525	7.3	31	348	4.7
800	31	2,022	5.7	30	298	4.1
750	31	2,546	3.5	28	274	7.2
700	31	3,106	1.2		279	9.5
650	31	3,694	- 2.3		281	12.0
600	31	4,329	- 6.5		281	16.5
550	31	4,995	-11.1		280	21.0
500	31	5,730	-16.2		278	23.1
450	31	6,506	-22.1		273	27.6
400	31	7,370	-28.9		273	31.7
350	31	8,312	-36.0		273	35.0
300	31	9,365	-44.0		273	40.4
250	31	10,567	-52.5		273	44.1
200	31	11,984	-59.0		269	52.7
175	31	12,818	-60.1		271	51.9
150	31	13,781	-60.2		269	46.2
125	31	14,913	-62.2		272	43.5
100	31	16,286	-64.4		273	36.5
80	30	17,641	-65.7		276	26.8
60	30	19,403	-62.7		292	15.5
50	29	20,528	-61.1		294	11.1
40	28	21,924	-58.9		311	8.4
30	28	23,740	-56.6		317	10.5
25	27	24,898	-55.4		310	15.0
20	22	26,307	-54.2		302	19.4
15	14	28,152	-53.8		288	27.4
10						

LITTLE ROCK, ARK.
(1010 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	79	6.0	81	227	3.7
1,000	31	160			223	6.8
950	31	586	8.2	63	244	16.9
900	31	1,030	6.2	61	259	19.4
850	31	1,498	4.6	52	266	17.1
800	31	1,991	2.4	48	270	18.1
750	31	2,511	.7	41	272	18.7
700	31	3,063	- 2.1	37	274	21.0
650	31	3,648	- 5.3		269	23.3
600	31	4,274	- 8.5		268	26.8
550	31	4,941	-12.6		281	31.1
500	31	5,666	-17.6		279	30.5
450	31	6,440	-23.2		283	37.5
400	31	7,300	-29.4		284	45.3
350	31	8,241	-36.3		285	48.2
300	31	9,295	-43.7			
250	31	10,500	-51.3			
200	30	11,926	-57.4			
175	30	12,768	-58.3			
150	30	13,737	-59.5			
125	28	14,877	-62.2			
100	27	16,253	-64.6			
80	24	17,619	-65.1			
60	22	19,381	-63.8			
50	19	20,509	-61.3			
40	18	21,907	-59.2			
30	15	23,730	-55.6			
25	13	24,912	-53.6			
20						
15						
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McGRATH, ALASKA
(990 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	103	-26.3	77		.0
1,000	31	32				
950	31	410	-20.0	70	47	5.4
900	31	811	-18.2	74	56	6.2
850	31	1,239	-17.0	72	59	5.1
800	31	1,694	-16.6	64	52	4.3
750	31	2,175	-18.5	58	27	3.3
700	31	2,689	-21.5	51	3	2.1
650	31	3,228	-24.9	49	280	1.7
600	31	3,809	-28.9	47	259	1.9
550	31	4,422	-33.2	45	239	2.5
500	31	5,089	-37.9		243	2.7
450	31	5,804	-42.9		243	3.7
400	31	6,593	-48.1		238	7.0
350	31	7,464	-52.6		239	7.2
300	31	8,454	-55.2		250	11.3
250	31	9,619	-54.2		264	17.1
200	31	11,057	-52.2		266	22.3
175	31	11,922	-51.9		265	26.2
150	31	12,920	-52.5		269	30.5
125	31	14,097	-53.0		267	35.6
100	30	15,537	-53.4		272	42.7
80	30	16,968	-54.5		272	49.4
60	30	18,804	-55.9		273	60.4
50	29	19,966	-56.4		278	67.2
40	27	21,383	-56.9		277	74.0
30	19	23,220	-58.9			
25	8	24,411	-59.0			
20						
15						
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MEDFORD, OREG
(972 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	401	2.0	96		.0
1,000	31	172				
950	31	588	2.3	87	215	.8
900	31	1,027	4.5	74	189	6.6
850	31	1,493	3.8	65	208	12.2
800	31	1,984	1.4	63	235	18.7
750	30	2,505	- 1.0	55	249	23.5
700	30	3,055	- 4.0	51	254	25.1
650	30	3,632	- 7.5	49	260	26.8
600	30	4,256	-11.5	48	255	28.6
550	30	4,912	-15.9	48	258	27.4
500	30	5,630	-20.7	42	266	31.1
450	30	6,393	-26.4	41	264	28.8
400	30	7,243	-32.6	39	267	31.1
350	30	8,170	-39.9			
300	30	9,206	-47.9			
250	30	10,388	-55.5			
200	30	11,794	-59.2			
175	30	12,632	-58.7			
150	30	13,601	-58.5			
125	29	14,744	-59.6			
100	29	16,136	-60.5			
80	29	17,525	-60.5			
60	29	19,319	-59.5			
50	29	20,463	-58.8			
40	29	21,866	-58.6			
30	27	23,688	-56.8			
25	23	24,857	-56.8			
20	11	26,296	-57.1			
15						
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MIAMI, FLA.
(1020 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	4	15.8	83	28	3.3
1,000	31	169	17.5	72	42	7.0
950	31	608	15.1	72	66	8.7
900	31	1,064	12.4	70	83	6.8
850	31	1,542	10.1	66	107	3.3
800	31	2,046	8.3	54	213	1.6
750	31	2,579	7.6		255	5.6
700	31	3,145	5.1		255	7.8
650	31	3,744	1.9		257	9.7
600	31	4,389	- 1.7		260	12.8
550	30	5,070	- 6.2		258	19.2
500	30	5,816	-11.4		262	19.2
450	30	6,609	-17.0		262	22.0
400	30	7,491	-23.4		269	25.6
350	30	8,455	-30.4		267	31.7
300	30	9,533	-38.8		274	37.3
250	30	10,760	-48.2		278	42.7
200	30	12,199	-57.0		277	49.9
175	30	13,038	-60.7		276	47.6
150	30	13,990	-64.3		273	48.4
125	30	15,096	-67.4		279	42.2
100	28	16,434	-71.1		273	30.1
80	27	17,746	-71.9		276	21.8
60	27	19,459	-66.3		262	12.8
50	27	20,574	-62.5		261	11.9
40	25	21,970	-57.4		266	12.6
30	22	23,800	-54.5		268	11.3
25	20	24,977	-50.8		280	13.8
20	20	26,442	-47.1		279	14.4
15	16	28,364	-42.6		273	25.6
10	6	31,119	-37.4			

See reference note at end of table

RAWINSONDE DATA

Average monthly values

DECEMBER 1957

MIDLAND, TEX. (919 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	871	3.5	64	243	3.9
1,000--	31	178				
950----	31	598				
900----	31	1,043	9.2	42	256	6.4
850----	31	1,518	9.8	28	286	10.5
800----	31	2,019	8.0	27	282	12.4
750----	31	2,546	5.6	29	278	16.3
700----	31	3,111	2.8		280	20.0
650----	31	3,702	- .5		280	22.3
600----	31	4,343	- 4.6		281	22.7
550----	31	5,017	- 9.1		285	22.5
500----	31	5,754	-14.3		277	26.8
450----	31	6,539	-19.7		277	26.0
400----	31	7,411	-26.0		273	31.3
350----	31	8,364	-33.3		275	35.9
300----	31	9,429	-41.5		280	39.2
250----	31	10,644	-50.0		282	44.7
200----	31	12,076	-57.9		283	52.8
175----	31	12,914	-60.0		281	60.8
150----	30	13,870	-62.4			
125----	30	14,989	-64.5			
100----	30	16,342	-67.7			
80-----	30	17,683	-68.1			
60-----	29	19,422	-65.1			
50-----	29	20,542	-62.2			
40-----	29	21,929	-59.9			
30-----	29	23,742	-56.3			
25-----	21	24,912	-54.4			
20-----	7	26,334	-53.1			

MONTGOMERY, ALA. (1015 MB)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	61	5.6	83	208	1.4
1,000--	31	183	7.8	70	217	2.9
950----	31	609	8.3	59	244	8.0
900----	31	1,054	6.7	51	258	10.7
850----	31	1,522	5.1	44	263	12.2
800----	31	2,016	3.4	41	270	15.2
750----	31	2,542	2.0	38	272	19.4
700----	31	3,092	- .5		273	22.0
650----	31	3,683	- 3.6		270	24.9
600----	31	4,311	- 6.9		270	29.5
550----	31	4,985	-11.0		271	31.9
500----	31	5,712	-16.2		269	36.7
450----	31	6,496	-21.7		268	41.2
400----	31	7,356	-27.8		266	46.0
350----	31	8,304	-34.1		267	52.5
300----	31	9,366	-41.7		269	57.7
250----	31	10,579	-50.2		269	62.2
200----	31	12,010	-57.9		274	65.1
175----	30	12,847	-59.2		276	62.2
150----	30	13,809	-60.8		276	60.4
125----	29	14,938	-63.2		272	56.0
100----	26	16,299	-66.4		274	42.6
80-----	26	17,646	-67.0		272	32.6
60-----	25	19,397	-63.9		268	23.1
50-----	25	20,524	-61.4		274	17.5
40-----	25	21,917	-58.6		270	15.5
30-----	22	23,746	-54.5		273	16.9
25-----	18	24,925	-52.2		272	20.2
20-----	7	26,364	-50.3			

NANTUCKET, MASS (1016 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	14	4.1	80	285	3.9
1,000--	31	141	4.8	72	292	6.6
950----	31	556	3.2	68	269	11.5
900----	31	995	1.7	60	271	13.2
850----	31	1,454	- .5	58	266	14.8
800----	31	1,938	- 2.0	53	260	20.2
750----	31	2,447	- 4.1	49	259	23.9
700----	31	2,991	- 6.7	45	260	27.0
650----	31	3,563	- 9.6	40	253	27.4
600----	31	4,182	-13.1	41	249	33.2
550----	31	4,838	-17.3	46	256	30.7
500----	31	5,549	-21.8	47	274	29.5
450----	30	6,311	-26.7	43		
400----	30	7,159	-32.3	41		
350----	30	8,088	-38.8			
300----	30	9,129	-46.1			
250----	30	10,324	-52.7			
200----	30	11,750	-56.6			
175----	30	12,596	-57.5			
150----	30	13,568	-58.1			
125----	28	14,706	-58.7			
100----	27	16,102	-59.5			
80-----	27	17,494	-60.6			
60-----	27	19,289	-59.8			
50-----	27	20,431	-59.6			
40-----	27	21,829	-59.2			
30-----	26	23,641	-58.2			
25-----	17	24,796	-57.8			
20-----	6	26,163	-58.6			

NASHVILLE, TENN. (998 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	177	4.6	82	218	4.1
1,000--	31	163			203	5.4
950----	31	583	5.5	68	237	15.3
900----	31	1,025	4.2	60	254	17.3
850----	31	1,488	2.2	58	268	17.5
800----	31	1,977	.4	53	276	19.0
750----	31	2,489	- 2.1	49	275	19.2
700----	31	3,038	- 4.6	41	280	25.6
650----	31	3,612	- 7.7	40	285	30.1
600----	31	4,238	-11.1	35	285	29.1
550----	31	4,895	-15.1		273	29.7
500----	31	5,616	-19.7		264	32.4
450----	31	6,384	-25.2		270	36.1
400----	31	7,236	-31.2	39	270	36.3
350----	31	8,171	-37.1			
300----	31	9,222	-44.2			
250----	31	10,424	-51.8			
200----	31	11,851	-56.9			
175----	31	12,696	-57.8			
150----	30	13,662	-58.5			
125----	28	14,816	-60.3			
100----	25	16,205	-63.3			
80-----	22	17,579	-64.0			
60-----	15	19,367	-62.6			
50-----	13	20,508	-61.1			
40-----	12	21,907	-58.8			
30-----	10	23,730	-56.1			
25-----	[illegible]	24,896	-54.5			
20-----						

N. Y. INT. AP, IDLEWILD (1018 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	5	2.8	71	280	5.1
1,000--	31	148	2.6	66	280	6.6
950----	31	563	1.5	63	277	10.3
900----	31	998	.3	62	279	12.8
850----	31	1,455	- 1.1	56	276	16.1
800----	31	1,938	- 2.8	53	271	20.4
750----	31	2,449	- 4.9	47	266	25.5
700----	31	2,988	- 7.0		266	30.1
650----	31	3,565	-10.0	39	266	35.0
600----	30	4,176	-13.7	43	265	39.2
550----	30	4,832	-17.7		267	42.9
500----	30	5,540	-22.2	46	265	45.9
450----	30	6,301	-27.3	45	262	49.7
400----	30	7,146	-33.0	46	262	54.0
350----	30	8,072	-39.6		260	59.5
300----	30	9,111	-46.9		261	62.6
250----	29	10,311	-53.5		262	63.3
200----	29	11,732	-57.2		264	60.2
175----	29	12,577	-57.3		262	57.7
150----	29	13,552	-57.2		262	57.7
125----	28	14,698	-58.1		259	50.1
100----	25	16,096	-59.8		261	41.8
80-----	24	17,487	-59.9		260	36.1
60-----	24	19,287	-59.3		259	27.2
50-----	23	20,433	-58.7		266	22.0
40-----	22	21,838	-57.9		273	22.2
30-----	17	23,655	-57.7		274	20.4
25-----	12	24,802	-57.7			
20-----						

NOME, ALASKA (1003 MB)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	7	-19.4	75	66	4.5
1,000--	31	28			26	2.1
950----	31	415	-15.2	68	71	5.2
900----	31	824	-16.0	66	65	5.1
850----	31	1,255	-16.2	62	35	5.1
800----	31	1,711	-17.8	58	29	6.2
750----	31	2,189	-19.9	53	13	6.2
700----	31	2,701	-22.6	49	360	6.6
650----	31	3,238	-25.9	44	345	6.4
600----	31	3,817	-29.7	42	332	6.8
550----	31	4,428	-33.8	42	325	6.6
500----	31	5,095	-38.2		322	8.0
450----	31	5,805	-43.0		321	10.5
400----	31	6,599	-48.2		316	9.1
350----	31	7,469	-52.8		320	7.8
300----	31	8,456	-56.2		305	11.5
250----	31	9,615	-55.3		286	14.6
200----	31	11,048	-53.2		282	22.3
175----	31	11,909	-52.9		278	25.1
150----	31	12,904	-52.9		275	29.9
125----	30	14,086	-53.6		269	33.6
100----	28	15,525	-54.0		275	39.8
80-----	27	16,958	-54.8		275	51.9
60-----	24	18,799	-55.1		274	58.5
50-----	24	19,961	-55.9		274	66.5
40-----	24	21,376	-57.3		270	69.0
30-----	19	23,163	-58.3			
25-----	17	24,289	-59.1			
20-----	11	25,654	-60.4			
15-----						
10-----						

NORFOLK, VA (1019 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	9	5.8	78	253	1.7
1,000--	31	163	7.1	68	235	4.7
950----	31	583	6.0	59	241	8.7
900----	31	1,027	4.6	52	245	12.6
850----	31	1,492	3.2	44	252	16.3
800----	31	1,982	1.5	40	253	19.6
750----	31	2,500	- .8	39	252	22.9
700----	31	3,048	- 3.4		256	26.4
650----	31	3,627	- 6.5		250	30.7
600----	31	4,253	-10.6		250	34.8
550----	31	4,911	-14.9		246	37.5
500----	31	5,632	-19.7	44	251	39.6
450----	31	6,402	-24.9	44	249	45.7
400----	31	7,255	-30.9	49	252	50.5
350----	31	8,189	-37.5		256	53.6
300----	31	9,238	-44.6		256	58.5
250----	31	10,439	-51.8		261	62.6
200----	31	11,866	-57.4		259	67.4
175----	31	12,707	-58.5		263	64.5
150----	30	13,669	-58.9		259	58.9
125----	25	14,812	-60.5		260	56.9
100----	25	16,195	-63.0		259	45.9
80-----	25	17,570	-63.0		260	35.8
60-----	22	19,344	-61.2		268	29.1
50-----	16	20,469	-60.3		266	22.2
40-----	15	21,864	-58.9		260	19.6
30-----	12	23,679	-56.1			
25-----	10	24,837	-56.3			
20-----	7	26,258	-55.7			
15-----						
10-----						

NORTH PLATTE, NEB. (916 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	848	- 4.6	83	297	3.5
1,000--	31	149				
950----	31	557				
900----	31	986	.0	62	295	5.6
850----	31	1,449	3.5	38	303	11.1
800----	31	1,939	1.5	35	303	14.0
750----	31	2,454	- 1.5	36	297	16.1
700----	31	3,003	- 4.6	36	293	20.8
650----	31	3,577	- 8.3	37	288	25.5
600----	31	4,199	-12.2	34	288	25.5
550----	31	4,854	-16.6	35	288	24.1
500----	31	5,570	-21.3		284	26.4
450----	31	6,329	-26.8	37	278	28.2
400----	31	7,179	-33.3	39	272	35.0
350----	31	8,104	-40.0		273	38.7
300----	31	9,141	-46.9		272	41.2
250----	31	10,330	-53.6		267	49.5
200----	30	11,748	-57.2		269	46.2
175----	30	12,593	-57.1		274	31.5
150----	30	13,570	-56.8		267	42.9
125----	30	14,722	-58.2		271	36.1
100----	30	16,121	-59.7		269	32.8
80-----	28	17,509	-60.1		274	27.8
60-----	28	19,303	-60.2		254	23.5
50-----	27	20,440	-59.5		275	26.4
40-----	23	21,828	-59.5			
30-----	20	23,621	-59.1			
25-----	11	24,740	-58.6			
20-----						
15-----						
10-----						

OAKLAND, CALIF. (1020 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	6	6.8	85	100	3.7
1,000--	31	173	9.2	78	92	3.5
950----	31	600	10.3	64	39	1.0
900----	31	1,050	9.9	52	263	2.5
850----	31	1,523	7.7	49	272	5.4
800----	31	2,020	5.3	43	270	7.2
750----	31	2,542	2.6	41	270	9.1
700----	31	3,100	- .6	37	271	11.1
650----	30	3,692	- 4.0	33	277	14.2
600----	30	4,319	- 8.1	33	275	16.9
550----	30	4,986	-12.5		273	20.8
500----	29	5,716	-17.5		270	24.3
450----	29	6,489	-23.3		271	27.0
400----	29	7,349	-29.9	34	273	28.8
350----	29	8,285	-37.4		273	32.3
300----	29	9,332	-45.5		273	37.5
250----	29	10,525	-53.9		274	42.6
200----	27	11,952	-60.2		269	48.0
175----	26	12,787	-60.7		270	47.6
150----	22	13,743	-60.1		274	46.0
125----	20	14,864	-61.9		272	41.4
100----	19	16,238	-63.8		276	38.5
80-----	19	17,604	-64.3		278	28.4
60-----	18	19,367	-62.8		296	19.0
50-----	18	20,495	-60.8		309	15.0
40-----	17	21,885	-58.5		315	13.8
30-----	16	23,694	-56.5		323	14.6
25-----	15	24,851	-55.1		320	18.3
20-----	14	26,270	-55.1		312	18.7
15-----	14	28,108	-54.2		307	27.6
10-----	6	30,741	-52.7			

OKLAHOMA CITY, OKLA. (971 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	392	2.9	75	233	2.7
1,000--	31	150				
950----	31	568	6.6	55	251	6.8
900----	31	1,014	7.8	47	257	10.5
850----	31	1,484	6.7	41	264	9.3
800----	31	1,981	5.1	37	286	10.5
750----	31	2,505	2.5		294	15.3
700----	31	3,059	- .5		285	19.6
650----	31	3,645	- 4.0		274	23.3
600----	31	4,275	- 7.8		275	28.8
550----	31	4,940	-12.2		281	31.3
500----	31	5,668	-17.3		289	32.6
450----	31	6,445	-22.9		285	40.2
400----	31	7,302	-29.0		284	41.0
350----	31	8,243	-36.0		289	45.9
300----	31	9,297	-43.8		295	50.3
250----	31	10,499	-52.1			
200----	29	11,918	-57.9			
175----	29	12,756	-59.1			
150----	29	13,721	-60.2			
125----	29	14,853	-62.4			
100----	28	16,223	-65.8			
80-----	26	17,571	-66.1			
60-----	24	19,329	-63.2			
50-----	24	20,453	-61.8			
40-----	23	21,841	-60.2			
30-----	20	23,646	-57.6			
25-----	20	24,801	-56.1			
20-----	18	26,230	-55.1			
15-----	13	28,076	-52.7			
10-----						

OMAHA, NEBR (967 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	403	- 2.3	77	280	1.6
1,000--	30	132				
950----	30	542	.1	62	307	3.3
900----	30	977	2.2	47	294	8.5
850----	30	1,438	1.3	39	293	12.6
800----	30	1,925	- .6	42	297	15.5
750----	30	2,440	- 3.3	43	295	18.8
700----	30	2,982	- 6.3	43	293	21.6
650----	30	3,558	- 9.8	40	296	25.8
600----	30	4,173	-13.3	37	294	28.8
550----	30	4,827	-17.6	33	293	33.0
500----	30	5,538	-22.8		290	34.6
450----	30	6,295	-28.5		292	38.1
400----	30	7,138	-34.6		291	42.7
350----	30	8,058	-41.2		293	49.9
300----	30	9,090	-47.7		292	57.9
250----	30	10,278	-53.9		288	64.5
200----	30	11,696	-57.3		286	64.3
175----	30	12,544	-55.6		286	60.6
150----	30	13,525	-56.0		283	54.4
125----	30	14,682	-57.2		281	52.1
100----	30	16,088	-58.9		281	40.2
80-----	30	17,484	-60.6		283	30.1
60-----	30	19,278	-59.9		282	27.2
50-----	30	20,418	-59.9		286	23.9
40-----	30	21,815	-59.4		283	19.8
30-----	25	23,620	-59.2		283	23.5
25-----	22	24,771	-58.4		280	24.7
20-----	15	26,196	-57.1		274	33.4
15-----	9	28,018	-58.0			

PEORIA, ILL. (991 MB)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	201	- 0.9	79	260	1.2
1,000--	31	127				
950----	31	539	1.1	61	251	7.4
900----	31	973	1.2	54	270	13.6
850----	31	1,432	- .2	49	272	17.9
800----	31	1,916	- 2.4	47	273	21.2
750----	31	2,424	- 5.0	43	274	23.9
700----	31	2,966	- 7.8	41	278	27.8
650----	31	3,535	-10.9	42	275	30.1
600----	31	4,150	-14.5	44	275	36.9
550----	31	4,799	-18.7	45	278	40.8
500----	31	5,509	-23.3	43	283	42.7
450----	31	6,264	-28.6	39	282	44.7
400----	31	7,106	-34.7		280	49.7
350----	31	8,026	-41.0		273	55.2
300----	31	9,059	-47.6		271	59.7
250----	31	10,249	-52.8		274	59.5
200----	31	11,678	-55.7		274	62.0
175----	31	12,528	-55.7		274	59.7
150----	31	13,510	-55.9		272	56.9
125----	29	14,663	-56.7		276	52.7
100----	29	16,072	-58.5		279	44.5
80-----	29	17,470	-59.8		274	30.5
60-----	29	19,266	-60.0		277	25.1
50-----	28	20,409	-59.3		279	22.0
40-----	26	21,812	-59.2		278	20.0
30-----	22	23,624	-58.0		286	23.9
25-----	18	24,772	-57.8		286	28.0
20-----	14	26,181	-57.2			
15-----	6	28,031	-56.5			

PITTSBURGH, PA. (976 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	353	0.2	78	220	4.1
1,000--	31	154				
950----	31	565	.5	72	226	8.7
900----	31	999	- .8	67	244	15.9
850----	31	1,454	- 2.1	60	254	22.2
800----	31	1,935	- 3.6	52	259	25.6
750----	31	2,443	- 5.6	50	259	26.8
700----	31	2,982	- 8.1	51	259	31.1
650----	31	3,552	-11.3	53	258	33.4
600----	31	4,166	-14.9	52	261	36.5
550----	31	4,816	-18.8	52	260	40.0
500----	31	5,524	-23.3	50	257	42.6
450----	31	6,280	-28.7	50	256	50.7
400----	31	7,122	-34.4	45	254	56.7
350----	31	8,043	-40.8		248	64.7
300----	31	9,077	-47.7		247	70.1
250----	31	10,263	-54.2		246	66.3
200----	29	11,667	-57.6		247	73.6
175----	27	12,505	-57.5		248	63.5
150----	21	13,455	-56.8		254	58.7
125----	18	14,594	-57.2		256	54.4
100----	9	16,028	-59.3			
80-----	[illegible]	17,420	-59.5			
60-----	5	19,206	-58.8			
50-----						
40-----						
30-----						
25-----						
20-----						
15-----						

PORTLAND, ME. (1014 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	20	- 0.9	82	256	4.1
1,000--	31	128			267	6.0
950----	31	537	.1	63	270	12.6
900----	31	972	- 1.3	60	275	14.6
850----	31	1,426	- 2.5	57	269	19.2
800----	31	1,906	- 3.9	55	266	21.6
750----	30	2,409	- 6.5	51	265	25.5
700----	30	2,949	- 9.0	46	263	29.5
650----	30	3,515	-12.2	47	261	34.2
600----	30	4,128	-15.7	48	259	38.9
550----	30	4,773	-19.8	49	257	42.6
500----	30	5,481	-24.5	49	256	46.6
450----	30	6,234	-29.6	48	255	52.3
400----	30	7,072	-34.9	47	254	58.1
350----	30	7,993	-40.6		255	65.1
300----	30	9,030	-46.5		255	73.4
250----	30	10,225	-52.4		258	68.2
200----	30	11,656	-55.2		255	56.0
175----	30	12,508	-55.5		250	57.9
150----	30	13,490	-56.1		250	53.6
125----	30	14,648	-56.7		254	46.8
100----	30	16,058	-58.1		253	42.7
80-----	29	17,463	-58.9		252	35.9
60-----	29	19,268	-58.7		254	26.8
50-----	28	20,408	-59.3		254	24.9
40-----	28	21,809	-58.7		256	27.8
30-----	27	23,617	-58.6		260	34.0
25-----	24	24,765	-58.5		262	35.4
20-----	18	26,182	-58.2		270	43.3
15-----	7	28,058	-57.5			

RAPID CITY, S. DAK. (901 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	966	- 1.7	64	294	3.1
1,000--	31	126				
950----	31	537				
900----	31	974			292	4.7
850----	31	1,431	2.2	43	297	17.1
800----	31	1,918	- .5	43	307	24.1
750----	31	2,428	- 3.7	45	304	28.6
700----	31	2,973	- 7.2	44	300	29.7
650----	31	3,540	-10.8	38	298	30.9
600----	31	4,157	-15.0	40	298	35.0
550----	31	4,805	-19.5	41	291	38.3
500----	31	5,511	-24.3	39	289	43.7
450----	31	6,265	-29.8	38	292	47.4
400----	31	7,102	-35.9	43	292	50.5
350----	31	8,016	-42.8		294	53.6
300----	31	9,040	-50.0		291	59.3
250----	31	10,215	-55.9		292	68.6
200----	31	11,624	-58.4		285	68.8
175----	30	12,467	-57.3		282	61.4
150----	28	13,437	-56.7		278	58.5
125----	27	14,580	-57.3		281	50.5
100----	26	15,986	-58.7		271	49.7
80-----	25	17,388	-59.3		277	41.2
60-----	24	19,188	-59.4		278	29.5
50-----	23	20,332	-59.9		293	27.2
40-----	22	21,733	-59.7		297	27.4
30-----	20	23,522	-60.8		302	27.0
25-----	19	24,660	-59.9		298	31.5
20-----	13	26,070	-59.0			
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See reference note at end of table

RAWINSONDE DATA

Average monthly values

ST. CLOUD, MINN. (975 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	316	- 7.1	76	293	1.9
1,000	31	118				
950	31	523	- 6.4	71	290	5.8
900	31	942	- 4.7	62	296	12.4
850	31	1,393	- 4.3	50	296	13.6
800	31	1,870	- 5.7	45	283	15.9
750	31	2,376	- 8.0	45	286	19.6
700	31	2,908	-10.7	43	290	22.0
650	31	3,473	-13.9	43	283	22.3
600	31	4,079	-17.4	39	282	24.5
550	31	4,726	-21.4	39	277	25.6
500	31	5,423	-26.3	40	279	29.1
450	31	6,173	-31.9	40	276	25.8
400	31	7,000	-37.9		265	31.3
350	31	7,908	-44.4		253	31.7
300	31	8,926	-50.8			
250	31	10,102	-54.9			
200	31	11,527	-55.1			
175	31	12,381	-54.2			
150	31	13,371	-54.1			
125	31	14,540	-55.0			
100	31	15,962	-56.4			
80	31	17,373	-57.7			
60	31	19,183	-59.0			
50	29	20,327	-59.8			
40	28	21,724	-60.4			
30	23	23,530	-60.4			
25	18	24,662	-60.8			
20	14	26,063	-60.8			
15						

ST. PAUL IS., ALASKA (1001 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	10	- 2.8	80	299	5.8
1,000	31	14			336	9.3
950	31	419	- 5.1	77	337	10.3
900	31	842	- 8.4	77	320	9.3
850	31	1,283	-11.4	73	312	10.1
800	31	1,745	-14.2	69	319	11.1
750	31	2,233	-16.5	58	310	14.4
700	31	2,749	-19.4	50	310	13.8
650	31	3,292	-22.7	46	309	15.7
600	31	3,880	-26.4	45	312	16.9
550	31	4,496	-30.4	42	315	18.3
500	31	5,175	-34.6	38	312	19.6
450	31	5,902	-38.9		301	22.7
400	31	6,706	-44.2		294	28.4
350	31	7,592	-48.5		288	28.0
300	30	8,597	-51.8			
250	29	9,781	-52.7			
200	29	11,229	-50.5			
175	29	12,102	-49.9			
150	27	13,104	-49.4			
125	26	14,303	-49.3			
100	26	15,766	-49.4			
80	25	17,216	-49.6			
60	25	19,097	-50.4			
50	24	20,300	-50.4			
40	23	21,763	-51.3			
30	19	23,656	-51.4			
25	19	24,840	-51.8			
20	16	26,281	-53.4			
15	11	28,086	-55.0			

SALEM, OREG. (1009 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	61	5.2	89	190	7.2
1,000	31	133			187	9.1
950	31	548	5.3	79	207	17.1
900	31	994	4.4	71	226	21.6
850	31	1,458	2.6	67	236	27.2
800	31	1,947	.1	65	242	32.1
750	31	2,457	- 2.9	61	248	32.6
700	31	3,005	- 6.0	55	249	33.6
650	31	3,577	- 9.3	48	251	36.3
600	31	4,197	-13.4	47	255	38.3
550	31	4,847	-17.9	47	258	39.6
500	31	5,560	-22.9	46	257	43.1
450	31	6,312	-28.5	46	261	45.5
400	31	7,159	-34.8	44	261	51.3
350	31	8,078	-41.6		263	56.0
300	31	9,107	-49.0		264	59.7
250	31	10,285	-56.1		266	58.7
200	31	11,695	-57.4		266	52.7
175	30	12,527	-56.6		269	49.5
150	30	13,503	-57.3		270	50.5
125	30	14,656	-57.6		272	47.2
100	30	16,062	-58.6		276	39.8
80	29	17,462	-58.2		280	30.3
60	26	19,279	-58.4		287	24.9
50	25	20,426	-58.4		291	22.3
40	25	21,834	-57.3		300	22.5
30	20	23,653	-57.3		307	23.5
25	16	24,808	-57.4			
20	7	26,210	-58.3			
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SALT LAKE CITY, UTAH (876 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	1,288	- 1.8	79	156	4.1
1,000	30	220				
950	30	629				
900	30	1,061				
850	30	1,526	1.0	57	177	6.6
800	30	2,014	.9	45	212	9.7
750	30	2,528	- 1.9	44	255	10.9
700	30	3,076	- 4.9	44	275	15.7
650	30	3,650	- 8.4	46	279	20.2
600	30	4,273	-11.9	48	287	26.2
550	30	4,928	-15.9	46	289	33.8
500	30	5,646	-20.3	42	289	39.1
450	30	6,411	-25.7		288	45.7
400	30	7,263	-31.8		287	46.0
350	30	8,193	-38.8		287	47.2
300	30	9,233	-47.0		286	51.9
250	30	10,419	-54.8		282	56.9
200	30	11,829	-59.2		284	57.9
175	30	12,667	-58.9		279	52.7
150	30	13,633	-59.5		280	52.8
125	30	14,771	-60.6		286	44.9
100	29	16,158	-61.9		289	38.5
80	28	17,541	-61.5		290	28.2
60	26	19,322	-60.6		289	18.7
50	25	20,456	-59.3		295	14.2
40	25	21,858	-58.3		294	12.6
30	22	23,669	-57.2		296	18.7
25	18	24,832	-56.9		294	21.6
20	12	26,246	-56.7		287	26.4
15						

SAN ANTONIO, TEX. (992 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	243	9.4	79	299	1.4
1,000	31	172				
950	31	604	11.9	63	200	7.4
900	31	1,054	10.5	57	222	8.9
850	31	1,529	9.6	42	243	9.9
800	31	2,031	8.3	35	260	11.7
750	31	2,566	6.3	34	276	15.2
700	31	3,125	3.7	30	275	17.7
650	31	3,721	.2		283	20.8
600	31	4,360	- 3.5		280	23.5
550	31	5,038	- 8.0		273	26.2
500	31	5,778	-12.5		278	28.0
450	31	6,568	-18.2		280	31.1
400	31	7,443	-24.9		280	35.0
350	31	8,400	-32.2		284	44.1
300	31	9,470	-39.9		284	47.4
250	31	10,692	-49.0		285	57.5
200	31	12,128	-57.8			
175	30	12,966	-60.9			
150	29	13,917	-63.7			
125	28	15,030	-66.2			
100	26	16,372	-70.0			
80	26	17,697	-70.7			
60	25	19,416	-67.2			
50	22	20,529	-63.6			
40	20	21,914	-59.7			
30	18	23,735	-55.5			
25	17	24,901	-53.2			
20	10	26,345	-50.9			
15						

SAN DIEGO, CALIF (1003 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	124	8.9	80	142	0.8
1,000	31	148			146	1.6
950	31	581	14.9	46	218	1.0
900	31	1,037	12.8	41	222	1.9
850	31	1,515	11.0	31	251	3.7
800	31	2,019	8.8		276	4.9
750	31	2,548	6.3		286	6.2
700	31	3,113	3.1		279	8.5
650	31	3,706	- .6		283	11.3
600	31	4,344	- 4.7		284	14.8
550	31	5,016	- 9.3		279	16.1
500	31	5,753	-14.8		274	18.8
450	31	6,532	-21.0		264	21.4
400	31	7,401	-27.6		267	24.3
350	31	8,349	-34.6		269	28.4
300	31	9,409	-42.5		266	34.2
250	31	10,617	-51.5		266	37.1
200	31	12,042	-58.7		269	43.5
175	31	12,877	-60.3		268	43.3
150	31	13,836	-61.5		271	43.7
125	30	14,961	-64.5		273	38.3
100	29	16,318	-67.0		273	30.3
80	26	17,658	-68.3		280	24.9
60	26	19,396	-64.7		294	13.8
50	26	20,516	-62.3		318	7.2
40	25	21,904	-59.0		345	6.6
30	23	23,720	-56.2		349	7.8
25	23	24,883	-54.4		330	8.5
20	21	26,313	-52.7		303	12.4
15	14	28,175	-51.3		292	22.5
10	11	30,821	-49.3			

SAN JUAN, P. R. (1015 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	6	23.1	89	103	3.7
1,000	31	141	23.4	82	99	9.1
950	31	589	20.8	81	89	14.4
900	31	1,055	18.0	80	87	12.6
850	31	1,543	15.1	79	87	11.9
800	31	2,055	12.6	73	94	9.3
750	31	2,594	10.1	63	98	7.4
700	31	3,167	7.5	53	108	5.4
650	31	3,771	4.3	41	103	2.7
600	31	4,422	1.1	32	272	6
550	31	5,108	- 2.9	30	271	2.5
500	31	5,865	- 7.6		264	7.8
450	31	6,667	-13.4		286	9.5
400	31	7,563	-19.9		293	15.3
350	31	8,540	-27.0		292	20.0
300	31	9,633	-35.3		288	32.3
250	31	10,879	-44.4		281	44.3
200	31	12,340	-55.0		273	53.8
175	31	13,183	-60.7		277	57.3
150	31	14,128	-66.8		278	54.8
125	31	15,218	-71.4		279	42.9
100	31	16,523	-75.2		286	29.5
80	30	17,816	-76.1		285	15.5
60	28	19,499	-68.7		281	4.7
50	27	20,607	-62.8		287	2.3
40	26	21,998	-57.7		329	[illegible]
30	25	23,837	-52.0		61	6.0
25	23	25,028	-48.7		81	7.6
20	22	26,504	-46.1		107	6.0
15	17	28,435	-42.1		94	7.0
10	[illegible]	31,190	-40.1			

SANTA MARIA, CALIF. (1011 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	74	8.2	70		0.0
1,000	31	162	11.8	61	358	2.1
950	31	596	13.7	45	30	5.4
900	31	1,049	12.7	37	25	2.1
850	31	1,527	10.4	34	334	4.5
800	31	2,029	7.9	31	331	5.6
750	31	2,556	5.2	28	312	6.6
700	31	3,120	2.0		299	8.5
650	31	3,708	- 1.7		292	10.3
600	31	4,347	- 5.8		282	13.2
550	31	5,016	-10.2	24	280	17.1
500	31	5,751	-15.7		274	18.1
450	31	6,526	-21.8		276	18.7
400	31	7,394	-28.4		272	21.2
350	31	8,338	-35.6		269	24.1
300	31	9,393	-43.6		272	26.4
250	31	10,597	-51.9		267	28.4
200	31	12,019	-58.4		285	27.2
175	31	12,857	-59.3		278	31.3
150	31	13,822	-60.2		278	29.0
125	30	14,955	-61.9		277	33.4
100	30	16,328	-64.5		282	26.6
80	30	17,689	-65.5		276	21.4
60	30	19,448	-63.0		308	14.0
50	29	20,578	-60.5		314	7.0
40	29	21,978	-57.9		352	5.4
30	24	23,812	-55.2		4	13.0
25	14	24,994	-54.7			
20						
15						
10						

SANTA MONICA, CALIF. (1014 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	38	12.3	59	34	4.3
1,000	31	159	15.9	48	35	4.7
950	31	596	14.9	39	58	4.1
900	31	1,050	12.9	34	55	2.5
850	31	1,528	10.4	33	329	1.7
800	31	2,031	7.9	30	283	3.5
750	31	2,559	5.4	29	272	5.6
700	31	3,122	2.2		264	8.2
650	31	3,712	- 1.5		272	10.5
600	31	4,350	- 5.5		273	15.3
550	31	5,019	-10.0		266	17.5
500	31	5,757	-15.5		264	20.4
450	31	6,533	-21.8		261	24.1
400	31	7,401	-28.6		261	27.0
350	30	8,345	-35.9		266	29.1
300	30	9,398	-43.8		269	29.1
250	30	10,601	-52.1		268	30.7
200	30	12,021	-59.0		268	39.4
175	30	12,856	-60.2		267	40.8
150	30	13,817	-60.9		266	42.4
125	30	14,946	-63.2		270	38.7
100	29	16,311	-65.9		272	29.9
80	29	17,663	-66.8		274	25.3
60	28	19,410	-63.7		296	13.2
50	28	20,536	-61.0		316	7.2
40	28	21,932	-58.1		347	8.0
30	28	23,759	-55.2		356	8.2
25	28	24,928	-53.8		334	9.3
20	27	26,367	-52.4		306	15.3
15	23	28,242	-50.0		282	22.9
10	12	30,886	-46.2			

S. STE. MARIE, MICH. (986 MB)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	221	- 5.2	85	279	0.6
1,000	31	108				
950	31	513	- 5.4	79	256	5.6
900	31	936	- 6.4	75	271	12.4
850	31	1,381	- 8.3	71	276	14.0
800	31	1,850	- 9.9	65	273	15.5
750	31	2,348	-11.2	57	274	19.2
700	31	2,875	-13.0	54	279	22.2
650	31	3,434	-15.9	53	278	26.2
600	31	4,037	-19.3	54	275	26.6
550	31	4,675	-23.5	51	273	29.1
500	31	5,370	-28.1	52	271	32.8
450	31	6,115	-33.4	52	269	36.7
400	31	6,938	-38.9		270	39.6
350	31	7,843	-44.7		269	44.7
300	31	8,862	-50.0		266	50.7
250	31	10,044	-53.1		267	53.0
200	30	11,475	-53.5		267	51.3
175	30	12,336	-53.1		267	48.8
150	29	13,326	-53.1		266	45.9
125	27	14,515	-53.8		266	40.4
100	27	15,943	-55.0		268	38.3
80	26	17,364	-56.5		270	37.7
60	25	19,182	-58.2		271	33.2
50	25	20,327	-59.3		270	33.4
40	21	21,738	-59.2		275	34.2
30	19	23,521	-60.4		273	36.3
25	17	24,658	-60.8		274	39.8
20	16	26,047	-62.0		268	44.3
15	8	27,755	-64.1			
10						

SEATTLE, WASH. (999 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	30	125	5.4	88	171	8.0
1,000	30	114			177	7.4
950	30	532	4.8	76	195	18.3
900	30	973	2.6	74	210	20.8
850	30	1,433	2	74	221	22.7
800	30	1,918	- 1.9	69	232	26.2
750	30	2,427	- 4.5	63	241	30.1
700	30	2,970	- 7.3	61	246	33.8
650	30	3,540	-10.9	55	252	35.0
600	30	4,154	-15.1	47	258	36.9
550	30	4,801	-19.5	47	257	40.8
500	30	5,509	-24.5	50	258	44.1
450	30	6,259	-30.3	49	260	48.2
400	30	7,096	-36.9	48	260	54.6
350	30	8,008	-43.3		260	60.4
300	30	9,030	-50.4		262	66.8
250	30	10,203	-56.1		267	67.4
200	30	11,615	-57.4		268	60.4
175	30	12,460	-56.9		269	57.1
150	30	13,437	-57.1		271	53.8
125	30	14,591	-57.1		271	49.5
100	29	16,007	-58.3		277	45.5
80	[illegible]	17,415	-58.8		280	38.7
60	20	19,248	-57.5		285	30.1
50	18	20,388	-58.7		286	28.8
40	16	21,804	-58.2		289	31.9
30	12	23,652	-56.2		302	32.1
25	10	24,832	-56.7		303	34.0
20	[illegible]	26,250	-58.0			
15						

SHREVEPORT, LA. (1010 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	76	7.8	80	201	3.1
1,000	31	161	9.5	68	206	5.1
950	31	588	9.7	57	234	14.2
900	31	1,036	7.9	52	251	15.5
850	31	1,507	6.0	48	260	16.3
800	31	2,002	4.0	42	265	18.5
750	31	2,524	2.2	37	270	19.6
700	31	3,081	- .2	34	270	22.7
650	31	3,668	- 3.3	31	275	26.6
600	31	4,302	- 6.8		279	30.3
550	31	4,971	-10.8		278	33.0
500	31	5,703	-15.8		278	36.9
450	31	6,483	-21.3		279	41.4
400	31	7,349	-27.4		281	46.4
350	31	8,297	-34.5		281	51.3
300	30	9,356	-42.4		283	60.0
250	30	10,565	-51.0		284	65.5
200	29	11,997	-58.4		284	72.1
175	29	12,834	-59.7		282	71.5
150	29	13,794	-61.5		281	66.1
125	[illegible]	14,916	-64.4		279	56.0
100	28	16,270	-67.6		279	44.9
80	28	17,613	-67.9		278	33.8
60	27	19,355	-65.1		270	21.4
50	26	20,473	-62.8		272	17.5
40	26	21,860	-59.5		278	12.4
30	20	23,670	-56.5		275	17.5
25	17	24,829	-54.6		281	22.5
20						
15						

SPOKANE, WASH. (931 MB)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	722	0.7	88	198	6.8
1,000	31	140				
950	31	555				
900	31	991	1.1	79	204	12.0
850	31	1,450	- .3	73	224	20.6
800	31	1,933	- 2.9	68	234	23.3
750	31	2,441	- 5.6	65	242	22.3
700	31	2,981	- 8.7	60	251	24.1
650	31	3,548	-12.1	56	261	28.6
600	31	4,159	-15.9	49	267	35.8
550	31	4,805	-19.7	54	271	41.4
500	31	5,511	-24.7	53	273	44.3
450	31	6,260	-30.0	51	275	48.4
400	31	7,099	-36.4	49	274	52.5
350	31	8,011	-43.5		272	57.1
300	31	9,031	-50.9		273	63.9
250	31	10,203	-56.1		276	66.1
200	31	11,614	-57.5		276	57.1
175	31	12,458	-57.3		275	56.0
150	31	13,436	-56.2		277	50.5
125	31	14,597	-55.8		275	46.4
100	31	16,014	-57.4		280	41.4
80	30	17,425	-58.4		278	38.7
60	28	19,242	-58.2		283	31.9
50	26	20,384	-58.6		288	34.4
40	25	21,787	-58.2		293	33.0
30	22	23,613	-58.5		299	32.1
25	18	24,759	-58.7		298	36.5
20	13	26,195	-59.4		300	40.4
15	5	27,952	-60.2			

TAMPA, FLA. (1021 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	8	10.7	83	34	4.5
1,000	31	181	13.6	71	50	6.2
950	31	616	12.3	65	86	3.5
900	31	1,066	10.0	61	233	1.2
850	31	1,540	8.0	51	275	2.7
800	31	2,040	7.2	37	273	6.4
750	30	2,572	5.5		277	9.5
700	30	3,132	3.0		273	11.7
650	30	3,728	- .1		272	15.7
600	30	4,365	- 3.7		266	14.2
550	30	5,041	- 7.7		262	16.1
500	30	5,783	-12.9		265	20.4
450	30	6,573	-18.7		269	23.3
400	30	7,447	-25.1	35	274	30.5
350	30	8,404	-32.5		275	33.8
300	30	9,473	-40.4		282	37.7
250	30	10,692	-49.6		283	46.6
200	30	12,126	-57.3		287	46.6
175	30	12,965	-60.4		285	49.0
150	30	13,919	-63.4		281	43.9
125	30	15,032	-66.3		276	43.1
100	30	16,376	-68.9		281	31.7
80	30	17,703	-70.1		270	24.3
60	28	19,430	-66.0		270	14.0
50	28	20,548	-61.8		258	13.0
40	26	21,938	-58.3		269	15.7
30	26	23,769	-53.8		277	16.1
25	26	24,946	-51.7		276	18.1
20	20	26,402	-48.7		287	22.0
15	5	28,317	-45.5			

TATOOSH IS., WASH. (1006 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	31	8.0	83	179	10.5
1,000	31	83			171	10.7
950	31	491	5.1	78	196	19.6
900	31	944	2.5	78	219	23.7
850	31	1,404	- .3	80	224	24.5
800	31	1,888	- 2.8	78	234	24.9
750	31	2,394	- 5.3	68	241	29.1
700	31	2,938	- 8.3	61	246	33.2
650	31	3,500	-11.8	60	247	35.8
600	31	4,119	-15.9	59	252	39.1
550	31	4,763	-20.5	58	251	43.5
500	31	5,469	-25.4	57	253	48.4
450	31	6,215	-31.0	50	253	56.5
400	31	7,053	-37.3		259	61.4
350	31	7,964	-43.5		254	62.0
300	31	8,986	-50.0		260	63.7
250	31	10,163	-55.0		250	58.9
200	30	11,581	-56.7		257	52.7
175	30	12,429	-56.5		255	51.3
150	30	13,410	-55.4		257	50.1
125	30	14,574	-55.0		259	44.3
100	29	15,984	-56.3		265	33.0
80	[illegible]	17,403	-56.8		261	31.9
60	27	19,231	-57.0		264	27.8
50	23	20,389	-57.0		275	24.3
40	22	21,810	-56.8		280	23.3
30	18	23,630	-58.1		282	27.4
25	14	24,803	-58.9		286	28.0
20	10	26,215	-58.6			
15	7	28,074	-59.5			

See reference note at end of table

RAWINSONDE DATA

Average monthly values

DECEMBER 1957

Standard pressure surface (mb.)	TOPEKA, KANS (984 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	269	0.2	77	267	3.3
1,000--	31	141				
950----	31	555	3.3	58	278	5.1
900----	31	995	3.9	48	288	9.3
850----	31	1,458	2.4	45	295	11.9
800----	31	1,947	1.2	40	299	15.7
750----	31	2,464	- 1.3	37	298	17.1
700----	31	3,012	- 4.3	35	295	21.0
650----	31	3,588	- 7.8	33	298	26.6
600----	31	4,210	-11.6	29	290	29.5
550----	31	4,868	-16.0	27	289	34.2
500----	31	5,584	-20.9	29	289	37.7
450----	31	6,347	-26.7	35	288	41.8
400----	31	7,193	-33.0		291	47.8
350----	31	8,121	-39.1		289	53.0
300----	31	9,162	-46.2		286	60.0
250----	30	10,360	-53.2		288	68.0
200----	30	11,782	-56.6		286	73.4
175----	29	12,628	-56.8		284	65.5
150----	27	13,595	-57.2		286	57.5
125----	25	14,751	-59.0		285	51.7
100----	25	16,145	-61.2		286	44.3
80-----	25	17,525	-62.9		288	34.4
60-----	23	19,302	-61.2		286	20.0
50-----	22	20,436	-60.2		286	20.2
40-----	19	21,826	-59.3		290	18.3
30-----	19	23,633	-58.2		289	22.3
25-----	14	24,801	-57.9		295	24.9
20-----						
15-----						

Standard pressure surface (mb.)	TUCSON, ARIZ. (929 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	781	7.3	58	146	6.8
1,000--	31	169				
950----	31	595				
900----	31	1,046	11.7	39	130	8.4
850----	31	1,523	10.7	32	136	5.1
800----	31	2,026	8.6	29	226	4.1
750----	31	2,554	5.9		253	8.0
700----	31	3,120	2.8		262	10.7
650----	31	3,713	- 4		271	13.6
600----	31	4,352	- 4.2		275	16.9
550----	31	5,022	- 8.8		277	20.4
500----	31	5,764	-14.1		280	22.5
450----	31	6,545	-19.9		276	26.6
400----	31	7,420	-26.0		275	30.5
350----	31	8,373	-33.2		271	36.3
300----	31	9,438	-41.4		274	38.9
250----	31	10,653	-50.2		271	48.2
200----	31	12,083	-58.0		270	56.2
175----	31	12,919	-60.5		268	53.4
150----	31	13,876	-62.0		271	50.5
125----	31	14,996	-64.9		276	43.9
100----	31	16,347	-68.0		278	37.3
80-----	31	17,684	-69.1		284	27.0
60-----	31	19,418	-65.9		281	16.9
50-----	29	20,529	-63.6		291	9.9
40-----	26	21,910	-60.4		291	9.5
30-----	21	23,723	-56.7		299	10.3
25-----	19	24,894	-54.6		292	11.5
20-----	14	26,327	-52.5		291	12.4
15-----						

Standard pressure surface (mb.)	WASHINGTON, D. C. (1009 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	88	3.0	75	262	1.7
1,000--	31	159			250	4.1
950----	31	573	3.5	59	255	10.1
900----	31	1,013	2.1	56	260	12.8
850----	31	1,474	.5	53	262	15.5
800----	31	1,959	- 1.1	49	265	18.5
750----	31	2,470	- 3.6	47	262	20.6
700----	31	3,015	- 5.9	45	261	26.6
650----	31	3,590	- 8.6	41	261	33.0
600----	31	4,210	-12.3	41	257	38.7
550----	31	4,864	-16.5		255	42.0
500----	31	5,581	-21.3	34	253	43.5
450----	31	6,341	-26.6	43	250	47.6
400----	31	7,191	-32.3	46	252	50.3
350----	31	8,121	-39.0		253	57.9
300----	31	9,161	-46.2		255	61.0
250----	31	10,355	-52.8		261	62.0
200----	31	11,778	-57.5		266	63.1
175----	31	12,620	-57.8		267	59.7
150----	30	13,587	-57.5		266	53.6
125----	27	14,729	-59.8		263	47.8
100----	26	16,118	-61.9		264	41.4
80-----	19	17,500	-61.9		258	33.0
60-----	18	19,279	-60.8		264	25.5
50-----	18	20,417	-59.7		264	18.5
40-----	17	21,819	-58.7		266	18.3
30-----	15	23,638	-57.0		270	23.1
25-----	13	24,804	-55.5		266	23.5
20-----	12	26,225	-54.9			
15-----	7	28,059	-53.0			

Standard pressure surface (mb.)	WINNEMUCCA, NEV. (873 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,310	- 3.5	76	154	3.3
1,000--	31	216				
950----	31	629				
900----	31	1,065				
850----	31	1,520	2.8	53	170	5.8
800----	31	2,010	1.7	44	222	12.0
750----	31	2,526	- 1.0	46	245	15.5
700----	31	3,076	- 3.8	45	269	18.8
650----	31	3,656	- 6.9	45	274	23.1
600----	31	4,279	-10.4	40	278	25.3
550----	31	4,940	-14.8	39	281	27.6
500----	30	5,653	-20.2	40	282	32.4
450----	30	6,419	-25.6	39	278	33.2
400----	30	7,270	-32.0		274	36.7
350----	30	8,200	-39.2		276	39.2
300----	30	9,239	-47.0		280	41.0
250----	30	10,426	-54.7		279	44.5
200----	30	11,833	-59.3		273	49.9
175----	30	12,670	-59.3		277	48.6
150----	30	13,639	-58.2		272	40.6
125----	30	14,783	-59.5		273	44.5
100----	29	16,178	-61.1		280	35.4
80-----	29	17,560	-61.5		282	29.5
60-----	29	19,349	-60.0		289	17.7
50-----	28	20,487	-58.9		293	13.2
40-----	27	21,895	-57.6		308	13.0
30-----	22	23,726	-56.9		321	14.4
25-----	17	24,871	-56.5		310	20.0
20-----	7	26,274	-55.3			
15-----						

Standard pressure surface (mb.)	YAKUTAT, ALASKA (994 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	12	- 2.1	87	91	7.6
1,000--	31	40				
950----	31	371	- 1.5	79	118	9.1
900----	31	798	- 4.1	77	156	10.1
850----	31	1,247	- 7.0	77	173	11.9
800----	31	1,717	-10.3	77	181	12.4
750----	31	2,213	-13.7	74	184	12.8
700----	31	2,733	-17.3	69	190	14.0
650----	31	3,285	-21.2	64	200	14.6
600----	31	3,870	-25.5	61	200	15.5
550----	31	4,493	-30.1	58	206	17.9
500----	31	5,168	-35.2	54	206	21.2
450----	31	5,889	-40.6		213	24.5
400----	31	6,689	-45.8		218	27.2
350----	31	7,568	-50.9		217	29.7
300----	31	8,564	-53.8		232	30.7
250----	31	9,736	-53.2		231	30.3
200----	31	11,177	-52.2		240	33.0
175----	31	12,043	-52.0		250	31.1
150----	31	13,041	-52.3		265	34.6
125----	30	14,214	-52.7		271	38.1
100----	29	15,652	-53.3		277	45.9
80-----	27	17,085	-54.0			
60-----	24	18,913	-55.5			
50-----	22	20,081	-56.8			
40-----	21	21,484	-58.0			
30-----	19	23,297	-59.4			
25-----	14	24,481	-60.0			
20-----	7	25,752	-61.8			
15-----	6	27,535	-63.4			

Standard pressure surface (mb.)	YUCCA FLAT, NEV. (885 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	1,196	- 1.0	72	299	1.7
1,000--	31	209				
950----	31	624				
900----	31	1,064				
850----	31	1,526	6.0	40	352	2.9
800----	31	2,022	4.6	35	245	1.4
750----	31	2,543	3.0	32	261	5.4
700----	31	3,103	.4	29	272	8.7
650----	30	3,684	- 3.3		275	13.0
600----	30	4,321	- 7.2		276	18.1
550----	30	4,987	-11.8		279	23.1
500----	30	5,718	-16.9		277	25.8
450----	30	6,493	-22.6		275	29.9
400----	30	7,356	-29.4		272	34.0
350----	30	8,297	-36.4		272	36.5
300----	30	9,349	-44.1		274	41.8
250----	30	10,550	-52.8		273	47.4
200----	30	11,967	-59.5		271	52.8
175----	30	12,800	-60.5		268	51.9
150----	29	13,759	-60.1		271	50.1
125----	27	14,901	-61.8		271	43.9
100----	21	16,283	-64.5		275	35.9
80-----	19	17,649	-66.0		281	27.6
60-----	18	19,408	-62.7		291	15.3
50-----	17	20,538	-60.8		296	10.5
40-----	17	21,932	-59.1		319	11.3
30-----	14	23,753	-57.0		347	9.5
25-----	8	24,935	-55.6			

Standard pressure surface (mb.)	YUMA, ARIZ. (1006 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	105	9.6	50		0.0
1,000--	31	153	11.6	45	46	1.0
950----	31	587	14.9	33	24	8.0
900----	31	1,041	13.0	33	36	6.4
850----	31	1,519	10.9	34	20	3.1
800----	31	2,022	8.4	33	298	3.9
750----	31	2,549	5.9	29	284	6.2
700----	31	3,114	3.3		284	7.8
650----	31	3,706	- .1		286	10.5
600----	31	4,347	- 4.3		284	13.8
550----	31	5,019	- 9.0		287	17.7
500----	31	5,757	-14.6		286	18.5
450----	31	6,536	-20.8		280	20.8
400----	31	7,405	-27.4		274	26.2
350----	31	8,351	-34.6		270	32.6
300----	31	9,411	-42.5		269	33.4
250----	31	10,618	-51.5		271	44.1
200----	26	12,046	-58.6		272	49.0
175----	24	12,881	-61.2		273	59.1
150----	20	13,847	-61.6		270	52.1
125----	14	14,931	-64.5			
100----	10	16,277	-66.7			
80-----	[illegible]	17,625	-69.3			
60-----						
50-----						
40-----						
30-----						
25-----						

Standard pressure surface (mb.)	SWAN ISLAND, W. I. (1014 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	10	24.9	85	31	12.0
1,000--	31	130	24.1	84	32	13.2
950----	31	578	21.2	82	41	13.6
900----	31	1,046	18.1	80	48	12.4
850----	31	1,534	15.1	77	52	9.3
800----	31	2,046	12.7	68	50	7.2
750----	31	2,585	10.1	59	54	4.3
700----	31	3,158	8.1	48	58	2.1
650----	31	3,767	5.2	42	20	1.0
600----	31	4,417	1.7	38	304	2.1
550----	31	5,109	- 2.1		289	4.5
500----	31	5,866	- 6.4		289	7.2
450----	30	6,676	-11.8		283	10.7
400----	30	7,574	-18.3		283	17.7
350----	29	8,557	-25.2		280	22.7
300----	29	9,658	-33.7		274	26.8
250----	29	10,910	-43.7		275	30.1
200----	25	12,371	-54.9		272	36.9
175----	17	13,217	-61.4		263	36.7
150----	12	14,158	-67.4			
125----	10	15,239	-71.8			
100----	7	16,535	-76.4			
80-----						
60-----						
50-----						
40-----						
30-----						
25-----						

Standard pressure surface (mb.)	MERIDA, MEXICO (1017 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	31	11	17.9	89	22	4.1
1,000--	31	160	20.1	79	54	7.4
950----	31	597	17.8	77	72	9.9
900----	31	1,063	15.0	78	62	6.8
850----	31	1,546	12.6	74	33	3.1
800----	31	2,054	10.3	68	310	3.3
750----	31	2,586	8.9	53	296	3.5
700----	31	3,159	6.6	43	279	4.9
650----	31	3,761	3.7	37	278	6.0
600----	31	4,411	.4		276	9.5
550----	31	5,097	- 3.3		276	14.2
500----	31	5,853	- 8.1		280	18.5
450----	31	6,658	-13.5		274	22.5
400----	31	7,550	-20.1		278	29.1
350----	31	8,527	-27.0		273	36.1
300----	31	9,619	-35.6		277	41.8
250----	31	10,862	-45.4		285	43.5
200----	31	12,314	-56.3		284	50.9
175----	31	13,152	-61.8		276	51.5
150----	31	14,093	-67.4		276	47.0
125----	31	15,181	-71.3		274	37.7
100----	30	16,490	-74.2		276	31.9
80-----	29	17,785	-75.0		282	21.4
60-----	28	19,478	-68.0		271	6.4
50-----	26	20,595	-62.2		254	5.6
40-----	26	21,991	-57.3		283	3.1
30-----	24	23,836	-52.3		332	2.9
25-----	22	25,021	-49.2		324	6.6
	19	26,494	-45.6		252	2.1
	12	28,448	-40.8			
	5	31,214	-38.0			

Note: All observations scheduled at 1200, G.C.T. "Number of observations" refers to those of dynamic height only. Temperature, humidity or wind data may be missing for one or more pressure surfaces of some observations. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Relative humidity data are not published for standard pressure surfaces having less than 16 actual observations.

Relative humidity data beginning with October 1, 1948, were computed and expressed in these tables on the basis of vapor-pressure over water. Upper air values of relative humidity at levels with temperatures less than 0°C, have formerly been computed and expressed on the basis of the vapor-pressure over ice. All relative humidity observations are obtained by electric hygrometer and have been adjusted to compensate for the value occurring below the operating range of the humidity element

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

SOLAR RADIATION DATA

Solar radiation intensities, tabulated in langleys per minute on a surface normal to the direction of the sun.

Date	Sun's zenith distance								
	A.M.				*	P.M.			
	78.7°	75.7°	70.7°	60.0°	*	60.0°	70.7°	75.7°	78.7°

BLUE HILL, MASS.

	Air mass								
	4.89	3.92	2.94	1.96	*	1.96	2.94	3.92	4.89
Dec.									
5	----	----	----	----	1.33	----	1.26	1.16	1.11
11	0.89	0.94	----	----	----	----	----	----	----
13	1.04	1.12	----	----	----	----	----	----	----
15	.96	1.07	1.17	----	1.30	----	1.17	1.09	----
17	----	----	----	----	1.24	----	1.15	1.05	.97
22	.89	1.02	1.17	----	1.20	----	1.17	1.06	.96
25	----	----	----	----	1.37	----	----	----	----
Averages	0.97	1.04	1.17	----	1.29	----	1.19	1.09	1.01

MADISON, WIS.

	Air mass								
	4.84	3.87	2.90	1.94	*	1.94	2.90	3.87	4.84
Dec.									
11	S1.10	S1.18	S1.31	----	Sc	----	S1.31	S1.18	S1.09
13	S.94	S1.06	Sc	----	Ac	----	----	----	----
14	1.04	1.12	----	----	1.24	----	----	----	----
21	S1.03	S1.12	S1.24	----	S1.22	----	S1.28	S1.12	Ci
24	S1.10	S1.19	S1.31	----	----	----	S1.27	Ci	----
26	----	----	----	----	----	----	S1.34	S1.25	S1.14
28	----	----	----	----	S1.37	----	S1.28	S1.12	S1.04
Averages	1.04	1.13	1.29	----	1.28	----	1.30	1.17	1.09

WASHINGTON, D. C. (WBCO)

	Air mass								
	5.00	4.00	3.00	2.00	*	2.00	3.00	4.00	5.00
Dec.									
1	0.99	1.04	----	----	1.34	----	1.17	1.05	0.95
2	.86	.92	1.08	----	----	----	----	----	----
5	1.06	1.11	1.21	----	----	----	----	----	----
13	.66	----	.97	----	----	----	----	----	----
14	----	----	----	----	----	----	.93	.76	.63
15	.75	.84	.96	----	1.17	----	1.01	.85	.70
27	----	.87	----	----	----	----	----	----	----
Averages	0.86	0.96	1.06	----	1.26	----	1.04	0.89	0.76

Date	Sun's zenith distance								
	A.M.				*	P.M.			
	78.7°	75.7°	70.7°	60.0°	*	60.0°	70.7°	75.7°	78.7°

TUCSON, ARIZ.

	Air mass								
	4.56	3.65	2.74	1.83	*	1.83	2.74	3.65	4.56
Dec.									
1	1.02	1.13	1.24	1.40	1.46	1.42	1.24	1.12	1.00
3	----	----	----	----	1.48	1.52	1.34	1.21	1.12
6	.82	.93	1.07	1.30	1.37	----	1.16	1.06	.95
7	.95	1.08	1.20	----	----	----	----	----	----
8	1.02	1.14	1.24	1.38	1.42	1.37	1.23	1.10	1.01
9	1.04	1.15	1.27	1.41	1.45	1.40	1.24	1.13	1.01
20	----	----	----	----	----	1.37	1.20	1.07	.95
21	----	----	----	----	1.44	1.35	----	----	----
25	1.02	1.14	1.24	1.37	1.42	1.41	----	----	----
27	1.03	1.23	1.23	1.38	1.41	1.33	1.18	1.09	.98
30	1.00	1.09	1.21	1.34	1.39	----	----	----	----
Averages	0.99	1.11	0.91	0.97	1.43	1.39	0.92	1.11	0.90

LINCOLN, NEBR.

	Air mass								
	4.80	3.84	2.88	1.92	*	1.92	2.88	3.84	4.80
Dec.									
1	1.01	1.09	----	----	----	----	1.19	1.05	0.94
4	----	----	KS1.06	----	KS1.15	----	KS1.04	KS.93	KS.84
8	----	----	----	----	1.18	----	1.09	1.00	----
11	----	----	KS1.13	----	KS1.23	----	KS1.15	KS1.05	----
13	----	----	----	----	KS1.16	----	KS1.08	KS.97	S.88
14	----	----	----	----	1.15	----	1.05	.94	.85
18	----	----	----	----	----	----	----	.94	.87
20	.88	1.08	1.14	----	1.22	----	1.11	.98	.91
21	----	----	----	----	----	----	1.08	.96	.88
23	.92	.98	1.12	----	1.22	----	1.13	1.05	.94
25	----	----	----	----	1.17	----	KS.99	KS.76	KS.68
26	.86	.96	1.10	----	1.17	----	1.05	.95	.87
27	----	----	----	----	----	----	----	.88	.79
28	.88	.97	1.07	----	1.17	----	----	----	----
29	----	----	----	----	----	----	.98	.84	.76
31	----	----	----	----	----	----	1.04	.92	----
Averages	0.91	1.02	1.10	----	1.18	----	1.08	0.95	0.85

* Values corresponding to true solar noon
S Slight haze - indeterminable
KS Slight smoke

Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station listed above appears in the February 1957 issue, Vol. 8, No. 2, page 63, of this publication.

SOLAR RADIATION DATA

DECEMBER 1957

Daily totals and average daily totals by weeks of solar and sky radiation, plus the radiation reflected from the ground, as received on a vertical surface facing south at Blue Hill, Mass. during the month

								Avg								Avg								Avg
Date------------	3	4	5	6	7	8	9		10	11	12	13	14	15	16		17	18	19	20	21	22	23	
Langleys--------	301	12	550	43	16	18	7	135	11	405	496	530	345	535	32	336	544	180	89	39	192	523	378	278
Date------------	24	25	26	27	28	29	30	31	Avg.															
Langleys--------	134	576	17	477	199	229	91	450	272															

Daily totals and average daily totals by weeks of diffuse (sky) radiation as received on a horizontal surface at Blue Hill, Mass. during the month

								Avg								Avg								Avg
Date------------	3	4	5	6	7	8	9		10	11	12	13	14	15	16		17	18	19	20	21	22	23	
Langleys--------	86	23	37	50	34	41	15	41	25	47	41	43	63	31	36	41	40	90	80	65	50	36	61	60
Date------------	24	25	26	27	28	29	30	31	Avg.															
Langleys--------	74	32	33	49	82	76	82	59	61															

Note: Langley is the unit used to denote one gram calorie per square centimeter.

NET RADIATION

Net radiation in langleys per day (midnight to midnight) at Raleigh, N. C., during the month

DECEMBER 1957

Date.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langleys. . .	32	40	*19	*75	25	22	*81	*-4	23	*-21	*-77	-39	29	40	39	58	36	*48	*35	*-21	50	35	45	37	42	*35	29	*21	39	13	47	27

* Estimated values owing to occurrence of rain during period. While rain is falling, radiation is assumed to be zero.

The measurement is made with a Beckman and Whitley net exchange radiometer over a plot of Bermuda grass. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the North Carolina State College at Raleigh. The instrument with which they were measured has not been checked by the Weather Bureau.

SOLAR RADIATION DATA

Daily totals and weekly averages of solar radiation (direct and diffuse) received on a horizontal surface, tabulated in langleys. DECEMBER 1957

1957	Albuquerque, N.Mex.	Annette, Alaska	Apalachicola, Fla.	Astoria, Oreg.	Atlanta, Ga.	Barrow, Alaska	Bethel, Alaska	Bismarck, N. Dak.	Blue Hill, Mass.	Boise, Idaho	Boston, Mass.	Brownsville, Tex.	Canton Island Pacific Area	Cape Hatteras, N.C.	Caribou, Me.	Charleston, S. C.	Cleveland, Ohio	Columbia, Mo.	Corvallis, Oreg.	Davis, Calif.	Dodge City, Kans.	E. Lansing, Mich.	Edmonton, Alberta	El Paso, Tex.	Ely, Nev.	Fairbanks, Alaska	Ft. Worth, Tex.	Fresno, Calif.	Gainesville, Fla.	Glasgow, Mont.
Dec. 3-----	337	103	248	121	193	*	15	124	162	191	142	83	401	231	180	225	32	54	41	245	298	69	77	366	273	5	317	261	177	254
Dec. 4-----	289	112	384	35	282	---	12	151	27	109	23	---	497	212	---	324	101	240	53	72	298	195	74	360	160	4	332	150	320	62
Dec. 5-----	108	64	377	94	330	---	12	99	227	120	196	371	593	355	---	339	142	168	93	157	93	128	108	197	137	12	326	121	310	105
Dec. 6-----	183	66	242	10	299	---	15	46	55	36	40	353	549	313	135	320	55	36	32	216	251	100	58	362	223	5	44	163	287	19
Dec. 7-----	325	54	311	36	26	---	35	84	38	51	28	136	581	171	36	284	16	89	104	57	151	102	70	364	226	3	334	45	169	146
Dec. 8-----	316	81	72	143	101	---	5	120	43	49	29	391	613	116	58	32	50	60	172	53	285	202	98	356	254	22	348	47	36	92
Dec. 9-----	318	91	219	156	79	---	24	142	23	34	3	396	158	57	43	95	116	248	60	54	278	96	83	354	274	2	323	74	293	117
Average------	268	82	265	85	187	---	17	109	82	84	66	288	485	208	91	231	73	128	79	122	236	127	81	337	221	8	289	123	227	114
Dec. 10-----	326	68	371	143	324	---	24	169	28	37	11	392	639	106	36	300	80	133	50	70	270	68	88	335	265	4	336	60	297	120
Dec. 11-----	312	54	384	90	195	---	9	180	186	49	162	409	608	284	109	167	112	263	114	46	293	148	49	341	262	3	360	52	211	161
Dec. 12-----	322	68	385	77	352	---	9	150	208	39	186	386	166	278	86	346	156	204	53	36	290	212	73	341	259	---	338	70	316	87
Dec. 13-----	319	11	(374)	83	225	---	10	164	209	35	192	365	361	341	164	(335)	113	198	25	44	292	89	76	344	---	3	321	112	299	123
Dec. 14-----	309	72	354	67	138	---	8	141	170	102	140	353	409	324	69	311	110	207	97	61	238	189	59	328	233	3	274	42	275	41
Dec. 15-----	132	69	348	20	114	---	29	158	218	34	190	225	468	314	104	280	180	81	75	40	175	78	90	129	81	5	225	57	252	122
Dec. 16-----	209	49	352	59	194	---	23	52	42	149	55	250	(527)	318	52	207	129	39	84	65	246	192	68	299	88	6	146	144	264	83
Average------	276	56	(367)	77	220	---	16	145	151	64	134	340	(454)	281	89	(278)	126	161	71	52	258	140	72	302	198	4	286	77	273	105
Dec. 17-----	278	71	336	39	195	---	33	116	216	50	167	307	623	297	130	211	80	31	48	176	53	71	(60)	214	273	5	79	241	244	78
Dec. 18-----	307	56	176	43	179	---	29	154	115	98	125	273	651	152	202	162	45	81	49	252	283	31	38	305	153	4	294	---	160	---
Dec. 19-----	332	71	223	15	29	---	33	132	94	40	72	254	430	127	53	249	134	190	15	138	218	154	61	347	211	4	245	234	147	143
Dec. 20-----	312	77	271	16	236	---	44	138	72	83	55	349	467	102	36	138	60	183	74	102	278	116	66	338	232	5	328	223	93	122
Dec. 21-----	312	47	370	25	338	---	48	134	105	124	99	329	399	321	19	330	58	238	72	45	196	201	37	348	222	5	298	135	280	---
Dec. 22-----	308	30	320	70	337	---	32	88	211	146	---	282	587	331	82	320	24	201	151	262	(206)	187	38	341	265	10	(288)	247	293	81
Dec. 23-----	199	40	310	46	198	---	35	171	176	186	168	261	566	277	89	269	---	111	73	175	230	92	36	223	253	3	(153)	221	77	142
Average------	292	56	286	36	216	---	36	133	141	104	114	294	532	230	87	240	67	148	69	165	(209)	122	(48)	302	230	5	(241)	217	185	113
Dec. 24-----	172	52	314	43	244	---	34	154	96	45	101	203	640	252	60	194	---	206	34	241	(60)	219	48	67	256	4	(75)	136	117	129
Dec. 25-----	301	15	176	12	28	---	32	153	231	175	201	276	(492)	265	151	163	---	53	34	259	282	34	65	347	248	3	283	219	240	129
Dec. 26-----	---	77	357	89	328	---	30	57	36	156	20	171	244	74	38	244	---	252	130	201	269	25	66	160	221	3	331	39	209	(62)
Dec. 27-----	308	113	371	25	307	---	35	161	202	107	183	235	461	(338)	22	328	---	16	28	163	(225)	171	88	353	189	2	113	113	268	82
Dec. 28-----	312	112	110	66	77	---	37	112	130	51	106	337	586	137	67	94	---	248	94	75	220	40	69	346	214	2	290	142	29	60
Dec. 29-----	308	71	308	44	228	---	19	80	139	90	110	360	409	262	30	(295)	---	174	73	95	262	77	73	352	136	7	305	159	244	89
Dec. 30-----	316	32	354	135	311	---	(32)	136	100	166	90	178	491	212	---	285	---	140	55	267	101	120	91	356	270	---	123	57	279	157
Dec. 31-----	334	46	299	158	207	---	31	167	199	225	155	171	268	204	122	310	---	92	64	---	311	34	88	351	263	9	324	217	290	---
Average------	293	65	286	72	216	---	(31)	128	142	127	121	241	(449)	(218)	70	(239)	---	148	64	186	(216)	90	73	292	225	4	(230)	135	210	(101)

Note.--Langley is the unit used to denote one gram calorie per square centimeter.
Values in parentheses are interpolated.
* Sun below horizon.

SOLAR RADIATION DATA

Daily totals and weekly averages of solar radiation (direct and diffuse) received on a horizontal surface, tabulated in langleys. - Cont'd. DECEMBER 1957

	Grand Junction, Colo.	Grand Lake, Colo.	Great Falls, Mont.	Greensboro, N. C.	Griffin, Ga.	Indianapolis, Ind.	Inyokern, Calif.	Ithaca, N. Y.	Laramie, Wyo.	Lake Charles, La.	Las Vegas, Nev.	Lexington, Ky.	Lincoln, Nebr.	Little Rock, Ark.	Los Angeles, Calif. (urban)	Los Angeles, Calif.	Madison, Wis.	Matanuska, Alaska	Medford, Oreg.	Miami, Fla.	Moosonee, Ontario	Nashville, Tenn.	Newport, R. I.	New York, N. Y.	Normandin, Quebec	North Omaha, Nebr.	Oak Ridge, Tenn.	Oklahoma City, Okla.	Ottawa, Ontario	Phoenix, Ariz.
1957																														
Dec. 3------	255	139	---	146	162	34	366	88	---	73	323	19	(197)	214	324	317	139	11	37	256	130	---	164	90	116	192	67	---	185	344
Dec. 4------	235	117	65	231	282	227	157	171	---	371	182	261	(239)	281	127	120	76	12	75	326	82	203	47	25	147	235	66	---	203	195
Dec. 5------	34	16	37	265	297	225	290	198	---	345	312	319	114	272	99	148	113	6	46	432	105	288	224	247	127	101	---	---	157	87
Dec. 6------	75	60	30	184	260	12	345	15	---	114	304	18	84	9	290	276	73	14	55	249	25	92	71	69	24	86	130	---	13	244
Dec. 7------	109	17	133	129	45	35	334	24	---	56	298	18	86	77	300	292	70	23	108	333	123	13	59	49	66	67	15	304	24	313
Dec. 8------	246	---	17	58	90	32	346	14	200	369	298	25	236	84	307	299	143	24	80	207	51	32	32	34	127	209	108	283	147	316
Dec. 9------	246	97	71	79	64	169	346	25	245	373	302	197	218	279	298	295	122	4	41	165	70	172	18	13	68	185	43	310	46	317
Average-------	172	64	59	156	172	105	312	76	---	243	289	122	(168)	174	249	250	105	13	63	281	84	133	88	75	96	154	72	---	111	259
Dec. 10------	258	98	152	245	291	89	332	164	215	359	303	256	206	283	287	295	123	13	50	409	38	271	20	26	49	215	273	---	57	302
Dec. 11------	250	109	93	107	181	225	344	113	230	387	304	188	246	310	298	279	200	11	74	366	48	253	166	38	86	260	199	---	138	295
Dec. 12------	247	104	78	260	332	246	337	122	235	344	306	330	(173)	294	282	270	106	4	34	446	124	307	206	181	59	199	310	---	114	302
Dec. 13------	237	118	137	232	258	181	293	170	113	310	243	297	235	199	234	215	162	5	40	344	66	284	---	169	(132)	226	184	---	139	260
Dec. 14------	229	131	117	220	141	225	178	78	223	83	---	230	217	132	87	80	---	8	47	180	61	50	183	133	(58)	224	35	---	56	253
Dec. 15------	109	9	81	238	150	36	63	182	52	247	73	121	205	166	34	82	118	27	62	247	100	49	213	211	---	207	93	---	123	53
Dec. 16------	82	16	129	192	246	169	170	108	192	---	167	85	59	82	81	98	174	7	130	368	65	46	33	46	79	84	---	---	85	187
Average-------	202	83	112	213	229	167	245	134	180	289	233	215	(192)	209	186	188	147	11	63	337	72	180	137	115	(77)	202	182	---	102	236
Dec. 17------	66	114	113	176	180	9	347	30	200	239	293	69	32	33	227	227	120	43	130	278	41	63	213	206	126	42	116	---	178	223
Dec. 18------	91	100	45	103	180	14	340	25	213	190	291	161	69	117	130	176	5	14	76	199	101	120	147	67	133	32	190	---	97	271
Dec. 19------	227	94	24	84	49	173	335	41	215	44	288	53	129	48	281	282	47	23	69	(355)	15	---	105	59	28	127	10	---	23	305
Dec. 20------	207	14	139	50	219	83	327	53	206	336	296	130	241	287	270	287	54	10	48	347	27	90	102	14	17	224	82	---	37	307
Dec. 21------	230	121	59	248	318	231	306	146	227	353	291	297	236	279	244	239	189	6	86	304	32	292	107	196	60	211	277	---	37	309
Dec. 22------	177	166	95	249	343	219	358	190	208	261	266	287	129	284	220	228	152	8	106	50	40	297	206	221	63	113	246	---	150	289
Dec. 23------	234	138	77	232	242	79	---	149	240	246	301	266	240	139	280	291	142	34	70	291	22	239	187	178	76	232	235	---	73	249
Average-------	176	107	79	163	219	115	335	91	216	239	289	180	154	170	236	247	101	20	83	(261)	40	183	152	134	72	140	165	---	85	279
Dec. 24------	144	19	69	109	255	222	---	140	232	296	302	123	99	26	268	279	216	36	42	201	110	87	134	46	61	146	58	---	81	297
Dec. 25------	236	178	103	38	61	13	---	199	216	42	292	44	209	95	296	315	22	37	53	297	82	26	221	221	131	206	43	---	172	309
Dec. 26------	250	145	81	175	329	23	---	14	195	366	283	61	236	286	286	304	133	10	133	164	(48)	293	32	8	11	228	220	---	14	(190)
Dec. 27------	218	116	84	264	307	111	---	61	185	135	263	286	118	205	237	235	75	10	20	239	(87)	226	190	218	124	117	274	---	155	304
Dec. 28------	148	17	100	83	104	156	---	125	155	359	249	47	219	263	268	247	200	29	128	202	34	86	126	87	71	222	44	---	99	248
Dec. 29------	127	58	106	247	256	191	---	187	183	349	270	291	178	284	276	265	125	10	127	187	86	281	168	212	57	178	268	---	77	299
Dec. 30------	243	139	84	226	308	---	---	50	196	290	302	279	83	194	215	217	52	8	160	348	122	261	114	74	131	112	244	---	100	306
Dec. 31------	252	147	135	240	220	---	304	111	238	180	244	39	201	191	289	297	49	9	137	204	118	16	195	170	118	221	80	---	65	314
Average-------	202	102	95	173	230	119	---	111	200	252	276	146	168	193	267	270	109	18	100	230	(86)	160	147	130	88	179	154	---	95	(283)

Note.--Langley is the unit used to denote one gram calorie per square centimeter.
Values in parentheses are interpolated.

SOLAR RADIATION DATA

Daily totals and weekly averages of solar radiation (direct and diffuse) received on a horizontal surface, tabulated in langleys. - Cont'd. DECEMBER 1957

1957	Portland, Me.	Raleigh, N. C.	Rapid City, S. Dak.	Riverside, Calif.	St. Cloud, Minn.	San Antonio, Tex.	Santa Maria, Calif.	S. Ste. Marie, Mich.	Sayville, N. Y.	Seattle, Wash.	Seattle-Tacoma, Wash	Shreveport, La.	Spokane, Wash.	State College, Pa.	Swan Island, W. I.	Tampa, Fla.	Toronto, Ontario	Tucson, Ariz.	Wake Island Pacific Area	Washington, D. C. (Silver Hill Obs.)	Winnipeg, Manitoba
Dec. 3------	190	171	105	343	148	143	331	97	125	81	94	184	98	52	---	354	112	377	485	109	58
Dec. 4------	96	225	225	80	65	386	166	94	29	98	102	358	68	102	---	342	207	224	502	33	105
Dec. 5------	203	310	78	156	123	290	129	52	289	61	84	333	38	198	360	429	146	113	421	277	83
Dec. 6------	---	212	107	324	63	119	318	52	95	23	30	29	29	82	438	399	26	348	446	115	89
Dec. 7------	29	226	(198)	322	48	340	321	169	53	30	38	185	65	44	512	201	15	348	---	29	40
Dec. 8------	100	27	(115)	318	89	401	319	130	32	105	106	244	133	48	---	334	51	349	358	27	104
Dec. 9------	7	45	(212)	321	84	368	305	45	18	105	146	352	173	40	189	168	103	351	426	18	50
Average-------	104	174	(149)	266	89	292	270	91	92	72	86	241	86	81	375	318	94	301	439	87	76
Dec. 10------	17	62	(227)	311	174	372	299	104	22	121	136	341	147	216	421	407	29	342	(434)	32	134
Dec. 11------	174	55	(256)	315	199	403	(306)	108	63	72	40	372	---	103	---	183	185	329	485	45	131
Dec. 12------	154	312	(192)	309	143	376	276	169	212	58	61	361	129	126	---	432	156	329	453	217	84
Dec. 13------	199	276	(212)	265	129	351	247	19	222	45	47	283	126	125	509	402	42	303	481	233	48
Dec. 14------	73	282	(214)	100	173	256	70	---	206	82	80	115	118	114	433	387	75	303	433	214	79
Dec. 15------	156	266	(127)	66	162	141	174	27	251	50	39	193	43	171	---	299	131	62	452	241	88
Dec. 16------	109	264	(100)	79	(135)	90	172	42	63	56	47	168	45	195	293	369	151	241	335	157	126
Average-------	126	217	(190)	206	(159)	284	(221)	78	148	69	64	262	101	150	414	354	110	273	(439)	163	99
Dec. 17------	179	247	(161)	222	(44)	81	294	80	252	38	44	108	65	200	---	342	143	185	414	229	53
Dec. 18------	173	214	(214)	113	16	120	259	23	110	63	62	163	26	36	---	317	12	309	449	67	24
Dec. 19------	42	139	(198)	302	83	283	(297)	9	89	58	28	83	40	74	---	290	132	334	446	84	107
Dec. 20------	63	39	(200)	309	204	348	301	16	63	48	38	346	47	32	---	323	26	335	435	19	43
Dec. 21------	76	289	(134)	282	173	311	175	24	202	32	42	343	21	154	294	388	96	338	466	249	53
Dec. 22------	---	296	(138)	213	86	228	311	69	248	54	92	327	124	195	---	296	122	337	474	237	65
Dec. 23------	135	280	(226)	300	161	67	299	122	225	21	28	297	28	180	515	219	135	285	446	253	109
Average-------	111	215	(182)	249	(110)	205	(276)	49	170	45	48	238	50	125	---	311	95	303	447	163	65
Dec. 24------	46	159	(180)	317	168	92	298	88	72	50	66	264	14	170	---	184	121	319	472	81	119
Dec. 25------	188	103	(214)	314	37	242	299	(54)	266	15	18	103	---	179	408	267	140	345	482	172	71
Dec. 26------	17	163	(77)	309	158	320	295	46	11	101	31	349	39	26	205	231	22	196	382	37	34
Dec. 27------	---	292	(194)	281	80	162	199	145	252	18	28	13	---	196	475	326	158	340	376	233	61
Dec. 28------	120	100	(184)	305	177	365	278	76	108	50	82	330	---	94	560	221	25	318	459	119	128
Dec. 29------	48	287	(172)	296	172	357	295	102	205	37	27	333	---	230	---	373	90	329	403	251	135
Dec. 30------	86	255	(88)	239	103	83	273	118	114	101	143	168	---	194	621	331	34	340	391	217	138
Dec. 31------	171	266	(245)	312	168	172	284	---	245	129	143	72	---	127	581	380	36	310	437	207	92
Average-------	97	203	(169)	297	133	224	278	(90)	159	63	67	204	---	152	475	289	78	312	425	165	97

Note.--Langley is the unit used to denote one gram calorie per square centimeter.
Values in parentheses are interpolated.

CONDENSED CLIMATOLOGICAL SUMMARY

DELAYED DATA

Section	Temperature						Precipitation			
	Monthly extremes						Monthly extremes			
	Station	Highest	Date	Station	Lowest	Date	Station	Greatest	Station	Least
		°F			*°F*			*In.*		*In.*
May 1957										
Alaska	Hollis	79	31	Barrow WB AP	-11	2	Little Port Walter	8.98	Matanuska Agr. Exp.	0.00
June 1957										
Alaska	Crooked Creek	94	6	3 Stations	24	1+	Beaver Falls	8.39	2 Stations	.00
Hawaii	Puunene CAA AP	94	6+	Mauna Loa Slope Obs	29	26	Kahana	10.45	16 Stations	.00
July 1957										
Alaska	Wild Lake	93	12	Anaktuvuk Pass	28	27	Pt. Alexander	8.70	Moose Valley	.15
August 1957										
Alaska	Moose Valley	90	15	Wainwright	25	31	Cordova	13.10	Sheep Mtn.	.19
September 1957										
Alaska	2 Stations	85	5	Point Lay	-8	26	Cordova	37.05	Port Heiden	.37
Hawaii	Puunene CAA AP	96	30	Mauna Loa Slope Obs.	32	30	Kipa	20.15	16 Stations	.00
October 1957										
Alaska	Whittier	71	7	Allakaket	-33	31	Little Port Walter	24.85	Sheep Mountain	.07
November 1957										
Alaska	Point Retreat Lt. Sta.	58	2	Fort Yukon CAA	-43	27	Little Port Walter	46.01	Point Lay	T

See footnotes with current data.

CORRECTIONS

	Month:	August 1957
page 373-376:	Climatological Data	In the precipitation sections the word "hail" should be deleted in the "snow, sleet" column.
	Month:	Annual 1956
page 29:	North Dakota	State temperature extremes should be: 121°F. highest and -60°F. lowest.
	Month:	October 1957
page 454:	Hawaii	Temperature extremes: the lowest should be for Mauna Loa Slope Obs., 33°F. and the date, 2+.
	Month:	November 1957
page 485:	Springfield, Ill.	Accumulated heating degree days should be 1185.
	Greensboro, N. C.	Accumulated heating degree days should be 825.

RAWINSONDE DATA

Average monthly values

DELAYED DATA

	1/CAMAGUEY, CUBA * (1003 MB.)						2/ CAMAGUEY, CUBA * (1002 MB.)						3/CAMAGUEY, CUBA * (1003 MB.)						4/CAMAGUEY, CUBA * (1001 MB.)						4/FT. HUACHUCA, ARIZ. * (854 MB.)					
Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	13	122	20.6		68	6.2	7	122	23.0				21	122	23.0	89	66	4.5	22	122	23.1	95	79	2.3	26	1,428	19.7	23	267	7.6
1,000	13	148	20.7		67	8.7	7	139	22.9				21	145	23.0	88	67	5.4	22	132	23.1	95	79	2.9	26	40				
950	13	602	18.5		80	24.7	7	597	21.2				21	599	20.2	82	79	16.5	22	588	21.2	80	98	8.7	26	499				
900	13	1,054	16.5		88	21.0	7	1,053	18.7				21	1,057	17.8	76	90	15.0	22	1,046	18.9	72	115	9.7	26	976				
850	13	1,539	13.7		92	12.4	7	1,542	16.5				21	1,545	15.1	72	89	12.2	22	1,536	16.2	70	125	7.8	26	1,469	19.5	24	263	8.0
800	13	2,048	10.5		103	6.0	7	2,056	13.8				21	2,056	12.2	66	87	8.0	22	2,049	12.9	70	133	5.8	26	1,986	14.9	29	259	10.3
750	13	2,594	7.4		105	6.6	7	2,606	11.3				21	2,607	9.0	66	82	7.2	22	2,597	9.9	64	134	4.5	26	2,531	10.0	35	259	11.7
700	12	3,147	5.2		96	6.2	7	3,171	8.3				21	3,164	6.4	52	76	6.0	22	3,160	6.8	59	150	4.3	26	3,097	4.9	40	233	10.1
650	12	3,757	1.8		104	6.4	7	3,786	4.6				21	3,780	3.7		78	4.7	22	3,776	3.2	58	147	3.7	26	3,695	- .1	41	224	10.5
600	11	4,386	- 1.5		63	3.1	7	4,425	.4				19	4,417	.2		61	2.9	21	4,410	- .5	57	156	4.5	26	4,329	- 4.9	38	228	11.3
550	11	5,074	- 6.4				7	5,121	- 3.3				19	5,119	- 3.9		343	1.4	20	5,107	- 4.3	54	162	4.7	24	5,010	- 9.5		251	15.3
500	11	5,810	-11.3				7	5,866	- 7.9				19	5,855	- 8.9		279	4.1	19	5,845	- 8.6	40	200	8.5	22	5,746	-14.2		255	21.6
450	11	6,620	-16.7				7	6,693	-13.5				19	6,676	-14.2		271	11.9	19	6,669	-13.7	48	220	10.5	20	6,537	-19.5		245	32.1
400	11	7,488	-22.9				7	7,562	-20.2				19	7,548	-20.5		272	20.8	19	7,541	-19.8	52	231	14.0	19	7,402	-26.0		259	39.2
350	11	8,452	-30.3				6	8,535	-28.2				19	8,522	-27.7		271	27.0	19	8,519	-26.7	54	235	14.8	18	8,352	-33.8		259	43.5
300	10	9,524	-38.2				6	9,622	-36.3				19	9,611	-36.3		271	29.3	19	9,613	-35.1		240	20.0	16	9,422	-41.7		256	49.9
250	10	10,755	-46.5				6	10,861	-45.8				19	10,849	-46.3		271	36.3	19	10,858	-45.0		250	29.0	13	10,652	-49.7		261	61.2
200	10	12,211	-54.6				6	12,310	-57.3				18	12,300	-56.4		268	48.0	19	12,315	-55.1		262	33.6	10	12,097	-56.5		266	72.9
175	10	13,056	-59.4				6	13,141	-63.4				18	13,137	-61.7		274	48.0	19	13,157	-60.5		272	30.5	8	12,949	-58.4			
150	10	14,011	-64.1				5	14,089	-67.4				17	14,080	-66.2		274	42.2	14	14,098	-66.0		272	30.3	6	13,945	-60.9			
125	10	15,113	-69.4										17	15,176	-69.6		280	33.4	11	15,189	-69.9				6	15,072	-62.1			
100	6	16,415	-74.2										14	16,478	-74.9		285	24.1	7	16,484	-74.4									
80													9	17,768	-75.7				5	17,796	-74.8									
60													7	19,443	-70.1															
50													5	20,542	-64.8															
40													5	21,914	-60.5															

	4/HAVANA, CUBA * (1009 MB.)						5/CAMAGUEY, CUBA (1001 MB.)						5/FT. HUACHUCA, ARIZ. (856 MB.)						5/HAVANA, CUBA (1008 MB.)						5/HILO, T. H. (1016 MB.)					
SURFACE	31	49	24.0	89	97	3.9	29	122	23.5	95	84	2.3	29	1,428	21.1	30	229	2.5	29	49	24.0	90	115	3.1	30	9	20.9	85	241	5.2
1,000	31	126	23.9	84	96	5.6	29	128	23.5	95	86	2.5	29	62					29	121	24.3	84	121	4.9	30	147	22.2	77	234	2.9
950	31	581	22.0	79	112	8.7	29	586	22.7	77	103	10.1	29	523					29	573	22.4	76	141	8.0	30	594	19.4	79	86	3.9
900	31	1,044	19.1	79	115	7.2	29	1,048	20.4	70	111	9.1	29	997					29	1,041	19.7	74	146	9.1	30	1,056	16.2	82	78	5.8
850	31	1,534	15.9	79	129	6.6	29	1,540	17.5	64	119	8.0	29	1,493	21.6	30	252	2.3	29	1,531	16.8	70	152	8.4	30	1,541	13.1	85	79	5.8
800	31	2,047	12.9	76	135	5.4	29	2,056	14.5	61	130	7.8	29	2,016	18.9	29	251	2.5	29	2,046	13.9	64	153	8.5	30	2,051	11.9	67	81	7.4
750	31	2,591	9.9	68	137	3.7	29	2,609	11.1	61	142	7.4	29	2,568	15.1	32	251	4.5	29	2,588	11.1	59	149	7.0	30	2,595	11.5	38	80	8.7
700	31	3,159	6.6	63	175	2.9	29	3,172	7.9	59	146	6.0	29	3,145	10.9	35	254	7.0	29	3,162	7.7	56	167	8.5	30	3,166	9.2	29	90	7.4
650	31	3,768	3.1	61	202	5.4	29	3,792	4.1	58	156	4.9	29	3,761	6.6	37	254	8.9	29	3,768	4.0	58	173	3.1	30	3,775	6.1		95	5.8
600	31	4,409	- .5	60	211	6.8	29	4,426	.1	58	181	3.7	29	4,410	1.6	36	259	8.4	29	4,417	.1	60	183	1.9	30	4,429	2.6		93	4.1
550	29	5,102	- 4.4	55	229	8.5	29	5,125	- 4.0	51	224	3.1	29	5,103	- 3.5	34	260	11.7	29	5,107	- 3.8	59	218	1.4	29	5,120	- 1.6		111	1.7
500	28	5,845	- 8.8	49	240	10.9	29	5,864	- 8.5	45	247	2.1	29	5,850	- 8.8		266	10.9	29	5,858	- 8.1	54	263	1.6	29	5,879	- 6.6		122	1.6
450	28	6,663	-14.1	47	251	11.3	29	6,689	-13.4	45	273	2.7	29	6,664	-14.3		270	11.5	29	6,671	-12.9	49	281	3.7	29	6,687	-12.0		163	3.7
400	28	7,539	-20.2	46	258	15.5	29	7,561	-19.4	38	311	3.7	29	7,539	-21.2		271	14.4	29	7,560	-18.9	45	313	5.8	29	7,587	-18.2		222	3.7
350	27	8,515	-27.3	46	250	16.3	29	8,541	-26.2	35	330	5.1	28	8,510	-28.7		261	15.3	29	8,541	-25.9	40	331	7.8	29	8,570	-25.6		237	7.0
300	27	9,606	-35.7		251	16.9	28	9,636	-34.7		323	10.7	28	9,593	-37.2		261	17.1	29	9,639	-34.1		335	8.9	29	9,668	-34.3		247	13.2
250	27	10,850	-44.5		264	26.6	28	10,884	-44.6		315	15.7	28	10,827	-46.7		274	15.3	26	10,888	-44.0		321	14.0	29	10,919	-43.8		265	16.5
200	25	12,312	-54.4		270	35.4	24	12,338	-56.3		315	23.3	28	12,274	-56.2		268	23.5	23	12,349	-55.5		333	20.6	29	12,381	-55.0		262	24.5
175	24	13,157	-59.8		268	34.2	22	13,171	-62.3		324	26.4	28	13,114	-60.3		275	25.6	17	13,189	-60.8		333	23.7	29	13,224	-60.6		268	24.5
150	20	14,106	-64.5		284	23.9	22	14,109	-67.9		328	27.0	26	14,069	-63.1		271	28.6	8	14,150	-65.1				29	14,171	-65.8		273	21.0
125	13	15,210	-68.3				16	15,185	-71.5				24	15,186	-66.6		278	18.5	5	15,216					29	15,266	-70.2		276	15.3
100	5	16,542	-72.6				9	16,506	-71.1				21	16,532	-68.5		300	7.8							29	16,589	-71.2		308	4.9
80							5	17,834	-70.6				21	17,872	-66.3		71	4.1							29	17,910	-70.1		75	8.5
60													18	19,635	-60.4		70	10.3							28	19,644	-64.6		91	22.9
50													18	20,776	-58.0		85	15.2							28	20,768	-61.4		90	26.8
40													14	22,178	-55.3		106	12.6							28	22,165	-57.9		87	30.3
30													12	24,025	-51.6										23	23,997	-53.5		87	35.4

	5/MERIDA, MEXICO (1010 MB.)						5/VERA CRUZ, MEXICO (1007 MB.)						5/YUMA, ARIZ. (994 MB.)						6/FT. HUACHUCA, ARIZ. (858 MB.)						6/HAVANA, CUBA (1009 MB.)					
SURFACE	30	11	24.0	93	101	3.9	30	13	29.0	80			27	105	25.3	34	349	0.8	31	1,428	21.5	61	232	0.8	30	49	24.9	88	138	1.9
1,000	30	99	23.7	91	109	7.6	30	72	28.7	79			27	50					31	83					30	132	25.3	82	135	2.7
950	30	545	22.6	87	141	20.0	30	519	26.4	72			27	507	28.7	22	290	3.9	31	538					30	584	23.4	74	135	4.7
900	30	1,021	21.2	74	144	16.9	30	1,004	23.8	70			27	983	26.9	19	294	6.0	31	1,017					30	1,055	20.6	70	140	4.9
850	30	1,516	18.9	66	145	13.0	30	1,503	20.7	69			27	1,484	23.8	19	265	6.2	31	1,514	22.0	57	248	1.2	30	1,548	17.7	65	148	5.1
800	30	2,035	16.1	62	143	11.1	30	2,025	17.4	67			27	2,008	19.8	21	232	5.2	31	2,040	19.6	53	45	1.7	30	2,064	14.8	56	144	5.4
750	30	2,577	13.0	57	150	8.0	30	2,574	14.1	60			27	2,563	15.4	23	223	5.6	31	2,596	15.7	55	60	3.1	30	2,604	11.6	51	158	9.1
700	30	3,159	9.6	56	161	6.8	30	3,153	10.8	53			27	3,139	11.4	25	227	8.4	31	3,174	11.4	61	85	3.9	30	3,183	8.4	49	138	4.7
650	30	3,765	5.9	56	158	5.1	30	3,767	7.0	47			27	3,755	7.1	27	226	9.3	31	3,793	6.7	66	113	4.5	30	3,790	5.0	48	106	5.1
600	30	4,421	1.9	56	152	4.3	30	4,421	3.0	47			27	4,405	2.3	29	235	10.3	31	4,443	1.9	70	126	6.0	30	4,441	1.3	47	101	5.6
550	30	5,109	- 2.1	53	157	2.9	28	5,117	- 1.1	49			27	5,101	- 2.8	30	249	10.1	31	5,137	- 2.8	69	149	6.0	30	5,131	- 3.0	46	99	6.4
500	30	5,871	- 6.4	49	214	1.9	27	5,875	- 5.6	49			27	5,849	- 8.3		259	11.5	31	5,889	- 7.5	60	153	8.7	30	5,887	- 7.6	42	84	5.6
450	30	6,682	-11.1	46	237	2.3	26	6,692	-10.2	43			27	6,664	-14.0		266	11.7	31	6,707	-12.5	51	167	7.6	30	6,697	-12.7	37	60	5.8
400	30	7,585	-17.3	38	267	4.1	23	7,592	-15.7				27	7,540	-20.8		274	15.2	31	7,592	-18.1	43	172	7.2	30	7,591	-18.6	30	58	7.0
350	30	8,572	-24.2	37	271	7.8	22	8,584	-22.5				27	8,510	-28.7		278	18.3	31	8,575	-25.3	39	176	7.8	30	8,574	-25.6	31	60	7.2
300	30	9,678	-32.4		278	11.9	22	9,696	-30.9				27	9,592	-37.5		270	20.2	31	9,675	-33.7	42	174	11.7	30	9,674	-33.9		57	9.3
250	30	10,937	-42.2		274	13.2	22	10,962	-40.9				26	10,825	-46.7		271	22.9	31	10,927	-43.7		179	13.8	30	10,926	-44.1		50	11.7
200	30	12,409	-53.7		279	14.4	21	12,438	-53.2				24	12,279	-56.1		271	28.4	31	12,389	-55.1		208	10.9	27	12,385	-55.8		47	15.5
175	30	13,254	-60.1		282	14.4	20	13,285	-59.9				20	13,125	-59.8		264	28.6	28	13,234	-60.6		212	6.4	26	13,221	-61.9		47	18.7
150	29	14,201	-66.3		308	13.0	20	14,230	-67.0				19	14,075	-63.2		273	21.4	26	14,182	-66.0		182	4.9	24	14,162	-67.2		48	22.2
125	27	15,291	-72.1		1	9.7	19	15,309	-73.5				16	15,179	-65.1		266	17.5	23	15,268	-70.4		119	7.0	19	15,256	-70.4		50	19.4
100	22	16,589	-74.0		57	9.5	11	16,594	-76.6				13	16,530	-66.6				20	16,591	-71.1		103	9.9	16	16,582	-70.7		65	19.0
80	21	17,901	-71.6		76	18.8	5	17,881	-73.0				10	17,888	-65.8				20	17,925	-67.0		100	14.0	15	17,915	-68.4		78	21.6
60	19	19,632	-64.0		90	23.1							[illegible]	19,641	-61.5				18	19,689	-60.6		93	22.0	13	19,668	-63.6		86	34.2
50	17	20,755	-61.0		84	23.5							6	20,775	-58.1				16	20,825	-57.9		97	23.9	13	20,797	-59.9		87	37.3
40	17	22,153	-57.5		89	30.5							6	22,190	-54.9				15	22,245	-54.4		89	24.7	13	22,202	-56.4		89	42.0
30	13	23,995	-53.1		91	28.4							[illegible]	24,046	-50.6				13	24,104	-50.6		90	27.4	12	24,048	-51.3		93	41.0
25																			7	25,302	-49.0				[illegible]	25,237	-49.0			

See reference note at end of table

RAWINSONDE DATA

Average monthly values

DELAYED DATA

6/MAZATLAN, MEXICO (1009 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	14	28.2	79		
1,000--	31	91	27.6	80		
950----	31	549	24.8	81		
900----	31	1,020	22.4	80		
850----	31	1,517	19.7	79		
800----	31	2,038	17.1	78		
750----	31	2,593	14.6	70		
700----	31	3,169	11.0	69		
650----	30	3,787	6.8	71		
600----	30	4,438	2.3	75		
550----	29	5,137	- 2.4	75		
500----	29	5,888	- 6.6	67		
450----	29	6,709	-11.4	64		
400----	29	7,599	-17.0	58		
350----	29	8,587	-23.7	57		
300----	28	9,694	-31.8			
250----	27	10,958	-41.3			
200----	27	12,434	-53.1			
175----	27	13,281	-59.7			
150----	27	14,229	-66.1			
125----	25	15,320	-71.3			
100----	24	16,631	-72.5			
80-----	23	17,954	-68.6			
60-----	23	19,705	-62.3			
50-----	23	20,841	-58.3			
40-----	21	22,260	-54.4			
30-----	21	24,120	-50.2			
25-----	20	25,332	-47.3			
20-----	18	26,798	-44.5			

6/MERIDA, MEXICO (1014 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	11	23.4	94	74	02.7
1,000--	31	129	24.0	91	96	07.2
950----	31	575	23.0	79	125	15.2
900----	31	1,051	20.8	65	124	15.2
850----	31	1,544	18.2	59	120	13.4
800----	31	2,061	15.4	53	115	12.4
750----	31	2,599	12.3	48	116	11.5
700----	31	3,182	8.8	51	112	11.3
650----	31	3,784	5.2	46	105	10.5
600----	31	4,441	1.5	45	93	10.1
550----	31	5,126	- 2.8	46	88	10.7
500----	31	5,887	- 7.3	43	83	10.5
450----	31	6,691	-12.1	37	77	9.5
400----	31	7,594	-18.1	35	69	10.1
350----	31	8,578	-24.9	30	58	8.4
300----	31	9,681	-33.2		52	7.6
250----	31	10,937	-43.0		44	9.1
200----	31	12,403	-54.6		26	7.6
175----	31	13,246	-60.7		38	10.3
150----	31	14,192	-66.1		54	13.4
125----	30	15,285	-70.7		58	16.9
100----	28	16,605	-71.1		72	21.8
80-----	28	17,933	-69.0		86	24.9
60-----	27	19,679	-62.4		86	33.8
50-----	25	20,814	-59.4		91	36.9
40-----	24	22,224	-55.4		93	39.2
30-----	22	24,074	-52.2		92	35.2
25-----	13	25,255	-50.7			
20-----						

6/TACUBAYA, MEXICO (775 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	27	2,306	12.3	84		
1,000--	27	108				
950----	27	560				
900----	27	1,027				
850----	27	1,517				
800----	27	2,033				
750----	27	2,581	11.2	84		
700----	27	3,153	8.6	83		
650----	27	3,770	5.4	77		
600----	27	4,415	2.1	64		
550----	26	5,112	- 1.9	56		
500----	26	5,868	- 6.3	56		
450----	26	6,689	-11.5	55		
400----	26	7,579	-17.1	49		
350----	23	8,569	-23.9			
300----	23	9,675	-32.1			
250----	22	10,935	-42.0			
200----	19	12,408	-53.7			
175----	15	13,253	-59.9			
150----	11	14,190	-66.3			
125----	6	15,282	-71.2			
100----	5	16,578	-71.3			

6/YUMA, ARIZ (995 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	105	29.9	38	154	0.6
1,000--	30	64				
950----	30	526	31.1	28	202	1.9
900----	30	1,005	28.6	28	221	3.5
850----	30	1,509	25.0	31	204	4.5
800----	30	2,037	20.8	36	191	5.2
750----	30	2,595	16.2	43	185	6.6
700----	30	3,172	11.2	52	182	7.6
650----	30	3,789	6.2	58	180	8.9
600----	30	4,437	1.2	60	187	9.3
550----	30	5,131	- 3.5	55	190	9.9
500----	30	5,879	[illegible]	38	202	9.9
450----	30	6,698	-13.3	32	204	10.9
400----	30	7,577	-19.3		208	15.0
350----	29	8,557	-26.1		208	22.0
300----	29	9,655	-33.8		200	25.5
250----	29	10,907	-42.7		202	28.6
200----	28	12,375	-53.5		212	27.0
175----	27	13,222	-59.1		211	27.6
150----	25	14,172	-64.8		222	20.2
125----	20	15,269	-69.1		219	17.1
100----	17	16,600	-69.4		190	15.7
80-----	13	17,957	-66.1		139	13.0
60-----	10	19,729	-60.9			
50-----	9	20,873	-58.1			
40-----	8	22,291	-54.5			
30-----	5	24,155	-51.1			

7/MAZATLAN, MEXICO (1009 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	9	14	27.3			
1,000--	9	96	27.0			
950----	9	547	24.7			
900----	9	1,023	22.1			
850----	9	1,520	19.6			
800----	9	2,042	17.0			
750----	9	2,588	14.1			
700----	9	3,172	11.3			
650----	9	3,784	7.3			
600----	9	4,443	2.8			
550----	9	5,138	- 1.6			
500----	9	5,895	- 6.5			
450----	9	6,703	-11.1			
400----	9	7,609	-16.3			
350----	9	8,600	-23.1			
300----	9	9,709	-31.3			
250----	8	10,977	-41.3			
200----	8	12,453	-52.9			
175----	7	13,303	-59.9			
150----	7	14,250	-66.4			
125----	7	15,338	-71.8			
100----	7	16,641	-74.6			
80-----	7	17,953	-68.2			
60-----	7	19,712	-61.9			
50-----	6	20,854	-59.3			
40-----	6	22,264	-54.6			
30-----	5	24,125	-48.4			
25-----	5	25,340	-47.3			

7/MERIDA, MEXICO (1013 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	11	22.9	93	85	1.2
1,000--	31	122	24.2	90	108	4.9
950----	31	570	23.4	82	128	12.2
900----	31	1,046	21.2	72	125	12.2
850----	31	1,540	18.5	67	118	10.1
800----	31	2,058	15.6	61	119	8.9
750----	31	2,599	12.5	57	121	8.9
700----	31	3,180	9.2	54	116	8.2
650----	31	3,785	5.5	53	108	8.0
600----	31	4,442	1.6	53	90	9.1
550----	31	5,128	- 2.5	53	81	9.5
500----	31	5,890	- 7.1	48	70	12.0
450----	31	6,695	-12.0	46	68	13.4
400----	31	7,597	-17.7	40	66	13.0
350----	31	8,584	-24.4	35	66	12.8
300----	31	9,689	-32.7		59	9.9
250----	31	10,947	-42.6		58	8.9
200----	30	12,416	-54.1		57	8.9
175----	30	13,261	-60.4		50	9.3
150----	30	14,207	-66.3		49	11.1
125----	30	15,300	-70.3		53	13.2
100----	29	16,620	-70.9		67	17.7
80-----	29	17,949	-68.9		86	23.1
60-----	27	19,695	-63.2		85	30.5
50-----	23	20,824	-60.5		84	35.9
40-----	21	22,224	-57.5		89	38.9
30-----	20	24,054	-53.7		90	37.7
25-----	19	25,233	-51.4		88	37.9
20-----	16	26,685	-50.5		85	39.1
15-----	6	28,601	-47.0			

7/ST. PAUL IS., ALASKA (1011 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	10	8.9	96	199	3.9
1,000--	31	99			208	5.1
950----	31	521	6.9	92	210	8.9
900----	31	966	5.6	88	206	8.5
850----	31	1,433	4.2	84	207	8.2
800----	31	1,926	3.1	72	216	6.6
750----	31	2,446	.8	69	217	6.0
700----	31	2,999	- 1.9	64	214	6.6
650----	31	3,580	- 4.9	60	220	8.4
600----	31	4,211	- 8.2	55	219	9.7
550----	31	4,876	-12.0	48	225	11.1
500----	30	5,602	-17.1	49	240	12.4
450----	30	6,380	-22.5	47	245	13.2
400----	30	7,240	-28.7	48	255	9.1
350----	30	8,183	-35.5	47	268	13.4
300----	30	9,238	-43.4		264	13.8
250----	30	10,445	-49.8		277	11.9
200----	30	11,902	-50.3		263	10.5
175----	30	12,775	-49.4		272	8.5
150----	27	13,787	-49.2		257	10.9
125----	27	14,981	-49.9		248	14.4
100----	27	16,438	-50.4		258	7.4
80-----	25	17,894	-49.9		246	8.7
60-----	22	19,775	-49.4		282	4.7
50-----	22	20,971	-49.1		112	.8
40-----	20	22,440	-48.5		134	2.5
30-----	14	24,354	-47.8			
25-----	13	25,554	-47.0			
20-----	5	27,102	-44.3			

7/TACUBAYA, MEXICO (774 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	13	2,306	13.0			
1,000--	13	97				
950----	13	550				
900----	13	1,018				
850----	13	1,512				
800----	13	2,029				
750----	13	2,579	11.8			
700----	13	3,153	8.9			
650----	13	3,772	5.1			
600----	13	4,414	1.7			
550----	13	5,109	- 2.3			
500----	13	5,864	- 6.4			
450----	13	6,688	-11.4			
400----	13	7,575	-16.8			
350----	13	8,564	-23.8			
300----	13	9,670	-32.3			
250----	13	10,929	-42.2			
200----	11	12,402	-53.7			
175----	[illegible]	13,252	-59.8			
150----	6	14,205	-66.3			
125----	5	15,290	-70.8			

7/YUMA, ARIZ. (997 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	29	105	28.0	50	268	0.8
1,000--	29	79				
950----	29	536	28.9	38	239	2.5
900----	29	1,014	26.1	39	213	3.5
850----	29	1,515	22.8	42	207	5.2
800----	29	2,040	19.0	47	197	7.2
750----	29	2,594	14.8	53	195	7.6
700----	29	3,170	10.4	54	201	8.5
650----	29	3,786	6.1	53	200	8.9
600----	29	4,433	1.4	58	204	8.5
550----	29	5,129	- 3.1	57	202	7.4
500----	29	5,877	- 7.7	50	206	8.2
450----	29	6,697	-12.9	47	222	10.5
400----	27	7,575	-19.1	45	227	11.9
350----	27	8,554	-26.3		228	14.4
300----	27	9,648	-34.8		214	17.3
250----	26	10,895	-44.0		219	21.4
200----	23	12,350	-54.4		213	28.8
175----	22	13,190	-60.1		212	27.6
150----	20	14,131	-65.4		214	28.2
125----	17	15,233	-69.3		199	22.2
100----	14	16,567	-68.4		181	15.2
80-----	13	17,908	-65.9		161	13.0
60-----	11	19,672	-60.2		127	10.1
50-----	11	20,814	-57.4		91	20.2
40-----	11	22,233	-54.3		99	27.8
30-----	11	24,085	-51.6		87	32.8
25-----	10	25,270	-50.2			
20-----	10	26,733	-47.9			

7/VERA CRUZ, MEXICO (1012 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	10	13	25.4			
1,000--	10	117	24.9			
950----	10	555	22.8			
900----	10	1,038	20.8			
850----	10	1,532	18.2			
800----	10	2,050	15.5			
750----	10	2,598	12.6			
700----	10	3,173	9.5			
650----	10	3,782	6.2			
600----	10	4,436	2.1			
550----	10	5,125	- 2.1			
500----	10	5,885	- 6.8			
450----	10	6,699	-11.7			
400----	10	7,593	-17.1			
350----	10	8,581	-23.8			
300----	10	9,688	-32.2			
250----	8	10,949	-42.0			
200----	7	12,421	-53.6			
175----	7	13,267	-60.2			
150----	5	14,218	-66.0			

8/MERIDA, MEXICO (1011 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	11	23.6	96	109	0.8
1,000--	30	103	24.0	92	114	4.3
950----	30	550	23.1	85	140	14.2
900----	30	1,026	20.8	78	139	13.4
850----	30	1,520	18.1	74	139	11.5
800----	30	2,083	15.2	70	140	10.5
750----	30	2,577	12.1	67	142	9.3
700----	30	3,159	8.9	65	136	8.9
650----	30	3,763	5.5	63	130	8.9
600----	30	4,421	1.9	60	114	8.7
550----	30	5,111	- 2.1	57	110	8.2
500----	30	5,870	- 6.4	56	101	6.6
450----	30	6,679	-11.1	56	109	4.7
400----	30	7,584	-17.1	50	62	3.3
350----	30	8,572	-23.9	46	36	2.1
300----	30	9,679	-32.2	39	321	2.1
250----	30	10,939	-42.3		318	6.6
200----	30	12,410	-54.1		316	11.3
175----	30	13,254	-60.8		320	14.6
150----	29	14,197	-67.3		336	11.7
125----	28	15,280	-72.4		357	8.7
100----	26	16,590	-73.0		46	8.9
80-----	21	17,905	-69.7		87	19.0
60-----	21	19,643	-63.7		91	20.2
50-----	21	20,769	-60.9		86	24.5
40-----	19	22,167	-56.7		90	28.4
30-----	19	24,005	-53.3		89	27.8
25-----	17	25,183	-51.1		92	29.7
20-----	16	26,639	-48.8		91	35.4
15-----	14	28,540	-44.5		91	38.3
10-----	7	31,276	-40.8			
7------						

8/SWAN ISLAND, W. I. (1011 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	30	10	26.8	87	103	9.9
1,000--	30	105	26.4	86	103	10.5
950----	30	552	23.2	86	113	13.0
900----	30	1,029	20.5	80	117	14.0
850----	30	1,522	17.8	74	118	13.8
800----	30	2,039	15.1	67	113	13.6
750----	30	2,582	12.0	66	108	11.9
700----	29	3,161	9.1	58	112	11.1
650----	29	3,769	5.6	51	111	11.1
600----	29	4,423	1.7	51	112	10.9
550----	29	5,114	- 2.0	46	111	11.1
500----	29	5,873	- 6.6	43	107	9.3
450----	29	6,682	-11.6	42	86	8.2
400----	29	7,583	-17.3	39	77	7.0
350----	29	8,571	-24.1	35	23	5.2
300----	29	9,676	-32.7	34	[illegible]	7.2
250----	29	10,933	-42.9		339	9.7
200----	29	12,400	-54.8		343	16.1
175----	29	13,242	-61.1		338	17.7
150----	29	14,185	-67.5		347	15.3
125----	29	15,269	-72.6		6	12.8
100----	29	16,576	-73.3		55	12.2
80-----	28	17,890	-70.6		83	15.9
60-----	28	19,622	-64.2		83	20.8
50-----	26	20,751	-61.0		82	24.7
40-----	22	22,150	-57.5		91	26.8
30-----	22	23,988	-53.2		90	28.0
25-----	21	25,164	-51.0		90	28.2
20-----	18	26,622	-49.0		90	29.5
15-----	13	28,525	-46.1		84	35.0
10-----	10	31,245	-41.2			
7------	6	33,632	-38.7			

8/YUMA, ARIZ. (996 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	29	105	24.7	42	299	0.6
1,000--	29	69				
950----	29	527	28.2	29	267	3.5
900----	29	1,001	25.9	27	264	4.9
850----	29	1,500	22.2	30	233	3.9
800----	29	2,023	17.9	32	213	4.3
750----	29	2,574	13.9	33	198	6.0
700----	29	3,148	9.7	33	194	8.5
650----	29	3,759	5.2	35	201	8.0
600----	29	4,405	.7	33	219	8.5
550----	29	5,097	- 3.8	29	229	9.5
500----	29	5,843	- 8.8		248	13.8
450----	29	6,658	-14.4		254	17.1
400----	29	7,533	-20.8		258	21.6
350----	29	8,503	-28.8		259	29.0
300----	29	9,585	-37.2		257	31.5
250----	29	10,820	-45.7		260	40.8
200----	27	12,276	-55.0		261	38.7
175----	23	13,118	-59.8		259	36.3
150----	20	14,067	-64.1		264	32.4
125----	15	15,174	-66.6			
100----	10	16,516	-68.0			
80-----	9	17,864	-64.4			
60-----	6	19,637	-61.1			
50-----	6	20,771	-59.8			
40-----	6	22,171	-57.1			

9/BARROW, ALASKA (1011 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	8	- 7.1	86	86	0.6
1,000--	31	91	- 6.2	84	71	1.7
950----	31	487	- 7.4	78	222	2.5
900----	31	913	- 8.5	75	213	3.7
850----	31	1,355	-10.2	73	212	5.6
800----	31	1,821	-11.9	66	227	7.2
750----	31	2,309	-14.0	58	226	9.1
700----	31	2,836	-16.5	55	230	10.1
650----	31	3,384	-19.5	53	234	12.8
600----	31	3,982	-22.9	53	239	16.7
550----	31	4,612	-26.3	50	237	19.8
500----	31	5,301	-30.2	48	240	24.7
450----	31	6,037	-34.7		243	27.2
400----	30	6,854	-40.3		243	35.9
350----	30	7,754	-45.7		246	34.8
300----	30	8,770	-50.5		240	40.6
250----	29	9,957	-52.3			
200----	29	11,401	-52.0			
175----	29	12,267	-51.0			
150----	29	13,272	-50.6			
125----	29	14,458	-51.6			
100----	28	15,898	-51.9			
80-----	26	17,341	-53.3			
60-----	25	19,191	-55.0			
50-----	25	20,353	-56.0			
40-----	23	21,749	-57.0			
30-----	22	23,565	-58.8			
25-----	20	24,712	-59.3			
20-----	17	26,127	-60.5			
15-----	12	27,905	-60.8			
10-----	7	30,418	-60.8			

9/FT. HUACHUCA, ARIZ. (857 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	31	1,428	12.9	59	158	2.9
1,000--	31	113			171	3.3
950----	31	548			164	7.2
900----	31	1,014			192	9.7
850----	31	1,500	13.3	59	208	14.2
800----	31	2,009	11.3	56	217	15.5
750----	31	2,543	8.1	56	232	15.5
700----	31	3,112	4.3	53	233	18.7
650----	31	3,710	.7	44	240	23.5
600----	31	4,351	- 2.9	33	244	27.4
550----	31	5,031	- 6.9		249	31.7
500----	31	5,773	-11.7		250	37.7
450----	31	6,565	-17.5		250	46.2
400----	31	7,444	-24.0		250	49.7
350----	31	8,405	-31.0		249	52.1
300----	30	9,478	-39.3		248	55.6
250----	28	10,712	-47.3		256	49.2
200----	26	12,164	-55.3		252	44.5
175----	24	13,003	-59.3			
150----	19	13,959	-63.1			
125----	14	15,075	-65.8			

See reference note at end of table

RAWINSONDE DATA

Average monthly values

Standard pressure surface (mb.)	9/MERIDA, MEXICO (1014 MB.)				Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	11	20.6	91	41	0.6
1,000	31	131	23.2	82	51	3.9
950	31	574	21.2	79	61	8.2
900	31	1,047	18.4	75	61	6.6
850	31	1,535	15.4	74	30	5.1
800	31	2,048	12.5	72	12	3.1
750	31	2,586	10.3	58	6	2.1
700	31	3,161	8.2	45	346	3.1
650	31	3,765	5.2	44	336	3.1
600	31	4,420	2.2	33	318	5.1
550	31	5,112	- 1.6		313	6.6
500	31	5,871	- 6.1		305	6.6
450	31	6,683	-11.6		296	8.2
400	31	7,580	-18.2		291	12.6
350	30	8,565	-25.3		286	17.9
300	30	9,664	-33.9		284	20.8
250	30	10,916	-43.7		285	25.6
200	29	12,378	-55.2		286	26.8
175	29	13,218	-61.6		278	26.2
150	29	14,158	-68.1		281	26.4
125	29	15,236	-73.9		289	20.6
100	27	16,528	-77.0		291	13.8
80	25	17,824	-72.7		342	6.4
60	24	19,554	-64.8		88	10.7
50	24	20,676	-61.5		90	11.9
40	24	22,073	-57.2		85	14.8
30	22	23,910	-53.7		78	20.8
25	20	25,085	-50.5		86	23.7
20	19	26,550	-47.5		86	24.9
15	16	28,461	-45.0		83	28.6
10	9	31,203	-39.2			

Standard pressure surface (mb.)	9/ST. PAUL IS., ALASKA (1003 MB.)				Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	31	10	4.5	88	58	3.3
1,000	31	30	4.0	80	305	1.4
950	31	446	1.9	86	179	1.2
900	31	880	- .8	83	192	2.7
850	31	1,336	- 2.1	74	182	1.9
800	31	1,817	- 3.7	63	184	2.9
750	31	2,322	- 5.7	56	169	3.7
700	31	2,863	- 8.3	53	166	5.2
650	31	3,429	-11.4	47	165	4.5
600	31	4,045	-15.4	45	197	4.5
550	31	4,688	-19.7	45	170	5.4
500	31	5,398	-24.5	46	166	5.1
450	31	6,147	-29.8	45	189	3.9
400	31	6,987	-35.4	42	194	3.3
350	31	7,905	-41.5		286	5.2
300	31	8,936	-48.3		246	7.0
250	31	10,122	-52.7		256	10.5
200	31	11,565	-51.5		243	16.9
175	31	12,434	-50.8		222	18.8
150	31	13,438	-50.8		214	16.7
125	31	14,625	-51.0		229	14.4
100	30	16,072	-50.8		220	14.0
80	30	17,525	-51.0		225	12.6
60	29	19,395	-51.8		225	9.7
50	29	20,575	-52.2		249	10.1
40	27	22,019	-52.8		261	8.9
30	22	23,889	-53.8		299	8.5
25	12	25,084	-54.0			
20	5	26,491	-51.2			
15						
10						

Standard pressure surface (mb.)	9/TONOPAH, NEV. (834 MB.)				Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	14	1,650	3.2		9	14.4
1,000	14	149				
950	14	572				
900	14	1,019				
850	14	1,491				
800	14	1,990	8.0		45	4.9
750	14	2,521	4.6		208	3.1
700	14	3,079	1.2		211	8.9
650	14	3,671	- 2.4		224	12.2
600	14	4,304	- 6.0		240	16.9
550	14	4,976	-10.1		236	20.2
500	14	5,710	-14.7		242	24.5
450	14	6,495	-20.1		243	28.2
400	14	7,364	-26.4		241	29.0
350	14	8,315	-33.9		244	31.9
300	14	9,379	-42.1		242	36.9
250	14	10,588	-51.0		257	36.7
200	14	12,013	-58.4		258	34.6
175	14	12,852	-58.7		254	39.4
150	14	13,818	-60.0		257	36.7
125	14	14,954	-61.0		251	29.5
100	14	16,337	-62.2		256	24.3
80	14	17,718	-61.3		255	18.8
60	13	19,513	-58.2		250	7.8
50	13	20,662	-57.4		247	5.6
40	13	22,079	-55.3		257	2.9
30	13	23,916	-53.8		299	2.9
25	13	25,092	-51.7		262	3.9
20	[illegible]	26,557	-49.8			
15						
10						

Standard pressure surface (mb.)	9/YUCCA FLAT, NEV. (881 MB.)				Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	24	1,196	5.9	72	356	2.1
1,000	24	141				
950	24	1,020				
900	24	1,491	10.6	58	346	1.6
850	24	1,994	7.8	58	165	.6
800	24	2,524	4.4	60	160	2.3
750	24	3,082	1.0	60	167	4.5
700	24	3,670	- 2.7	58	194	5.6
650	24	4,306	- 6.7	57	222	6.2
600	24	4,975	-10.6		233	7.8
550	24	5,708	-15.4		234	8.7
500	24	6,491	-21.1	38	235	10.7
450	24	7,356	-27.5	38	232	12.6
400	24	8,305	-34.3		230	12.6
350	24	9,367	-41.7		246	11.7
300	24	10,583	-49.6		258	17.7
250	24	12,018	-56.5		267	22.7
200	23	12,873	-57.5		267	27.0
175	23	13,843	-59.4		262	28.4
150	20	14,974	-62.2		266	24.9
125	19	16,341	-64.0		268	21.6
100	19	17,711	-62.8		275	15.0
80	18	19,495	-60.3		288	11.3
60	15	20,622	-60.3		283	7.8
50	15	22,019	-58.5		276	8.0
40	10	23,809	-56.6		268	14.8
30	6	24,981	-53.7			
25						
20						
15						
10						

Standard pressure surface (mb.)	10/MERIDA, MEXICO (1014 MB.)				Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	30	11	20.7	91	89	2.3
1,000	30	131	22.4	86	101	6.8
950	30	575	21.1	79	123	13.8
900	30	1,046	18.7	73	123	11.3
850	30	1,535	16.3	64	124	7.8
800	30	2,050	14.1	55	128	8.9
750	30	2,587	11.9	43	127	6.2
700	30	3,168	9.4	34	150	4.5
650	30	3,772	6.4	33	156	3.3
600	30	4,432	2.6	29	213	2.1
550	30	5,121	- 1.6		232	2.5
500	30	5,883	- 6.7		241	5.2
450	30	6,690	-12.1		232	8.0
400	30	7,589	-18.5		244	10.9
350	30	8,572	-25.5		262	15.5
300	30	9,671	-34.3		262	18.1
250	30	10,919	-44.4		269	23.7
200	30	12,378	-55.8		264	30.7
175	29	13,216	-62.1		263	30.5
150	28	14,154	-68.3		259	29.3
125	28	15,233	-73.5		258	28.0
100	28	16,528	-76.3		260	17.7
80	28	17,815	-75.6		255	10.7
60	25	19,511	-66.6		113	3.9
50	23	20,628	-61.8		96	5.6
40	23	22,024	-57.3		81	7.8
30	20	23,860	-52.0		83	16.1
25	19	25,051	-49.2		88	15.5
20	12	26,523	-45.3			
15	6	28,464	-41.2			
10						

Standard pressure surface (mb.)	10/SWAN ISLAND, W. I. (1012 MB.)				Wind		10/YUMA, ARIZ. (1004 MB.)				Wind	
	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed	Number of observations	Dynamic height	Temperature	Relative humidity	Direction	Speed
SURFACE	30	10	26.3	86	64	10.5	29	105	11.2	54	346	1.4
1,000	30	116	25.6	82	60	11.7	29	141			359	1.7
950	30	568	22.4	84	70	13.6	29	575	14.0	38	2	6.4
900	30	1,036	19.4	80	82	14.2	29	1,027	11.3	37	8	6.8
850	30	1,527	16.4	74	87	13.0	29	1,501	8.3	41	9	6.0
800	30	2,042	14.3	60	86	13.0	29	2,000	6.3	36	348	5.2
750	30	2,586	12.2	45	91	11.7	29	2,532	3.9	32	341	5.8
700	30	3,162	9.7	36	91	10.3	29	3,084	1.2	31	334	10.5
650	30	3,770	6.7	30	91	9.1	29	3,680	- 1.3	28	323	14.6
600	30	4,427	3.1	24	86	8.4	29	4,309	- 5.4		321	19.6
550	30	5,120	- .7		79	7.8	29	4,984	- 9.8		315	22.3
500	30	5,882	- 5.3		69	6.6	28	5,713	-15.3		303	29.7
450	30	6,694	-10.8		58	7.0	28	6,505	-21.1		308	28.0
400	30	7,596	-17.4		40	6.0	28	7,358	-27.4		298	29.3
350	30	8,582	-24.7		15	7.0	27	8,313	-34.2		294	32.6
300	30	9,686	-33.3		349	4.9	27	9,374	-41.4		295	36.9
250	30	10,939	-43.7		323	12.2	27	10,588	-49.4		288	44.7
200	27	12,403	-55.3		293	18.3	26	12,019	-55.9		291	53.2
175	25	13,241	-61.7		280	18.5	24	12,867	-59.4		291	56.3
150	23	14,185	-68.4		273	19.6	19	13,817	-61.7		292	51.5
125	22	15,262	-74.3		272	21.4	12	14,971	-65.9			
100	18	16,546	-78.1		283	16.1	5	16,365	-70.0			
80	17	17,819	-77.4		308	6.4						
60	16	19,503	-68.8		75	4.1						
50	16	20,611	-63.1		77	5.6						
40	15	22,000	-58.8		76	8.2						
30	15	23,833	-52.8		91	14.6						
25	14	25,021	-49.8		83	17.7						
20	13	26,483	-47.2									
15	12	28,406	-42.1									
10	6	31,135	-37.6									

* 0300 GMT

1/ February 1957	6/ July 1957
2/ March 1957	7/ August 1957
3/ April 1957	8/ September 1957
4/ May 1957	9/ October 1957
5/ June 1957	10/ November 1957

Also see reference notes with current data.

SOLAR RADIATION DATA

Solar radiation intensities, tabulated in langleys per minute on a surface normal to the direction of the sun.

DELAYED DATA

Date	Sun's zenith distance								
	A M					P. M			
	78.7°	75.7°	70.7°	60.0°	*	60.0°	70.7°	75.7°	78.7°
DILIMAN, QUEZON CITY, PHILIPPINES									
	Air mass								
	5.0	4.0	3.0	2.0	*	2.0	3.0	4.0	5.0
Jan. 1957									
2------	----	----	----	----	1.30	1.10	1.04	0.83	0.82
3------	----	----	0.90	1.15	1.27	.91	.66	.54	.32
4------	0.73	0.87	.98	1.15	----	1.16	.85	.61	.06
5------	----	.74	.96	1.10	1.28	----	----	----	----
8------	.11	.21	.43	.84	----	----	----	----	----
11-----	----	.54	.61	----	.43	----	----	----	----
12-----	----	----	----	1.19	1.34	----	1.03	.88	.83
13-----	----	----	1.01	----	1.37	1.22	1.05	.94	.81
14-----	----	----	----	----	----	1.12	.95	----	.68
15-----	.73	.84	.99	1.17	----	----	----	----	----
16-----	.78	.88	.98	1.18	----	----	----	----	----
17-----	.84	.93	1.03	1.18	1.32	----	.80	.86	.74
18-----	.86	.96	1.08	1.21	1.22	----	.54	.40	.31
19-----	.85	.94	1.05	1.20	1.34	1.19	1.06	.93	.84
20-----	.78	----	1.11	1.22	----	.58	----	.86	.76
21-----	.80	.89	.99	1.16	----	.94	----	----	----
22-----	.96	1.02	1.11	----	----	----	----	.64	----
23-----	----	----	----	1.13	----	----	----	----	----
24-----	.94	1.00	1.03	.98	.91	.38	----	----	----
26-----	82	.90	----	1.13	1.29	.60	----	----	----
28-----	----	.81	1.01	1.08	1.18	1.02	----	----	.62
29-----	.77	.88	.97	1.15	1.15	.93	.73	.66	.53
30-----	.69	.82	.95	1.09	1.12	----	----	----	----
31-----	.70	.79	.96	1.12	1.18	----	.74	.64	.52
Averages	.76	.82	.96	1.13	1.18	.93	.86	.73	.60

DILIMAN, QUEZON CITY, PHILIPPINES

	Air mass								
	5.0	4.0	3.0	2.0	*	2.0	3.0	4.0	5.0
Mar. 1957									
1------	0.67	0.74	0.85	1.03	1.16	1.09	0.96	0.78	0.50
2------	.78	.89	.98	1.17	1.30	1.14	.97	.86	.76
3------	.77	.87	1.01	1.12	1.38	1.14	.96	.78	.73
4------	.81	.91	1.03	1.17	1.36	1.14	.90	.72	.65
5------	.79	.90	.92	.96	----	.86	----	----	----
6------	.62	.86	.80	.98	1.16	.97	.64	.56	.53
7------	----	----	.18	----	.93	----	.38	.44	.42
8------	.66	.70	.85	1.16	1.20	----	----	----	----
9------	----	----	.14	----	1.21	.92	.90	.75	.66
10-----	.60	.73	.85	1.04	1.04	----	----	----	----
11-----	----	----	----	1.02	1.16	.78	----	----	.31
12-----	----	----	----	1.02	----	1.05	.85	.70	.55
13-----	.54	.67	.50	.47	----	----	.65	----	----
14-----	.65	.77	.87	1.05	1.16	.83	----	----	----
15-----	.18	.20	----	----	----	----	----	----	----
16-----	----	----	----	----	----	.98	----	----	----
17-----	----	----	.35	.43	1.28	1.00	.77	.52	----
18-----	.68	.78	.91	1.04	1.27	1.13	.97	.82	.72
19-----	.72	.82	.86	.96	1.24	.60	.72	.52	.59
20-----	.44	.79	.94	1.12	----	.78	.73	----	----
21-----	.72	.83	.94	1.13	1.30	----	.50	----	----
22-----	.71	.83	.94	1.09	1.13	----	----	----	----
23-----	.79	.89	1.02	1.19	1.33	.91	.79	.75	.70
24-----	.74	.85	.98	1.15	1.32	1.12	.95	.84	.74
25-----	.54	.34	.43	.92	1.21	.99	.58	.68	.60
26-----	.78	.86	.99	1.17	1.33	1.06	.86	.69	.61
27-----	.64	.77	.92	1.10	.94	.96	.86	.76	.67
28-----	.67	.76	.87	1.02	1.22	.87	.71	.63	.54
29-----	----	----	----	.97	1.22	.92	----	----	.60
30-----	----	----	----	----	----	----	----	.30	----
31-----	----	----	----	----	1.21	.80	.69	.56	.38
Averages	.66	.76	.80	1.02	1.21	.96	.78	.67	.59

Date	Sun's zenith distance								
	A. M.					P. M.			
	78.7°	75.7°	70.7°	60.0°	*	60.0°	70.7°	75.7°	78.7°
DILIMAN, QUEZON CITY, PHILIPPINES									
	Air mass								
	5.0	4.0	3.0	2.0	*	2.0	3.0	4.0	5.0
Feb. 1957									
1-----	0.69	0.78	0.88	1.04	1.24	1.05	0.78	0.65	0.56
2-----	----	----	.68	1.02	1.18	1.08	.80	.68	.48
4-----	.88	.94	.96	1.04	1.29	1.06	.88	.79	.68
5-----	.65	.78	.88	1.08	1.28	1.05	.80	.65	.48
6-----	.78	.84	.96	1.10	1.26	.86	.68	.58	.48
7-----	.50	.70	.86	1.00	1.18	1.00	----	----	----
8-----	.78	.89	1.01	1.16	1.32	1.06	.76	.67	.48
9-----	.78	.86	.98	1.15	1.18	----	----	----	----
10----	.28	.50	.81	.98	1.08	----	----	----	----
11----	----	----	----	.78	----	.98	.79	.66	.52
12----	.09	.14	.30	.78	----	----	----	----	----
13----	.22	.34	.42	.54	1.31	1.04	----	----	----
14----	.73	.79	1.00	1.14	1.18	1.09	.89	.70	.61
15----	.81	.91	1.00	1.16	1.23	.98	.78	.62	.54
16----	.62	.78	----	1.08	----	----	----	----	----
17----	----	----	.08	1.10	1.25	----	----	.38	----
18----	.69	.80	.95	1.15	----	1.16	.90	.80	.73
19----	.50	.22	.78	.58	----	----	.63	----	----
20----	.70	.73	.80	1.14	1.27	.67	----	.68	.58
21----	.72	.90	1.02	----	----	----	----	----	----
22----	.63	.75	.87	1.06	1.17	.90	.67	.61	.48
23----	----	----	----	1.08	----	.89	.82	.70	.58
24----	.79	.88	.87	1.12	1.23	1.07	.87	.71	.61
25----	.65	.75	.85	1.03	1.19	.98	.66	.55	.44
26----	.44	.61	.71	.72	1.04	----	.73	.58	.33
27----	.62	71	.85	1.01	1.21	----	.75	.25	----
28----	.63	.73	.84	.95	1.16	----	----	----	----
Averages	.62	.71	.81	1.00	1.21	1.00	.78	.63	.54

DILIMAN, QUEZON CITY, PHILIPPINES

	Air mass								
	5.0	4.0	3.0	2.0	*	2.0	3.0	4.0	5.0
Aug. 1957									
1-----	0.57	0.55	0.94	1.08	0.93	----	----	----	----
2-----	.57	.62	.82	.85	----	----	----	----	----
4-----	----	----	.29	.65	.81	----	----	----	----
5-----	.76	.85	.92	1.11	.69	----	.83	.70	.47
6-----	----	----	----	.21	.90	----	----	----	----
8-----	.02	.08	.01	.06	.49	----	.52	.49	----
9-----	.05	.14	.18	.06	----	----	----	----	----
11----	.17	.33	.60	.97	----	----	----	----	----
12----	.50	.52	.58	.94	1.20	----	----	----	----
13----	----	.08	.09	----	.30	----	----	----	----
16----	----	----	.22	----	----	----	----	----	----
19----	----	----	----	----	.23	----	----	----	----
20----	----	----	.48	.40	----	----	----	----	----
23----	----	----	----	----	----	0.04	.09	.24	----
24----	----	----	----	----	.38	----	----	----	----
26----	----	----	----	.10	.46	.76	.50	.48	----
27----	.03	.30	.46	.44	1.15	----	----	----	----
28----	----	----	----	----	.14	----	----	----	----
29----	----	----	----	----	.71	.87	----	----	----
30----	.15	.21	.25	----	1.30	----	----	----	----
31----	.19	.21	.30	.47	----	----	----	----	----
Averages	.30	.35	.44	.56	.69	.56	.49	.48	.47

SOLAR RADIATION DATA

Solar radiation intensities, tabulated in langleys per minute on a surface normal to the direction of the sun. (Cont'd.)

DELAYED DATA

OMAHA, NEBR.

Date	Sun's zenith distance								
	A. M.					P. M.			
	78.7°	75.7°	70.7°	60.0°	*	60.0°	70.7°	75.7°	78.7°
	Air mass								
	4.78	3.82	2.87	1.91	*	1.91	2.87	3.82	4.78
Aug. 1957									
1	I 0.51	I 0.61	I 0.73	M0.95	S1.18	I 0.94	I 0.80	I 0.65	I 0.54
2-3					Clouds				
4		Clouds			1.30	1.16	1.01	.92	.80
5	S.84	.91	S1.00	1.11	1.22	.97	M.81	M.73	M.62
6	.69	.79	.89	1.05	1.22	1.00	.84	.72	.63
7	Ci	S.69	S.80	S.97	1.19	.94		Clouds	
8-11	Ci	Ci	Ci	Ci			Clouds		
12		Fog			I 1.10		Clouds		
13					Clouds				
14			Clouds			.97	M.82	M.65	M.61
15	M.65	M.74	M.86	M1.03	M1.17		Clouds		
16					Clouds				
17		Fog				Clouds			
18			Clouds			1.10	.97	.87	.75
19-23					Clouds				
24	.76	.84	.96	1.10	1.24		Clouds		
25		Clouds		.99	1.16		Clouds		
26-29					Clouds				
30			Clouds			I .77	I .60	I .46	I .43
31		Clouds			M.89	Clouds	I .57	I .45	I .37
Averages	.69	.76	.87	1.03	1.17	.98	.80	.68	.59

TUCSON, ARIZ.

Date	Sun's zenith distance								
	A. M.					P. M.			
	78.7°	75.7°	70.7°	60.0°	*	60.0°	70.7°	75.7°	78.7°
	Air mass								
	4.56	3.65	2.74	1.83	*	1.83	2.74	3.65	4.56
Sept. 1957									
1	----	----	----	----	1.36	----	----	----	----
2	0.71	0.81	0.94	1.12	1.32	----	----	----	----
3	----	----	----	----	1.26	----	----	----	----
8	.62	.73	.85	1.05	1.28	----	----	----	----
10	.78	.87	.98	1.17	1.36	----	----	----	----
13	.87	.96	----	----	1.41	----	----	----	----
14	.89	.99	1.11	1.25	1.39	1.24	1.07	0.91	0.86
15	.89	1.00	1.13	1.26	1.40	1.22	1.06	.95	.83
16	.80	.89	1.00	1.15	1.37	----	----	----	----
17	.87	.98	1.11	1.26	1.42	1.29	1.11	1.04	.94
18	.83	.94	1.05	1.23	1.37	1.23	1.08	.95	.84
19	.80	.92	1.02	1.13	1.36	1.22	1.04	.93	.80
20	.86	.95	1.06	1.26	1.42	1.23	1.04	.90	.78
21	.83	.93	1.04	1.22	1.40	1.17	1.01	.88	.78
22	.77	.88	1.01	1.16	1.35	1.09	.89	.70	.56
23	.71	.84	.97	1.15	1.31	----	----	----	----
24	.88	.97	1.10	----	1.40	1.23	1.08	.95	.85
25	----	----	----	1.24	1.37	----	----	----	----
27	.75	.86	.93	1.13	1.37	1.18	.96	.81	.69
29	----	----	----	----	1.36	----	----	----	----
Averages	.80	.91	1.02	1.19	1.36	1.21	1.03	.90	.79

DILIMAN, QUEZON CITY, PHILIPPINES

Date	Sun's zenith distance								
	A. M.					P M			
	78.7°	75.7°	70.7°	60.0°	*	60 0°	70 7°	75 7°	78 7°
	Air mass								
	5 0	4.0	3.0	2 0	*	2 0	3 0	4.0	5 0
Sept. 1957									
1	----	0.51	0 54	0 01	----	0.31	0.58	0.05	----
2	0.56	.37	.44	----	----	.32	.23	.22	----
3	.06	.44	.47	.50	0 28	----	----	----	----
6	----	----	----	----	.32	----	.03	01	0 01
7	----	----	----	.14	.45	----	----	----	----
8	----	.01	.09	.30	----	.17	.08	01	----
9	----	----	.03	----	.75	----	----	----	----
10	.01	.01	.06	----	.01	----	----	----	----
11	.03	.05	.03	01	.34	----	----	----	----
15	.12	.16	.11	.28	.33	----	----	----	----
16	.34	.18	.08	.32	.60	01	----	----	----
17	----	----	.06	02	.22	----	----	----	----
18	----	----	----	.30	.40	----	----	----	----
19	----	----	.04	.03	----	.78	58	.09	01
21	----	----	----	01	.03	09	----	04	----
25	----	----	----	.03	1.19	----	----	----	----
26	----	----	----	----	07	----	01	----	----
27	.45	.51	.69	1.03	.01	----	----	----	----
28	.36	.10	.03	----	----	----	----	----	----
29	.35	.16	.58	.28	.98	.28	.04	.03	----
30	.72	.89	1.01	78	----	----	----	----	----
Averages	.30	.28	.28	.27	.40	.28	.22	0.10	0.01

S Slight haze - indeterminable
M Moderate haze - indeterminable
I Intense haze - indeterminable
* Values corresponding to true solar noon

Also see footnotes with current data

SOLAR RADIATION DATA

Daily totals and weekly averages of solar radiation (direct and diffuse) received on a horizontal surface, tabulated in langleys.

DELAYED DATA

	Raleigh, N. C.		Raleigh, N. C.		Raleigh, N. C.		Raleigh, N. C.	Shreveport, La.		Raleigh, N. C.	Shreveport, La		Columbus, Ohio	Raleigh, N. C.		Moosonee, Ontario	Resolute, N.W.T.	Seattle, Wash.		Columbus, Ohio	Davis, Calif.	Moosonee, Ontario	Resolute, N.W.T.	Seattle, Wash.	Stillwater, Okla.		Moosonee, Ontario	Resolute, N.W.T	Stillwater, Okla		Aklavik, N.W.T.	Davis, Calif.	Lemont, Ill.	Seattle, Wash.		Seattle, Wash.		Columbus, Ohio
1957		Feb.		Mar.		Apr.			May			Jun.			Jul.				Aug.							Sep.				Oct.					Nov.		May	
Jan. 1-----	---	5	46	5	169	2	508	---	7	683	732	4	113	524	2	---	367	581	6	149	642	621	313	337	707	3	(510)	161	560	1	152	---	447	---	5	141	7	94
Jan. 2-----	---	6	147	6	54	3	510	(97)	8	651	609	5	138	331	3	---	221	372	7	156	666	441	76	300	763	4	(508)	238	582	2	72	---	432	161	6	208	8	118
Jan. 3-----	---	7	96	7	133	4	210	553	9	605	563	6	79	373	4	---	643	741	8	134	664	457	198	333	728	5	487	42	252	3	167	---	421	306	7	88	9	136
Jan. 4-----	---	8	37	8	200	5	139	724	10	543	613	7	79	414	5	---	722	528	9	108	667	380	155	546	702	6	320	205	---	4	138	376	438	330	8	111	10	73
Jan. 5-----	---	9	115	9	213	6	569	709	11	147	663	8	18	353	6	---	491	302	10	118	671	456	140	413	687	7	(263)	101	---	5	(142)	389	417	175	9	114	11	136
Jan. 6-----	---	10	218	10	517	7	578	309	12	562	602	9	81	79	7	---	704	718	11	136	665	249	204	388	---	8	(485)	257	566	6	125	296	328	325	10	40	12	160
Jan. 7-----	---	11	219	11	495	8	180	625	13	566	308	10	62	396	8	---	661	---	12	144	662	306	486	582	625	9	461	159	560	7	120	432	401	138	11	83	13	48
Average-------	---		125		254		385	(503)		537	584		81	353		---	544	540		135	663	416	225	414	702		(433)	166	504		(131)	374	412	239		112		109
Jan. 8-----	---	12	410	12	364	9	633	(662)	14	634	491	11	79	565	9	---	659	---	13	138	655	396	364	599	692	10	317	55	502	8	104	228	331	195	12	86	14	22
Jan. 9-----	---	13	420	13	288	10	606	639	15	540	677	12	145	657	10	---	336	497	14	104	656	177	395	598	414	11	385	61	44	9	89	192	218	230	13	77	15	60
Jan. 10-----	---	14	238	14	176	11	559	422	16	662	657	13	100	658	11	---	158	400	15	151	657	224	145	593	---	12	264	148	380	10	114	102	261	310	14	72	16	39
Jan. 11-----	128	15	421	15	373	12	436	629	17	374	709	14	135	617	12	670	227	646	16	140	655	372	210	469	650	13	103	110	534	11	33	384	281	245	15	149	17	49
Jan. 12-----	216	16	180	16	538	13	170	134	18	651	458	15	93	660	13	(571)	250	217	17	139	647	430	263	305	209	14	274	138	---	12	32	117	416	108	16	138	18	69
Jan. 13-----	251	17	438	17	527	14	630	(739)	19	466	752	16	75	609	14	(213)	335	228	18	126	645	434	213	315	427	15	45	84	---	13	62	86	405	51	17	45	19	42
Jan. 14-----	236	18	378	18	301	15	649	---	20	600	732	17	99	610	15	463	328	500	19	145	628	208	205	335	708	16	251	132	567	14	101	238	241	259	18	16	20	19
Average-------	208		355		367		526	(538)		561	639		104	625		(479)	328	415		135	649	320	256	459	516		234	104	406		76	1[illegible]3	308	200		83		43
Jan. 15-----	38	19	---	19	253	16	517	294	21	394	506	18	124	512	16	696	369	289	20	161	629	582	192	403	705	17	329	119	541	15	36	415	82	264	19	59	21	68
Jan. 16-----	138	20	412	20	470	17	445	218	22	320	---	19	119	537	17	637	444	515	21	123	598	556	419	588	689	18	48	125	548	16	37	415	81	115	20	161	22	73
Jan. 17-----	39	21	384	21	521	18	324	402	23	598	---	20	186	559	18	622	269	710	22	142	607	371	376	534	671	19	30	147	512	17	51	384	78	144	21	62	23	109
Jan. 18-----	325	22	425	22	52	19	380	469	24	661	---	21	174	661	19	525	383	719	23	132	593	161	393	152	569	20	346	96	---	18	38	394	321	180	22	114	24	139
Jan. 19-----	324	23	373	23	354	20	590	301	25	345	365	22	135	617	20	631	351	344	24	50	598	553	309	447	697	21	126	84	---	19	22	390	347	271	23	154	25	129
Jan. 20-----	300	24	307	24	313	21	596	560	26	475	396	23	151	637	21	559	349	559	25	94	561	434	90	441	---	22	191	129	---	20	81	178	393	295	24	46	26	97
Jan. 21-----	237	25	190	25	81	22	494	335	27	430	633	24	16	719	22	326	353	235	26	144	618	228	74	522	---	23	95	113	533	21	78	381	162	135	25	72	27	60
Average-------	200		349		292		478	368		460	475		129	606		571	360	481		121	601	412	265	441	666		166	116	533		49	365	209	201		95		96
Jan. 22-----	155	26	198	26	153	23	574	156	28	595	617	25	142	439	23	602	194	503	27	108	476	221	268	383	---	24	239	96	---	22	69	312	22	32	26	155	28	169
Jan. 23-----	170	27	254	27	503	24	577	---	29	502	764	26	152	255	24	613	478	709	28	40	556	300	165	540	631	25	272	63	---	23	62	57	28	38	27	40	29	148
Jan. 24-----	203	28	49	28	504	25	633	---	30	191	743	27	123	493	25	491	306	627	29	130	590	204	245	454	---	26	227	61	359	24	42	292	125	151	28	143	30	130
Jan. 25-----	68	Mar.1	219	29	587	26	646	---	31	570	542	28	136	544	26	485	529	456	30	134	596	429	177	442	556	27	387	77	439	25	28	248	204	90	29	113	31	84
Jan. 26-----	163	2	468	30	603	27	632	97	Jun.1	528	348	29	158	694	27	323	263	317	31	131	585	436	154	413	---	28	344	139	460	26	16	371	153	179	30	14	Jun.1	70
Jan. 27-----	50	3	318	31	574	28	638	170	2	657	253	30	174	614	28	223	285	634	Sep.1	122	581	428	201	377	---	29	206	120	512	27	26	231	352	161	Dec.1	56	2	131
Jan. 28-----	174	4	329	Apr.1	164	29	566	562	3	591	378	Jul.1	168	703	29	559	450	376	2	116	574	358	62	490	---	30	107	110	497	28	42	363	354	97	2	35	3	137
Average-------	140		262		441		610	246		519	521		151	535		471	358	517		112	565	339	182	443	---		255	95	453		41	268	177	107		80		124
Jan. 29-----	188					30	530	538							30	293	468	406												29	27	357	186	44				
Jan. 30-----	52					May 1	590	514							31	510	381	536												30	15	315	153	174				
Jan. 31-----	40					2	548	297							Aug.1	637	191	611												31	23	344	146	126				
Feb. 1-----	96					3	266	415							2	(301)	497	613												Nov.1	26	341	223	193				
Feb. 2-----	257					4	166	686							3	220	318	129												2	19	262	48	235				
Feb. 3-----	68					5	589	768							4	220	224	626												3	19	319	131	219				
Feb. 4-----	247					6	539	757							5	218	174	574												4	12	326	95	176				
Average-------	135						461	568								(343)	322	499													20	323	140	167				

Note.--Langley is the unit used to denote one gram calorie per square centimeter.
Values in parentheses are interpolated.

DESCRIPTION of CHARTS

CHART I. A. AVERAGE TEMPERATURE (°F.) AT SURFACE. B. DEPARTURE OF AVERAGE TEMPERATURE FROM NORMAL.-The average monthly temperature presented in Chart I-A is computed from the average daily maximum and the average daily minimum which in turn are computed from the daily maximum and minimum temperatures reported by some 225 first-order Weather Bureau stations and 700 cooperative stations. The departures from normal are presented in Chart I-B. They are based on the 30-year normals (1921-50) for the first-order Weather Bureau stations and on means of 25 years or more (mostly 1931-55) for the cooperative stations.

CHART II. TOTAL PRECIPITATION.-

CHART III. A. DEPARTURE OF PRECIPITATION FROM NORMAL (INCHES). B. PERCENTAGE OF NORMAL PRECIPITATION.-Chart II is based on daily precipitation records at about 800 Weather Bureau and cooperative stations. In Chart III the anomaly in the month's precipitation is shown as a departure from the normal total and as a percentage of the normal total. These anomalies show the deviations from the 30-year normals (1921-50) for about 225 first-order Weather Bureau stations in Charts III A and B, supplemented in Chart III-A by the deviation from means of 25 years or more (mostly 1931-55) for about 700 cooperative stations.

CHART IV. TOTAL SNOWFALL.-

CHART V. A. PERCENTAGE OF NORMAL SNOWFALL. B. DEPTH OF SNOW ON GROUND.-Chart IV gives the total depth in inches of unmelted snowfall as reported during the month by Weather Bureau and cooperative stations. This is converted in Chart V-A into a percentage of the normal total amount computed for each Weather Bureau station having at least 10 years of record. The depth of snow on ground is that reported by both Weather Bureau and cooperative stations as of 7:00a.m. Eastern Standard Time on the last Monday of the month. This is reported only for the months December through April. The snowfall charts are presented each month November through April.

CHART VI. A. PERCENTAGE OF SKY COVER BETWEEN SUNRISE AND SUNSET. B. PERCENTAGE OF NORMAL SKY COVER BETWEEN SUNRISE AND SUNSET.-These charts are based on visual observations made hourly at Weather Bureau stations and averaged for the month. Sky cover includes, in addition to cloudiness, obscuration of the sky by fog, smoke, etc. Normal amount of sky cover is computed for stations having at least 10 years of record.

CHART VII. A. PERCENTAGE OF POSSIBLE SUNSHINE. B. PERCENTAGE OF NORMAL SUNSHINE.-Chart VII-A shows the amount of sunshine received in terms of percentage of the total hours of sunshine possible during the month. In Chart VII-B this is shown as a percentage of the normal number of hours of sunshine received. Normals are computed for Weather Bureau stations having at least 10 years of record.

CHART VIII. AVERAGE DAILY VALUES OF SOLAR RADIATION, DIRECT AND DIFFUSE.-Plotted on the chart are the monthly means of daily total solar radiation, both direct and diffuse, in langleys (gm. cal. $cm.^{-2}$) for all Weather Bureau stations which record this element. Supplementary data for which limits of accuracy are wider than for those data shown are drawn upon in making the analysis. The inset shows the percentages of the mean based on the period 1951-55.

CHART IX.-TRACKS OF CENTERS OF ANTICYCLONES AT SEA LEVEL.-

CHART X. TRACKS OF CENTERS OF CYCLONES AT SEA LEVEL.-Centers which can be identified for 24 hours or more are tracked in these charts. Semi-permanent features such as the Great Basin and Pacific Highs and Colorado and Mexico Lows are not shown. The 7:00 a.m. EST positions are shown by open circles, with the intermediate positions at 6-hour intervals shown by solid dots. The date is given above the circle and the central pressure to whole millibars below. A dashed track indicates a regeneration rather than actual movement to the next position. Solid squares indicate position of stationary center for period shown beside it.

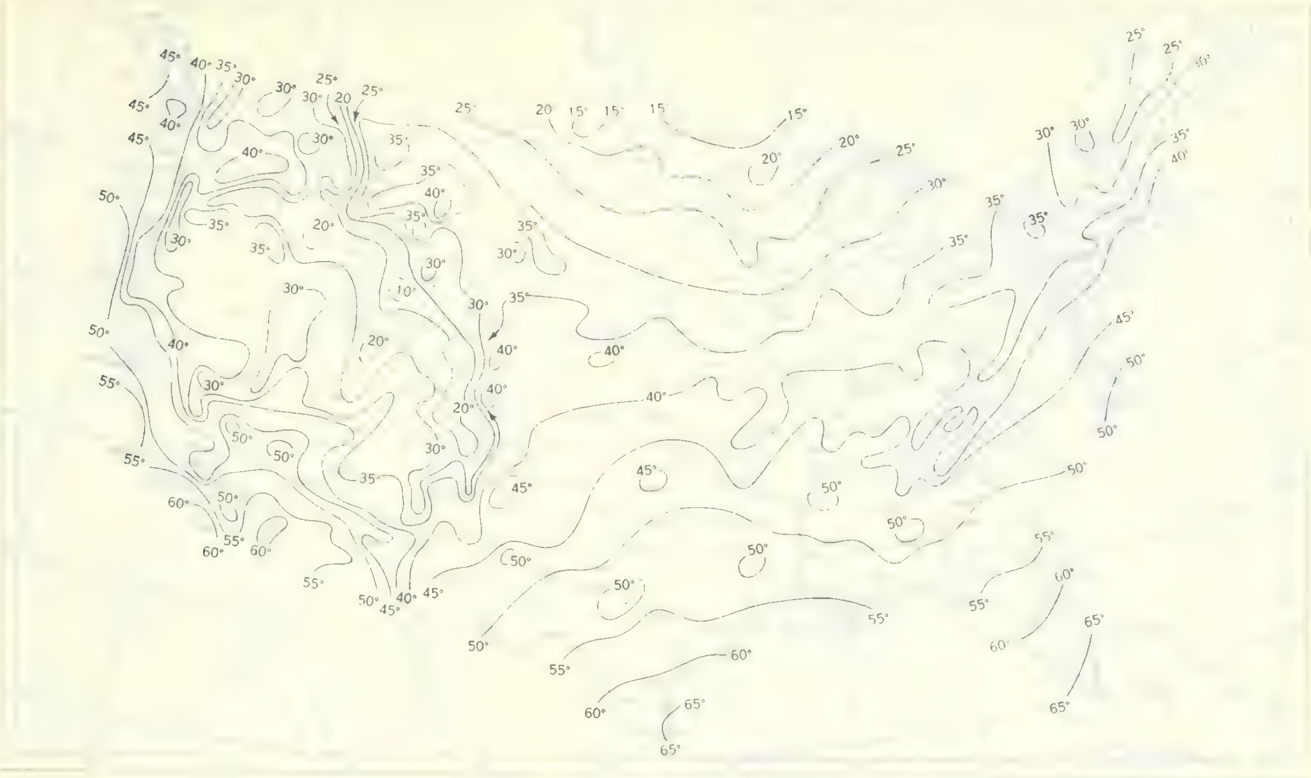
CHART XI. AVERAGE SEA LEVEL PRESSURE (mb.) AND SURFACE WINDROSES.-The average monthly sea level pressure is obtained from the averages of the 7:00 a.m. and 7:00 p.m. EST pressures reported at Weather Bureau stations. Windroses are based on the hourly wind directions (to 16 points of the compass) reported by Weather Bureau stations, each circle or arc indicating 5 percent of the time. The inset shows the departure of the average pressure from the normal average computed for each station having at least 10 years of record and for each 10° intersection in a diamond grid over the oceans from interpolated values read from the Historical Weather Maps for the 20 years of best coverage prior to 1940.

CHARTS XII-XVII. AVERAGE HEIGHT, TEMPERATURE, AND RESULTANT WINDS, 850, 700, 500, 300, 200, and 100 mb.-Height is given in geopotential meters and temperature in degrees Celsius. These are the averages of the 1200 GMT radiosonde reports. Wind speeds are given in knots; flag represents 50 knots, full feather 10 knots, and half feather 5 knots. Directions are shown to 360° of the compass. Winds are based on rawins at the indicated pressure surface and at 1200 GMT.

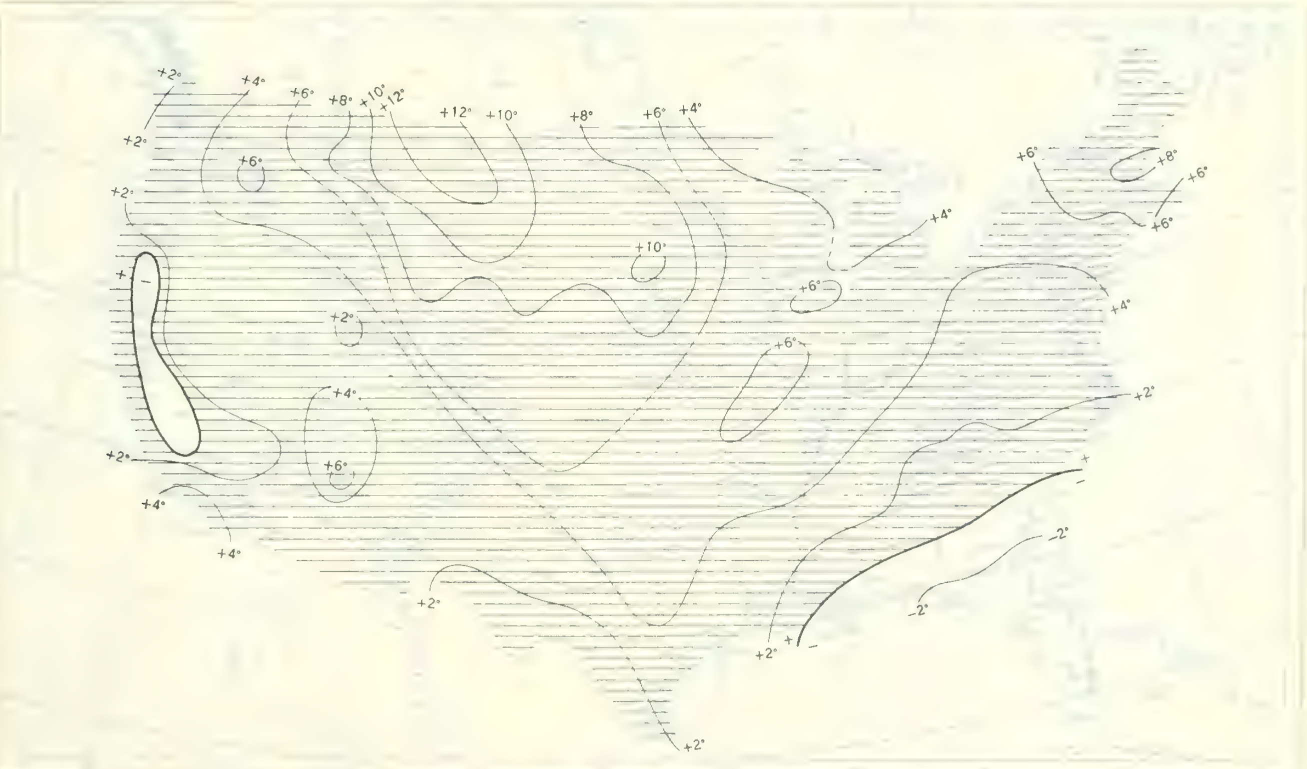
Tabulations of exact values of most of these charted elements for Weather Bureau stations are printed each month in tabular form in CLIMATOLOGICAL DATA, NATIONAL SUMMARY, and annual averages are presented in the CDNS Annual Issue each year.

USCOMM-WB-Asheville - 3/12/58 - 1850

Chart I. A. Average Temperature (°F.) at Surface, December 1957.



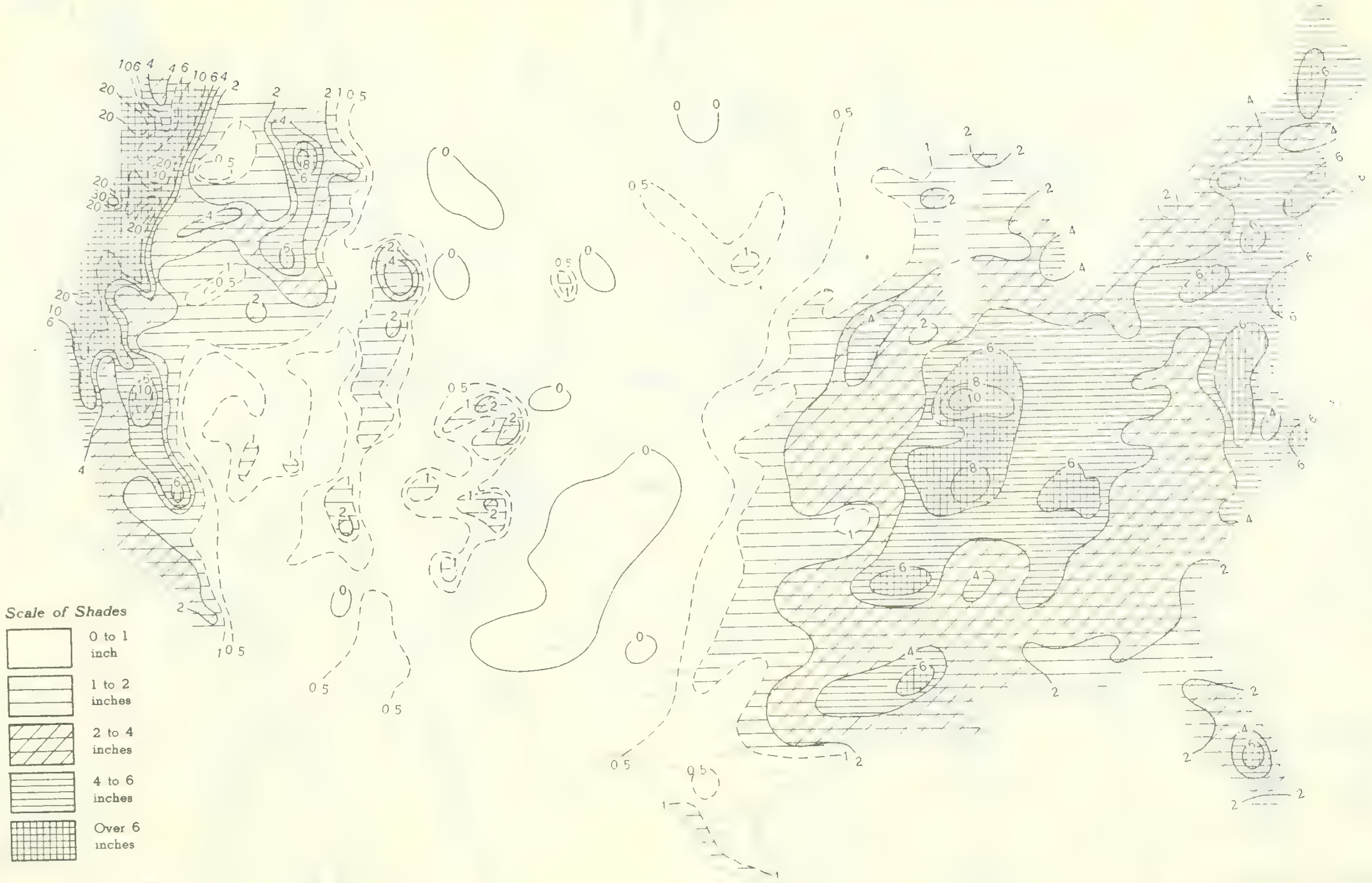
B. Departure of Average Temperature from Normal (°F.), December 1957.



A. Based on reports from over 900 Weather Bureau and cooperative stations. The monthly average is half the sum of the monthly average maximum and monthly average minimum, which are the average of the daily maxima and daily minima, respectively.

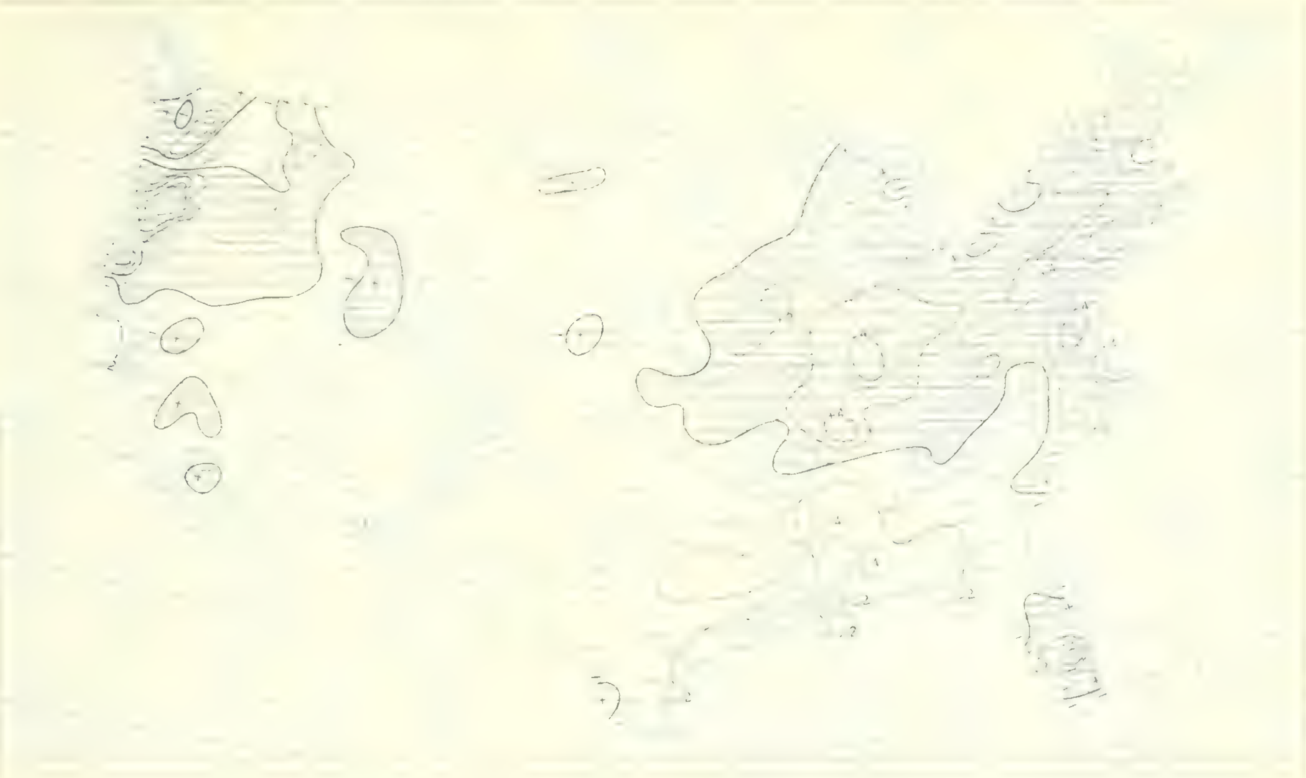
B. Departures from normal are based on the 30-yr. normals (1921-50) for Weather Bureau stations and on means of 25 years or more (mostly 1931-55) for cooperative stations.

Chart II. Total Precipitation (Inches), December 1957.

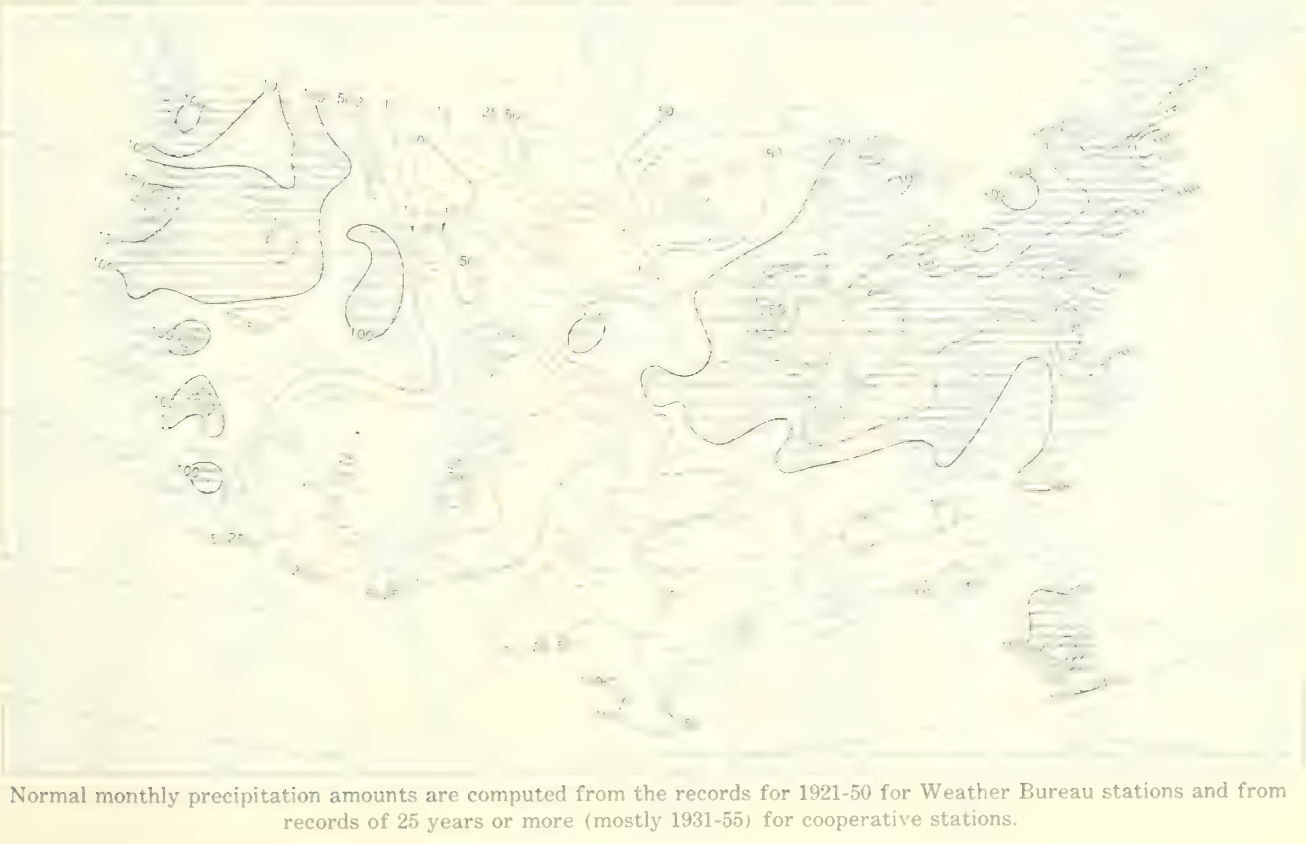


Based on daily precipitation records at about 800 Weather Bureau and cooperative stations.

Chart III. A. Departure of Precipitation from Normal (Inches), December 1957.

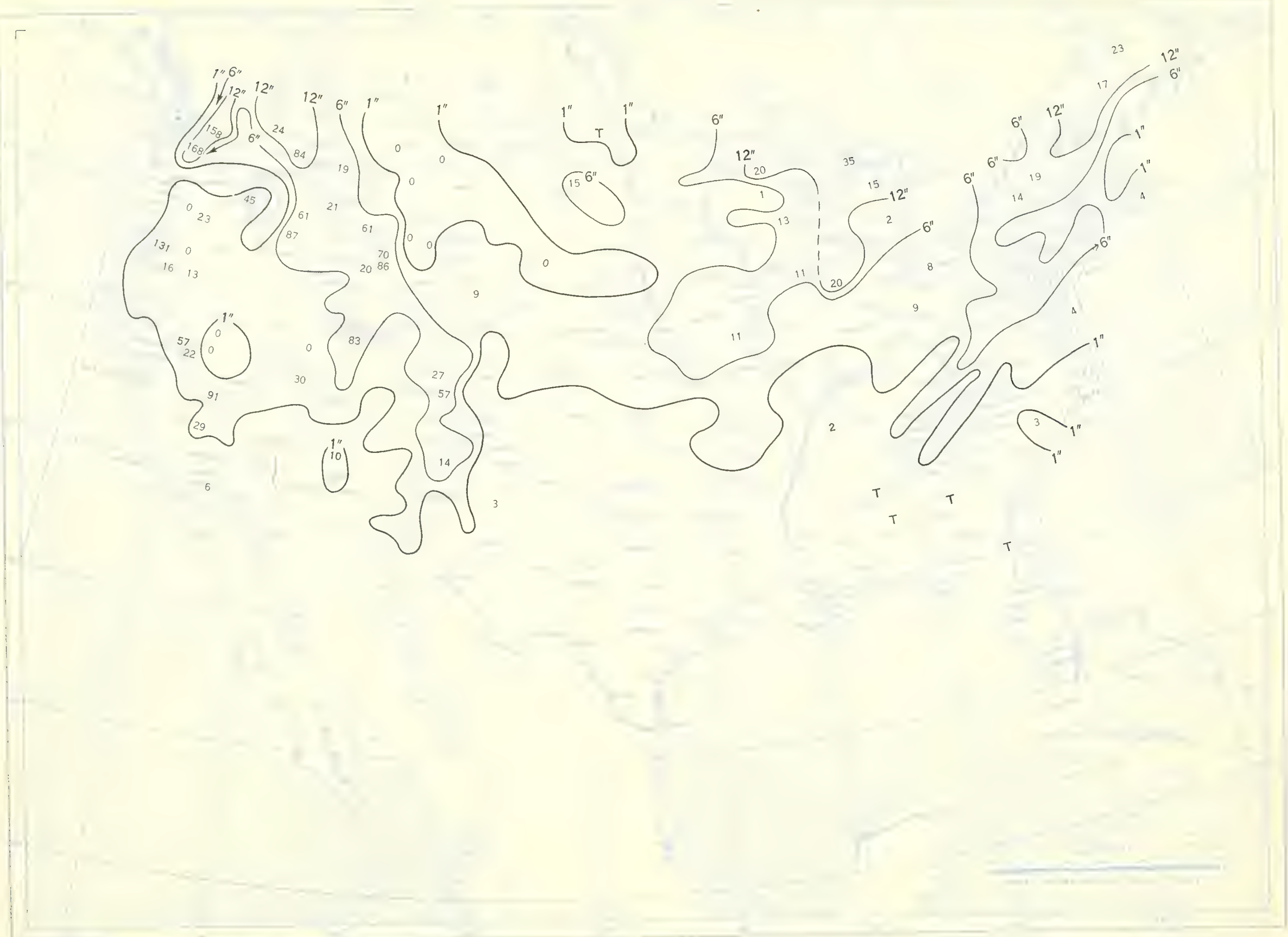


B. Percentage of Normal Precipitation, December 1957.



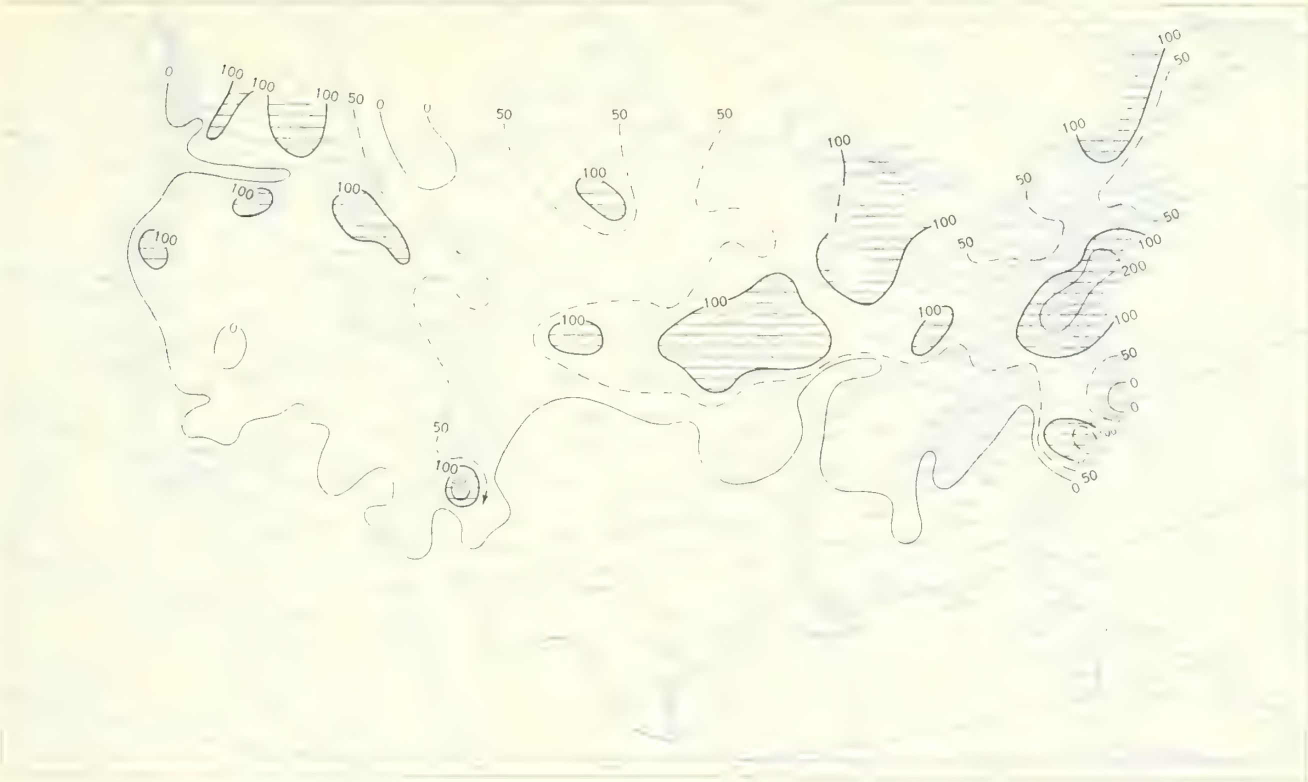
Normal monthly precipitation amounts are computed from the records for 1921-50 for Weather Bureau stations and from records of 25 years or more (mostly 1931-55) for cooperative stations.

Chart IV. Total Snowfall (Inches), December 1957.

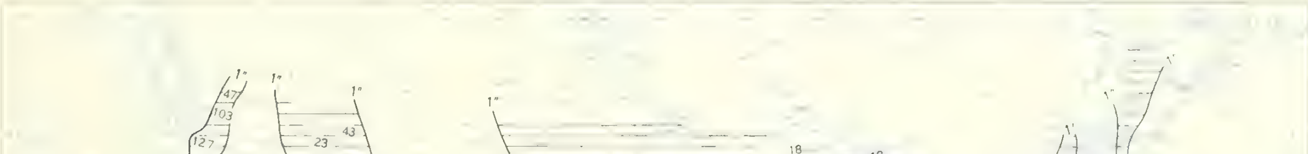


This is the total of unmelted snowfall recorded during the month at Weather Bureau and cooperative stations. This chart and Chart V are published only for the months of November through April although of course there is some snow at higher elevations, particularly in the far West, earlier and later in the year.

Chart V. A. Percentage of Normal Snowfall, December 1957.

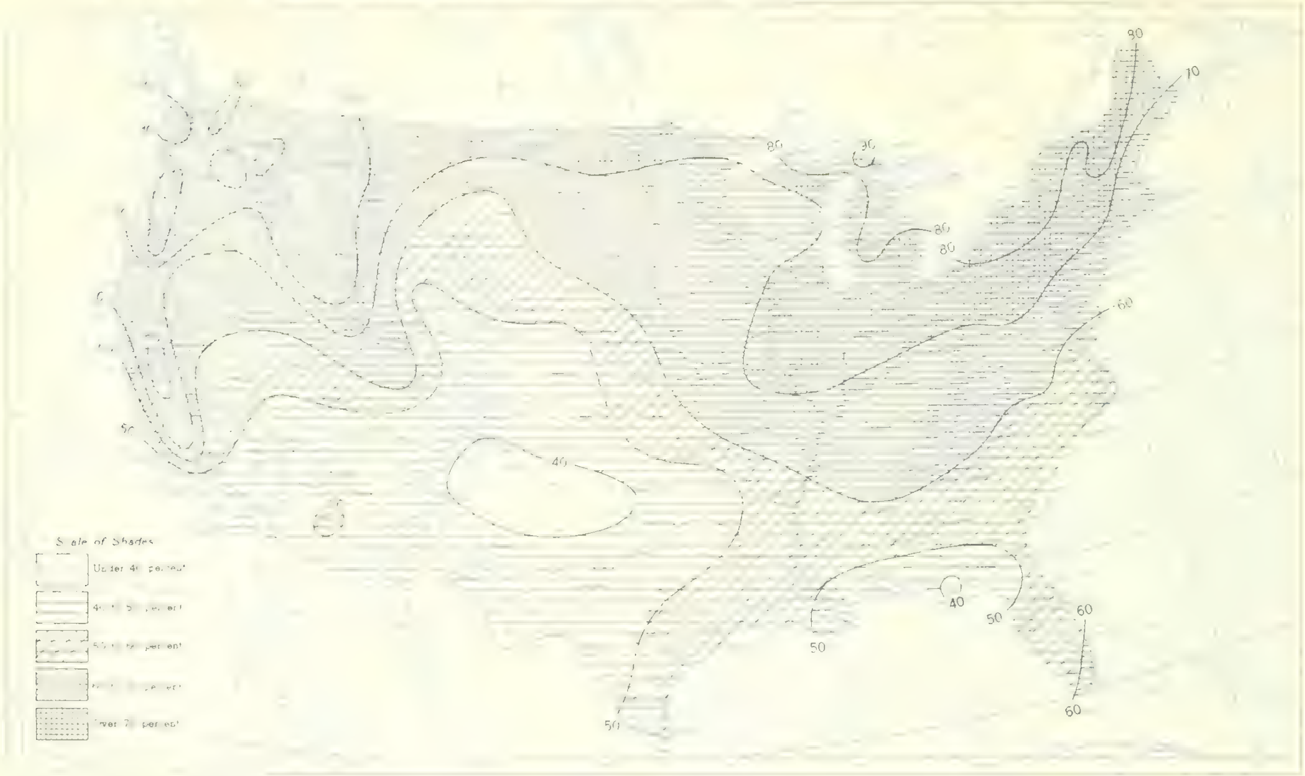


B. Depth of Snow on Ground (Inches), 7:00 a. m. E. S. T., December 30, 1957.

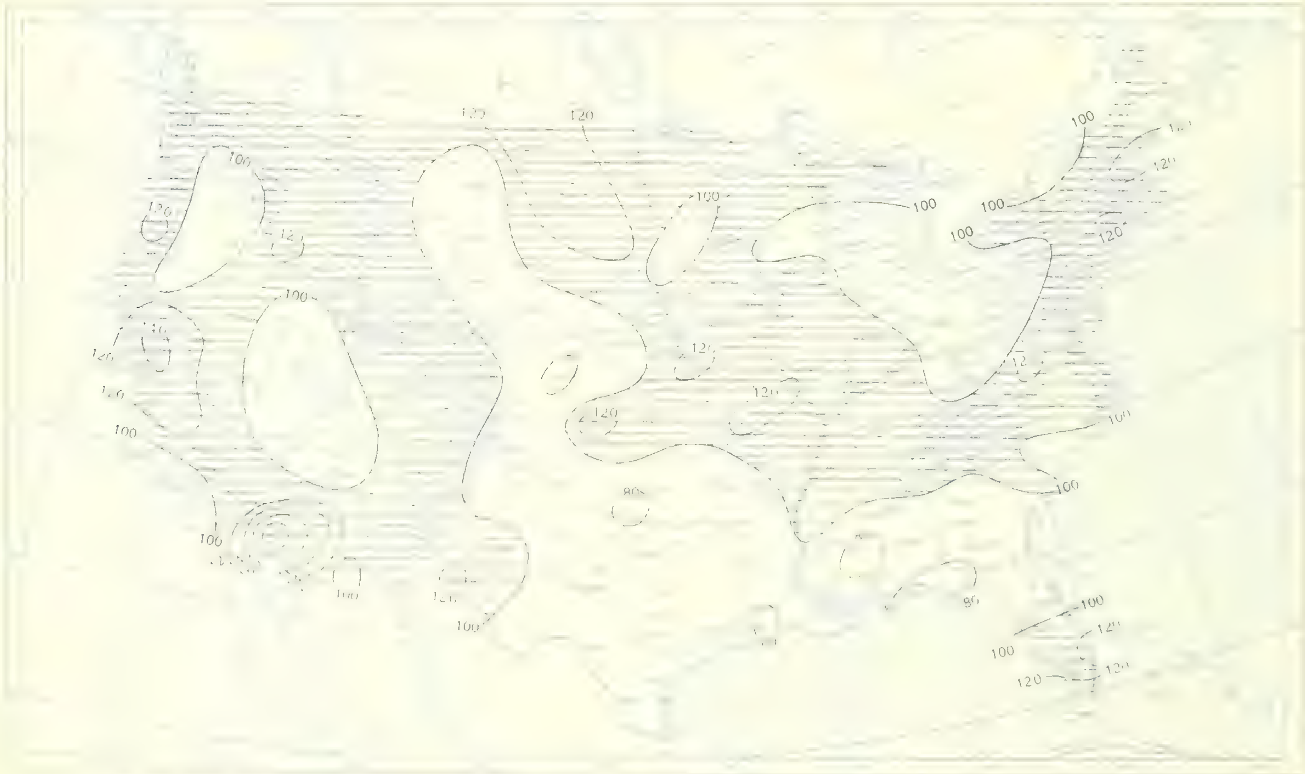


A. Amount of normal monthly snowfall is computed for Weather Bureau stations having at least 10 years of record.
B. Shows depth currently on ground at 7:00 a. m. E. S. T., of the Monday nearest the end of the month. It is based on reports from Weather Bureau and cooperative stations. Dashed line shows greatest southern extent of snowcover during month.

Chart VI. A. Percentage of Sky Cover Between Sunrise and Sunset, December 1957.

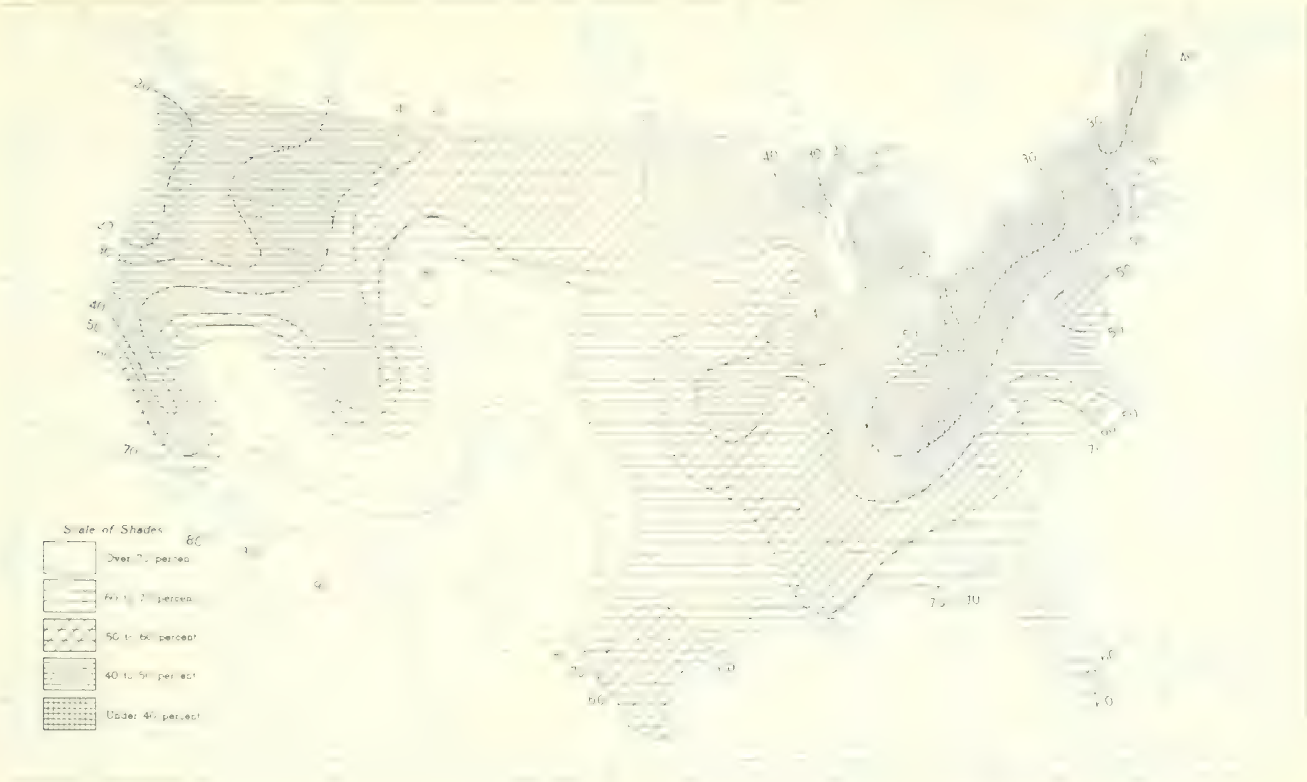


B. Percentage of Normal Sky Cover Between Sunrise and Sunset, December 1957.

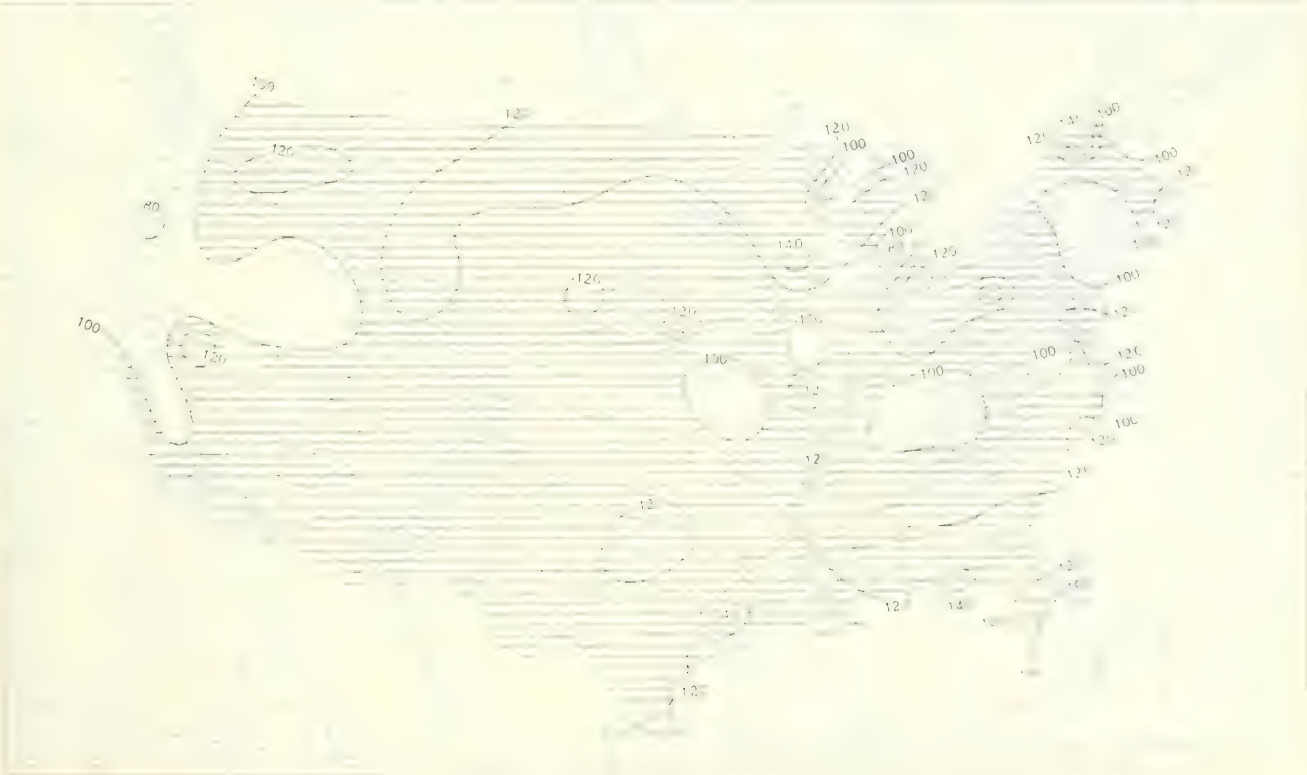


A. In addition to cloudiness, sky cover includes obscuration of the sky by fog, smoke, snow, etc. Chart based on visual observations made hourly at Weather Bureau stations and averaged over the month. B. Computations of normal amount of sky cover are made for stations having at least 10 years of record.

Chart VII. A. Percentage of Possible Sunshine, December 1957.



B. Percentage of Normal Sunshine, December 1957.



A. Computed from total number of hours of observed sunshine in relation to total number of possible hours of sunshine during month. B. Normals are computed for stations having at least 10 years of record.

Chart VIII. Average Daily Values of Solar Radiation, Direct + Diffuse, December 1957. Inset: Percentage of Mean Daily Solar Radiation, December 1957. (Mean based on period 1951-55.)

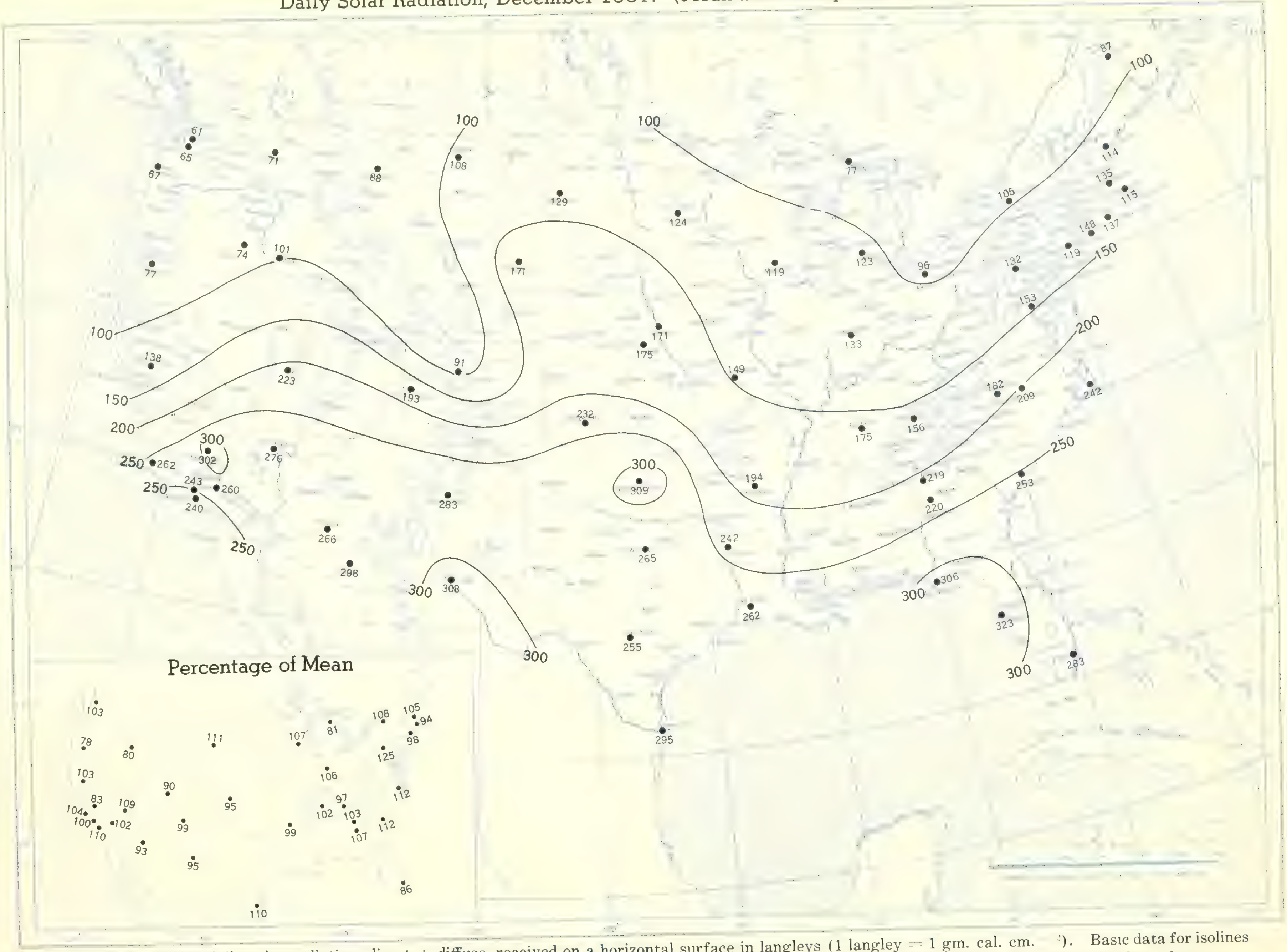
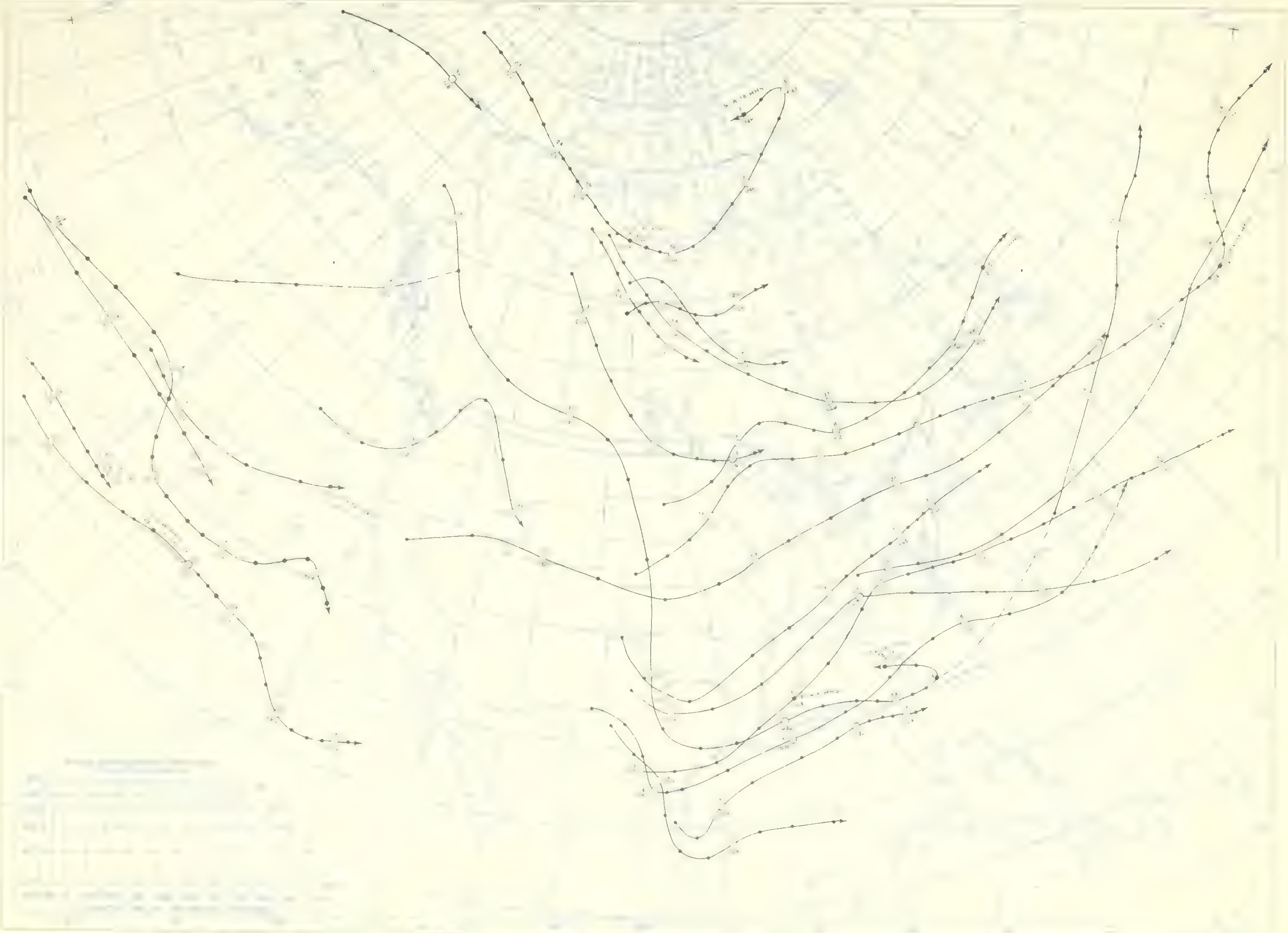


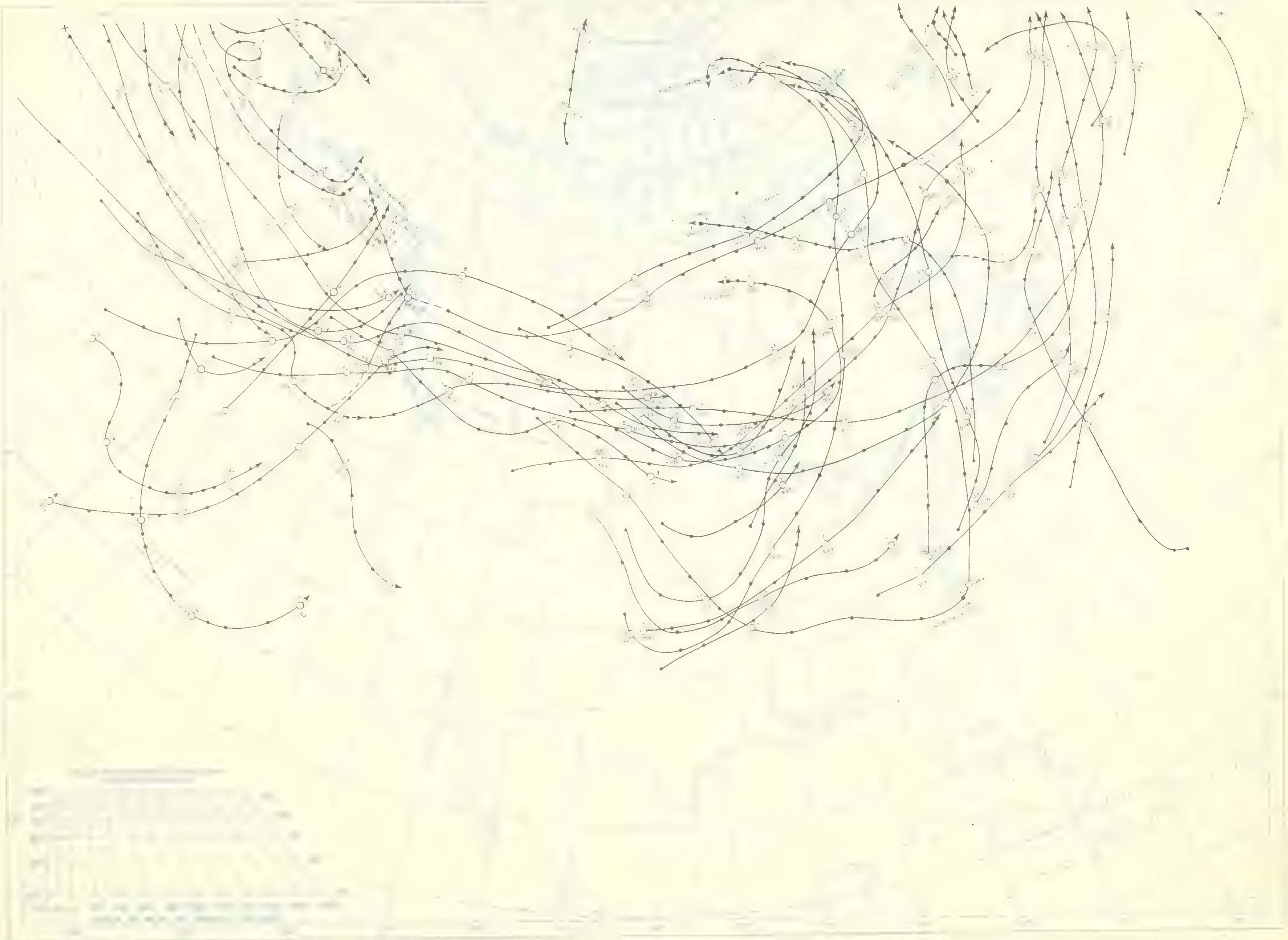
Chart shows mean daily solar radiation, direct + diffuse, received on a horizontal surface in langleys (1 langley = 1 gm. cal. cm.$^{-2}$). Basic data for isolines are shown on chart. Further estimates are obtained from supplementary data for which limits of accuracy are wider than for those data shown.

Chart IX. Tracks of Centers of Anticyclones at Sea Level, December 1957.



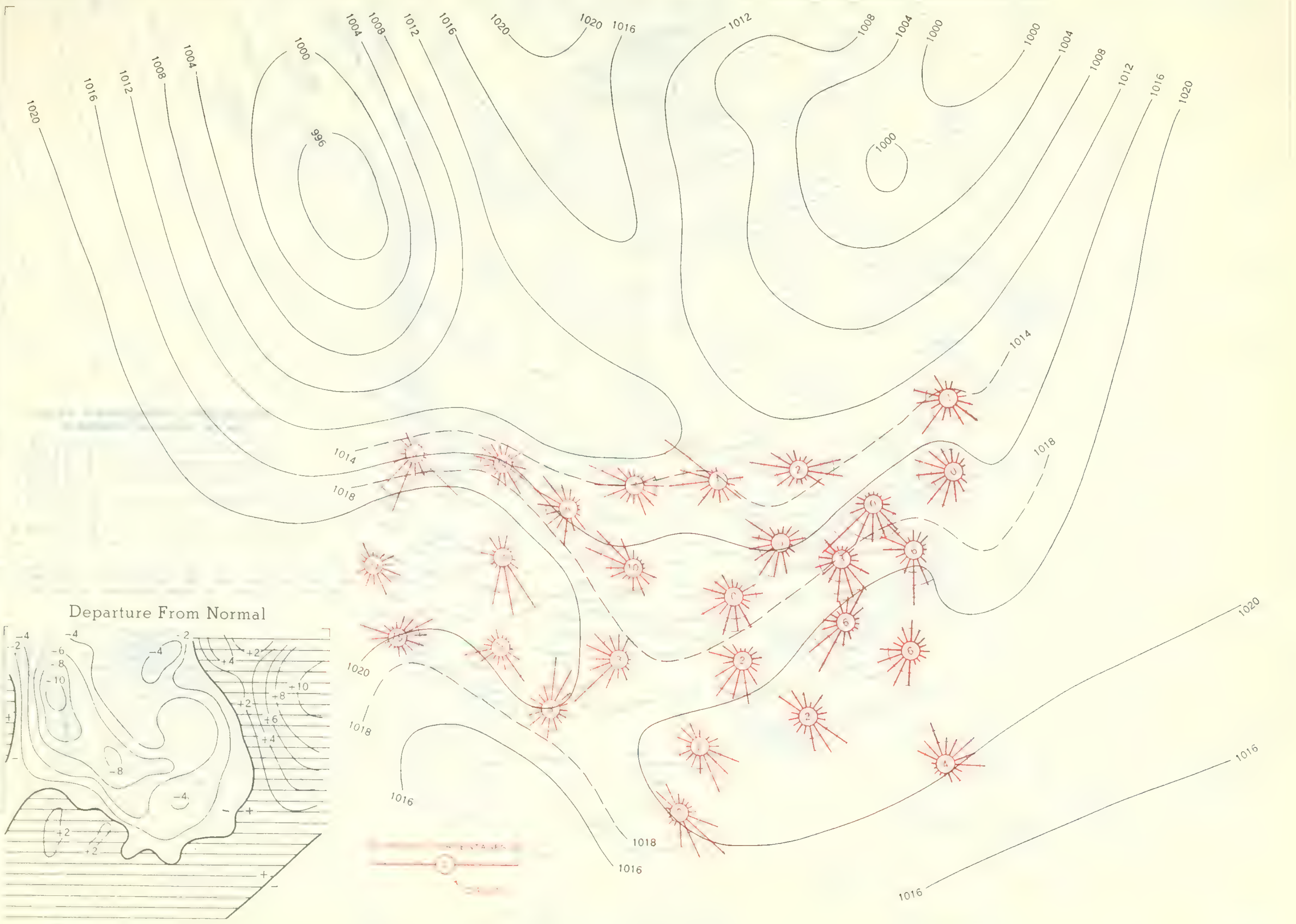
Circle indicates position of center at 7:00 a. m. E. S. T. Figure above circle indicates date, figure below, pressure to nearest millibar. Dots indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.

Chart X. Tracks of Centers of Cyclones at Sea Level, December 1957.



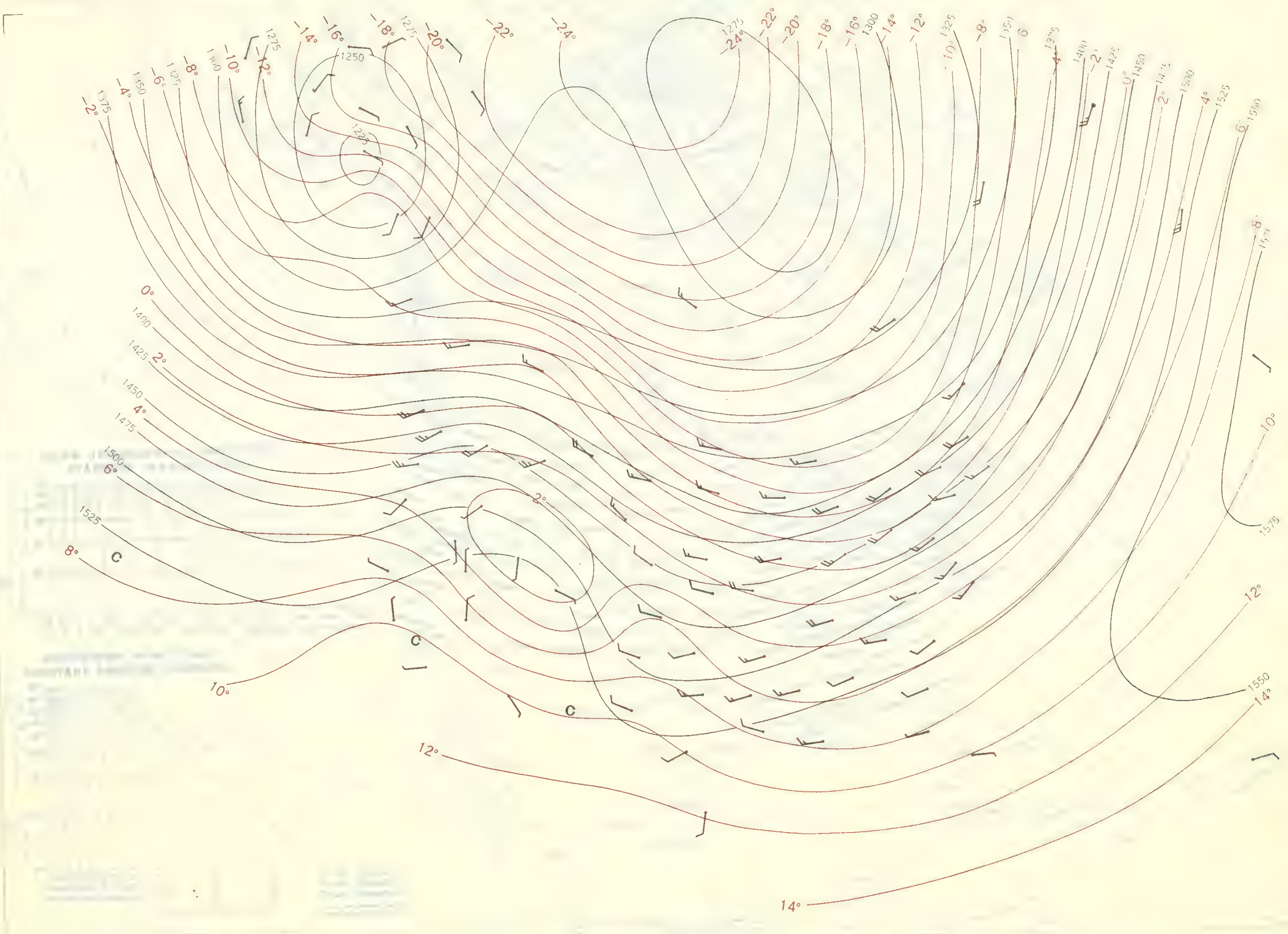
Circle indicates position of center at 7:00 a. m. E. S. T. See Chart IX for explanation of symbols.

Chart XI. Average Sea Level Pressure (mb.) and Surface Windroses, December 1957. Inset: Departure of Average Pressure (mb.) from Normal, December 1957.



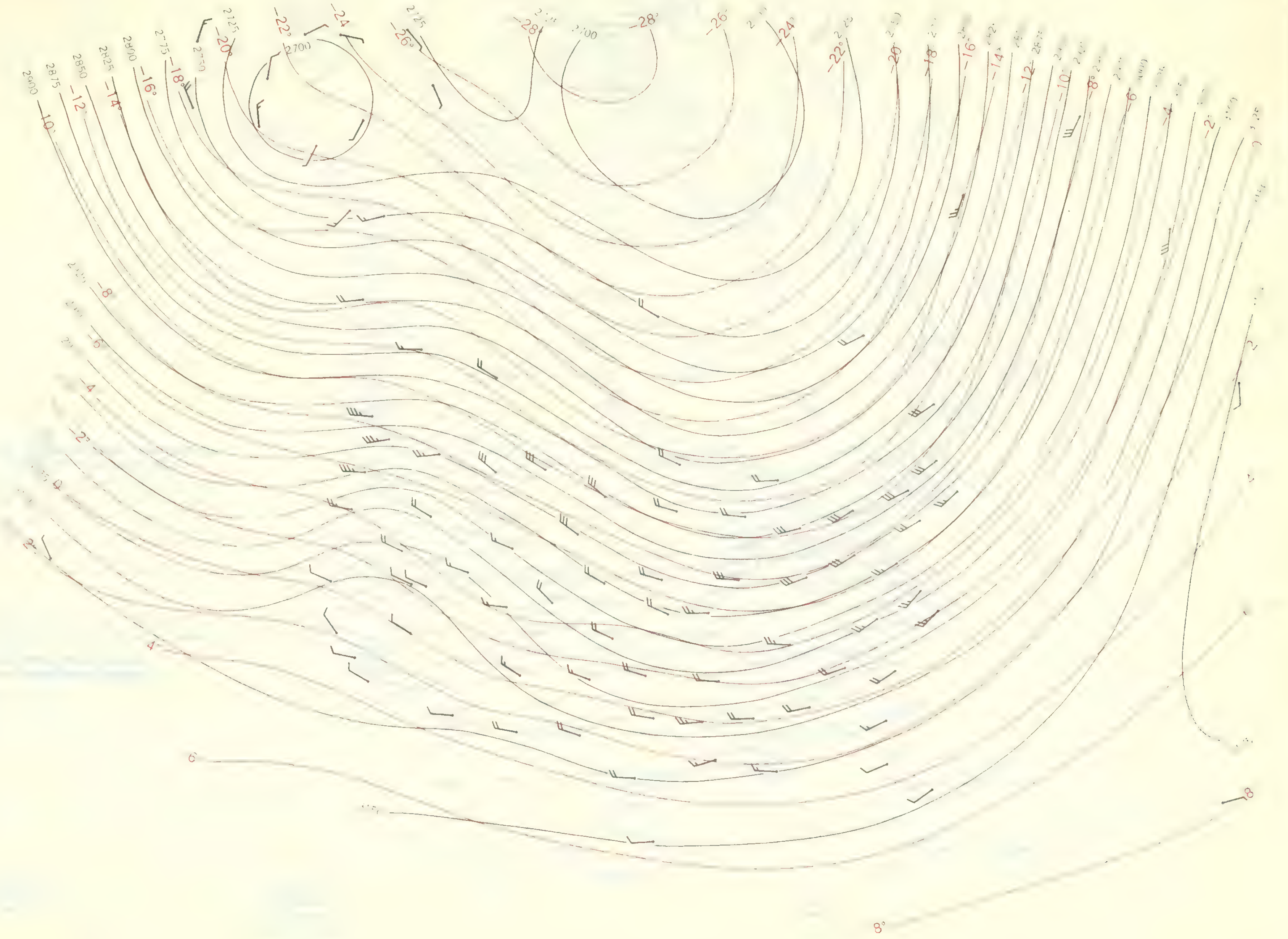
Average sea level pressures are obtained from the averages of the 7:00 a.m. and 7:00 p.m. E.S.T. readings. Windroses show percentage of time wind blew from 16 compass points or was calm during the month. Pressure normals are computed for stations having at least 10 years of record and for 10° intersections in a diamond grid based on readings from the Historical Weather Maps (1899-1939) for the 20 years of most complete data coverage prior to 1940.

Chart XII. 850-mb. Surface, 1200 GMT, December 1957. Average Height and Temperature, and Resultant Winds.



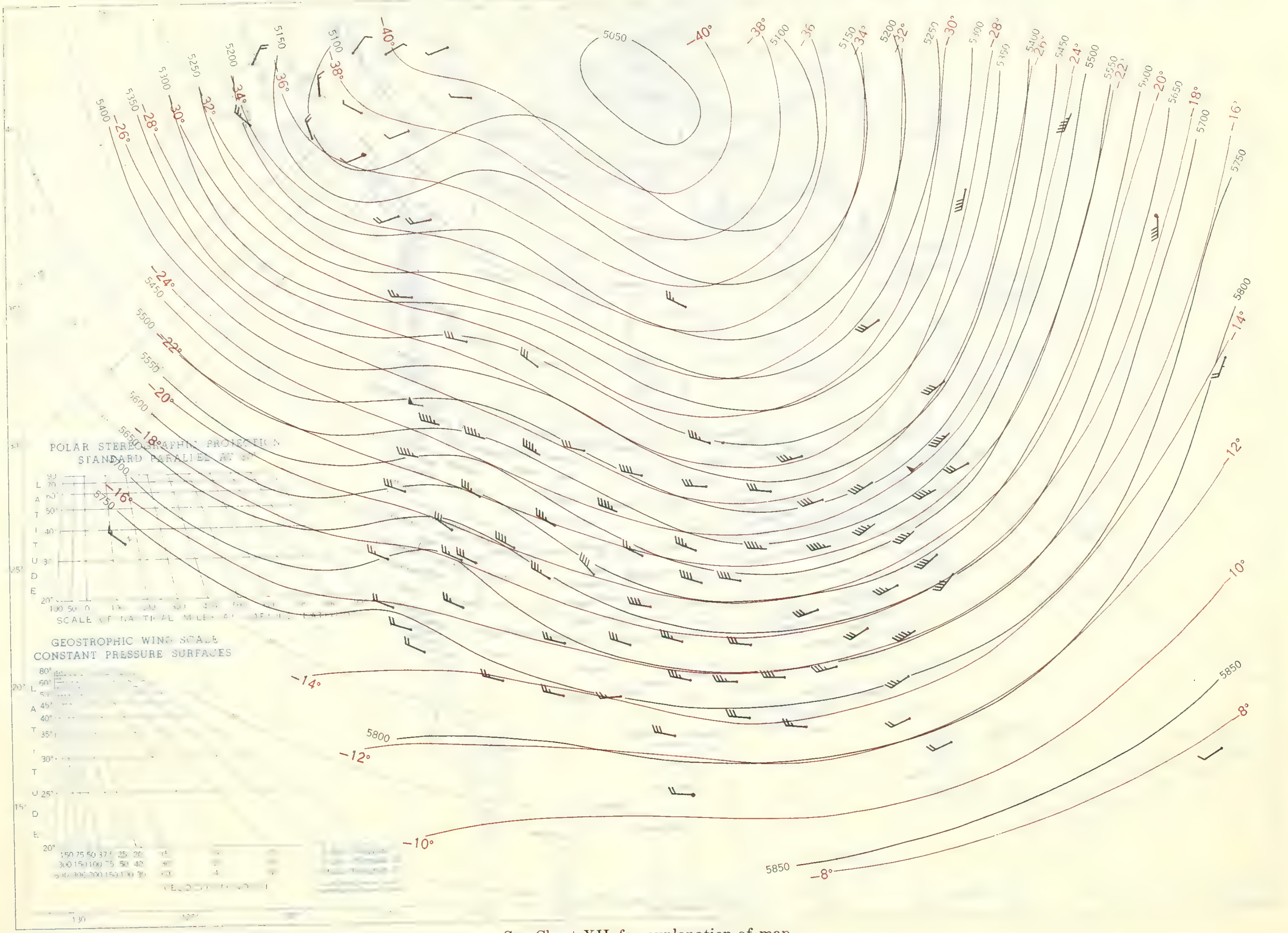
Height in geopotential meters (1 g.p.m. = 0.98 dynamic meters). Temperature in °C. Wind speed in knots; flag represents 50 knots, full feather 10 knots, and half feather 5 knots. All wind data are based on rawin observations.

Chart XIII. 700-mb. Surface, 1200 GMT, December 1957. Average Height and Temperature, and Resultant Winds.



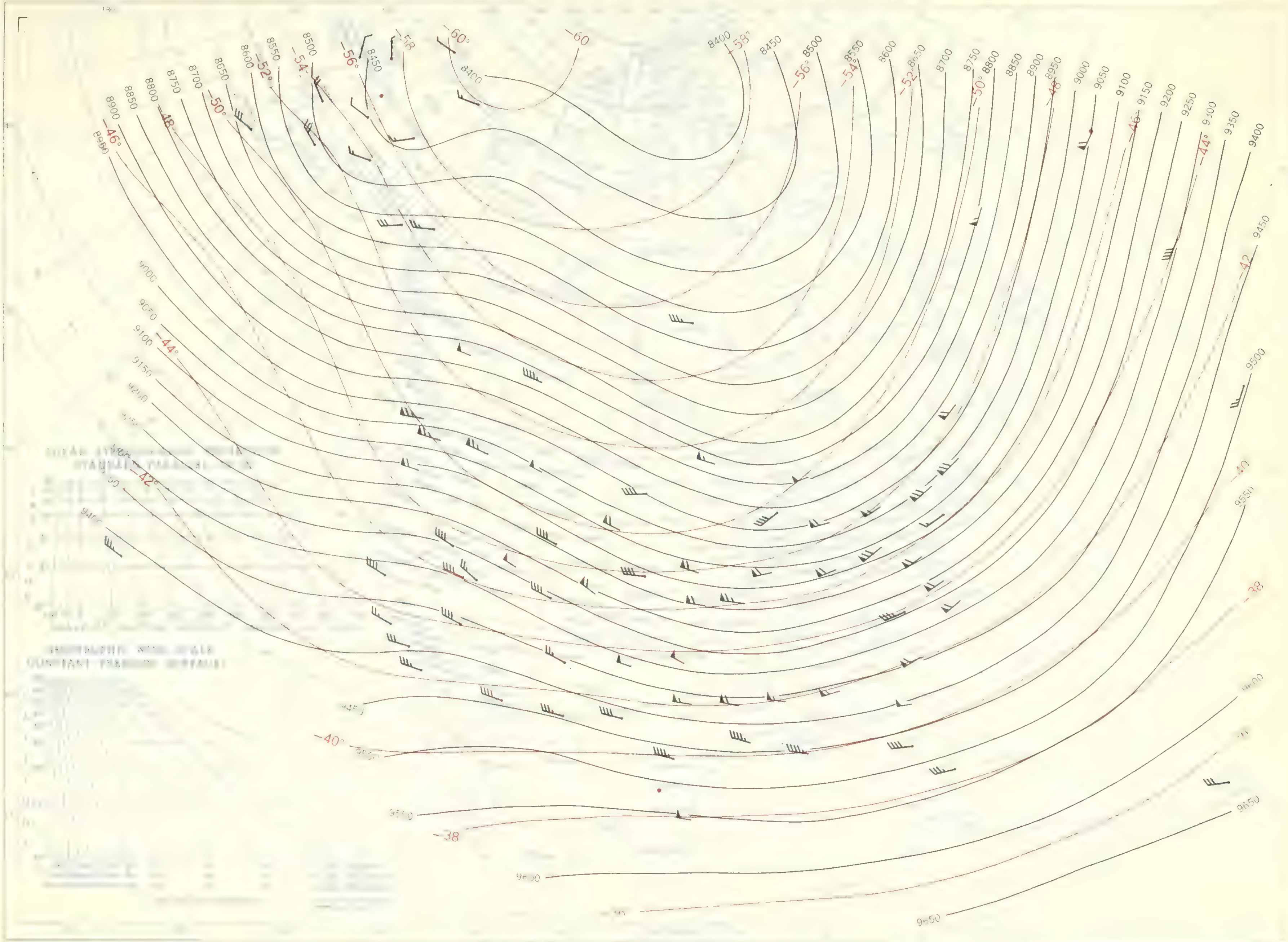
See Chart XII for explanation of map.

Chart XIV. 500-mb. Surface, 1200 GMT, December 1957. Average Height and Temperature, and Resultant Winds.



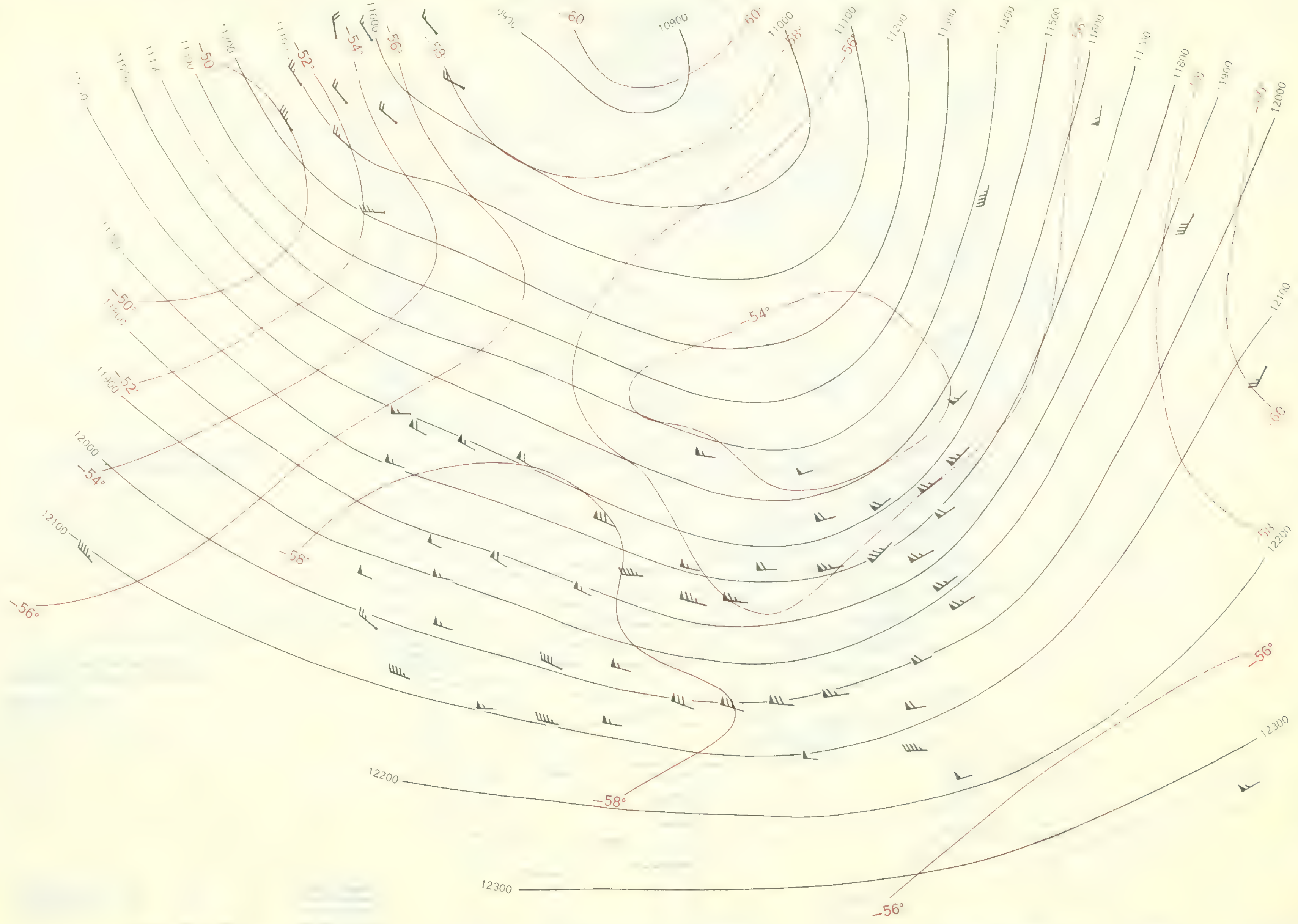
See Chart XII for explanation of map.

Chart XV. 300-mb. Surface, 1200 GMT, December 1957. Average Height and Temperature, and Resultant Winds.



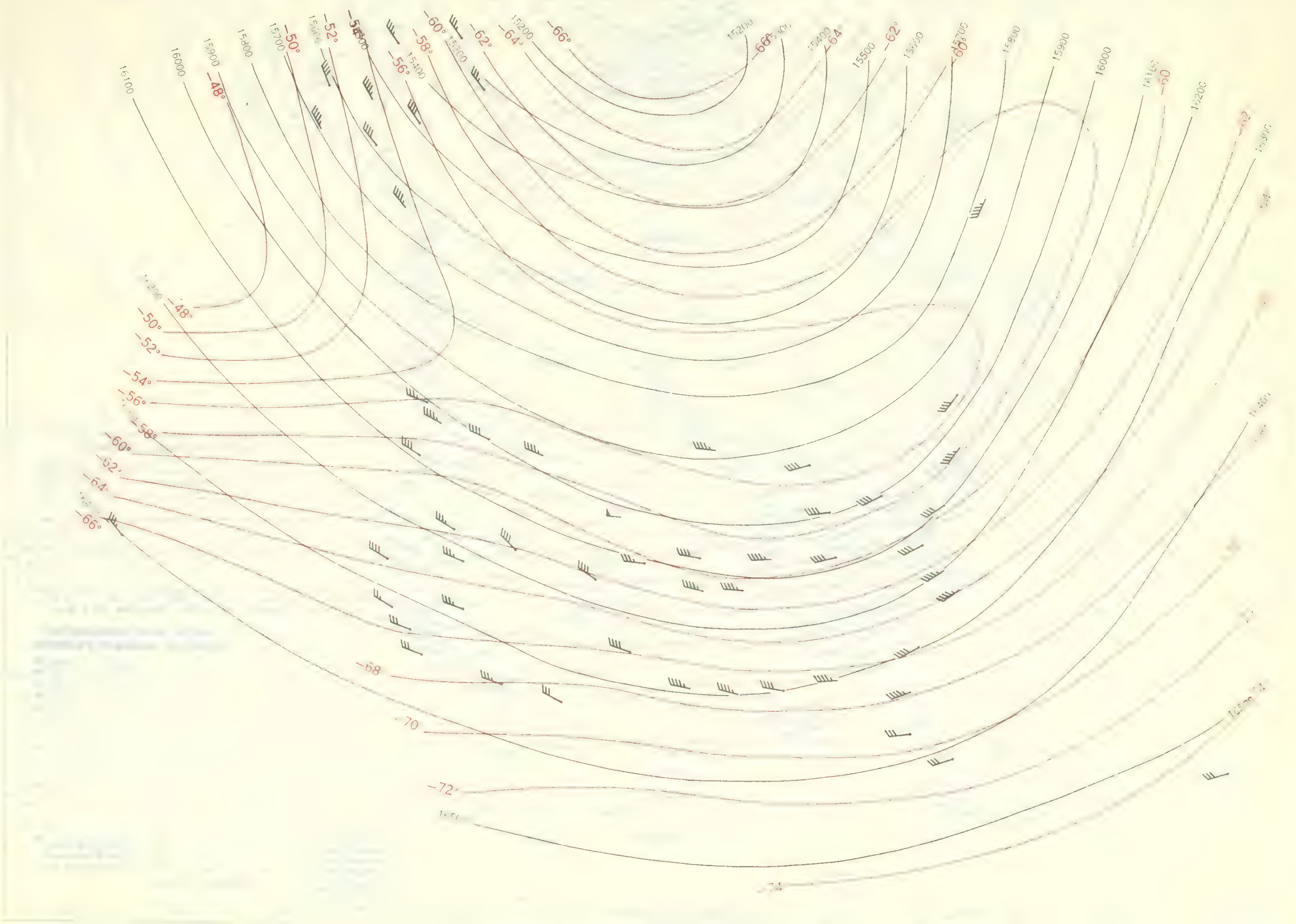
See Chart XII for explanation of map.

Chart XVI. 200-mb. Surface, 1200 GMT, December 1957. Average Height and Temperature, and Resultant Winds.



See Chart XII for explanation of map.

Chart XVII. 100-mb. Surface, 1200 GMT, December 1957. Average Height and Temperature, and Resultant Winds.



See Chart XII for explanation of map.

U. S. DEPARTMENT OF COMMERCE
SINCLAIR WEEKS, Secretary
WEATHER BUREAU
F. W. REICHELDERFER, Chief

CLIMATOLOGICAL DATA

NATIONAL SUMMARY

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CONTENTS

SURFACE DATA

Page

General Summary of Weather Conditions---------- 1
Excessive Precipitation (Short Duration Rainfall) by Stations---------- 4
Sunshine, Amount and Percentage by Stations---------- 15
Annual Climatological Data by Stations---------- 18
Normals, Means, and Extremes by Stations---------- 28
Elevations - Station Pressure---------- 35

STORM DATA

General Summary of Tornadoes---------- 36
Percentages of Tornado Occurrences from Indicated Directions - Tornado Rose---------- 38
Tornado Data---------- 39
Tornado Summary---------- 83
Number of Tornadoes, Tornado Days, and Resulting Losses by Years - 1916-1957---------- 85
Dust Devil Data---------- 86
Funnel Clouds Aloft---------- 89
Hailstorm Losses---------- 96
Hailstorm Losses for Past Years---------- 98
Windstorm Losses---------- 98
Windstorm Losses for Past Years---------- 100
General Summary of North Atlantic Tropical Storms---------- 101
Hurricane Data for Selected Storms (AUDREY, ESTHER)---------- 108
North Atlantic Hurricanes and Tropical Disturbances---------- 110
Tracks of North Atlantic Hurricanes and Tropical Disturbances---------- 111
North Atlantic Hurricanes and Tropical Disturbances for Past Years---------- 112
General Summary of Eastern North Pacific Tropical Storms---------- 114
Tracks of Eastern North Pacific Tropical Storms---------- 116
Eastern North Pacific Hurricanes and Tropical Disturbances---------- 117
Central North Pacific Hurricanes---------- 118
Tracks of Central North Pacific Hurricanes---------- 120

FLOOD DATA

General Summary of Flood Losses - 1956---------- 121
Estimated Flood Losses - 1956---------- 122
Loss of Life and Property in the United States from Floods - By Districts and Years, 1925-1956---------- 126
Loss of Life and Property in the United States from Floods, 1925-1956 - By Months and years---------- 127
Distribution of Estimated Flood Losses in the United States by Major River Systems, 1925-1956 (Chart)---------- 128
Losses in Individual Severe Floods in the United States since July 1902---------- 129
General Summary of River and Flood Conditions - 1957---------- 131

UPPER AIR

Rawinsonde Data---------- 132

SOLAR RADIATION DATA

Average Daily Values by Stations---------- 138

CHARTS

I----Departure from Normal of Annual Average Temperatures (°F) at Surface, 1957.
II---Total Precipitation, 1957.
III--Percentage of Normal Annual Precipitation, 1957.
IV---Tracks of Tornadoes, 1957.

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CLIMATOLOGICAL DATA

NATIONAL SUMMARY

Volume 8 No. 13 ANNUAL 1957

GENERAL SUMMARY OF WEATHER CONDITIONS

Compiled by L. H. Seamon
U. S. Weather Bureau, Washington, D. C.

GENERAL

Wet weather in the central and lower Great Plains and Far Southwest, areas where disastrous drought in 1956 climaxed a 5- to 7-year dry period, was the outstanding feature of 1957. The blessings of rain were marred locally, however, by damaging floods and destructive storms.

Drought left the Plains and Southwest only to reappear in the Northeast where hot, dry weather during summer and early autumn cut crop production, created a high fire hazard several times, and reduced many municipal water supplies to the extent that drastic restrictions were necessary.

With adequate precipitation outside the Northeast, the absence of any widespread destructive freezes in spring and autumn, and generally favorable temperatures during the growing season, total crop production was next to the highest on record.

Severe storms took their usual toll. The most destructive single storm was Audrey, the only hurricane to enter the mainland of the United States during 1957. Tornadoes were again reported in record-breaking numbers, but fortunately deaths and losses were less than in some other years. The blizzard or snowstorm in the Southwest on March 22-25 was the worst winter storm. Hail damage was less than usual.

PRECIPITATION.--Precipitation for 1957 was well above normal in most of the nation. Deficiencies resulting in serious drought occurred only in the Northeast, particularly along the north Atlantic coast.

Deficiencies for the year ranged up to 25 percent in the Northeast, and several stations had their driest year on record, including Trenton, N. J., 28.79 inches and Hartford, Conn., 32.26 inches. In contrast, excesses for the year ranged up to 50 percent or more in the lower two-thirds of the area from the Rocky Mountain region to the Appalachians and in some sections of the Southeast. The following stations reported their greatest annual precipitation on record: Grand Junction, Colo., 15.69 inches; Lander, Wyo., 21.89; Cairo, Ill., 72.98; Shreveport, La., 67.23; Memphis, Tenn., 76.85; and Knoxville, Tenn., 61.49. Many other stations from the central Rockies to the lower Appalachians reported their wettest year on record. 1957 was much the wettest year on record in Arkansas, with 22 stations reporting new annual records and Newhope measuring 98.55 inches for the greatest annual total ever reported in Arkansas.

At the end of 1956 severe drought extended from the middle Mississippi Basin through the central and lower Great Plains into the Far Southwest, and moisture was needed in California, southern Georgia, and most of Florida.

January precipitation replenished topsoil moisture in California and the southeastern Great Plains and eased the drought in Utah, southwestern Colorado, western New Mexico, and in Arizona. In most of the latter State streamflow was above normal at the end of the month. Heavy rains in southeastern Kentucky and nearby areas of the Virginias during the last 10 days of the month caused the worst floods at some points in nearly 100 years. Damage was in the millions of dollars. February rains brought further drought relief to Texas and Oklahoma, and beneficial amounts fell in Florida's citrus belt, but more was still needed in northern Florida and southern Georgia. Spring precipitation was above normal all over the country. March was especially wet in the central and lower Great Plains where some streams were flowing again for the first time in months, and topsoil was either replenished or greatly improved. Heavy rains in the Pacific Northwest improved ranges but caused some flooding in western Oregon. Heavy rains in April again soaked the Great Plains, and widespread floods occurred in Texas the last 10 days of the month. During May, another wet month except in some northern and eastern sections, floods occurred in Texas, Oklahoma, Arkansas, and south-central Kansas. By the end of May, moisture was adequate to excessive in the 1956 drought area and adequate elsewhere except in the Northeast.

Summer rainfall, spotty as usual, generally was adequate for growing crops except in the Northeast. Heavy June rains in the midcontinent area caused near record floods along several streams in the central Great Plains and in the upper Mississippi Basin, and prolonged flooding along the Red River in Louisiana. Late in June thousands of acres of crops were damaged or destroyed by floods along the Sioux and Vermillion Rivers in South Dakota, and up to 11 inches of rain from eastern Kansas to central Indiana caused more flooding and additional property and crop losses.

In early July the most damaging flood of record occurred along the Wabash and White Rivers in Indiana. On the 12th and 13th of July 6 to 10 inches of rain in the Chicago area caused the loss of 9 lives and heavy property losses. Numerous flash floods occurred during the second week of July in a belt extending from Kansas to Michigan. Texas and Oklahoma had very little rain in July and August, which was in great contrast to heavy rains of the 3 previous months, and both States needed more rain at the end of the summer. August rainfall was light in most of the country, but heavy amounts were recorded in the upper Mississippi Valley, parts of the Great Lakes region, Nebraska, and parts of the Rocky Mountain region. Dry, hot weather during August caused some crop decline in Kansas and Missouri.

Autumn precipitation was heavier than normal in most of the country. September was particularly wet in Oregon and northern California, the eastern Great Plains, and the South. Rainfall in the South totaled up to 20 inches or more and set several new records. Tropical storms contributed much to the total rainfall in the South during September, Debbie on the 7th bringing up to 9 inches to northwestern Florida and 2 to 4 inches to nearby areas and Esther, September 18-19, producing up to 5 inches or more from southeastern Louisiana to northern Florida. October precipitation was unusually heavy in parts of Texas and most of the Far West. It was one of the wettest Octobers on record in the Far Southwest. Heavy rains caused serious flooding in central Texas on October 12, and along most streams of the State's Gulf drainage area during the third week. November was unusually wet in the western Great Plains, the South, the upper Mississippi Valley, and Maine. Early in November more floods occurred in Texas, and during the third week widespread flooding occurred from Texas eastward and in the lower Ohio River drainage basin. Wet weather delayed cotton and corn harvests in the South and Midwest.

December was wet in the Northeast, the Ohio and middle Mississippi Valleys, the Great Lakes region, Oregon, and extreme southern Florida, but the month's precipitation was below normal elsewhere.

NORTHEASTERN DROUGHT.--The northeastern drought, serious during the growing season along the coast from southern Maryland to southern New England, began in January and did not completely end until December. Precipitation in this coastal area was only about 50 percent of normal for January, February, and March.

April precipitation was above normal owing to generous rainfall the first half of the month, but much above normal temperatures and almost no precipitation at all the second half created a high forest fire hazard in New England with numerous fires occurring in Massachusetts, New Hampshire, and Maine.

Although rains on May 14 and 15 relieved the fire hazard in New England and monthly totals were above normal in some interior sections, May rains were less than 50 percent of normal from southern New England to Virginia with some sections experiencing drought by the end of the month. Rains on June 6 and 7 furnished some relief to developing drought conditions in Maryland and Virginia, but the month's rainfall was only 50 percent of normal or less in New Jersey, extreme southeastern New York, and southern New England.

July rainfall generally was less than 50 percent of normal from southern New England to the Carolinas, and severe drought gripped Rhode Island, southeastern Massachusetts, parts of Connecticut, New Jersey, extreme southeastern Pennsylvania, Delaware, central and eastern Maryland, and much of eastern Virginia. In the lower Appalachian region where July rainfall also was less than 50 percent of normal, signs of drought were showing up. The dry spell continued until August 25-26. Rains at that time improved pastures and furnished sufficient moisture for fall seeding, but came too late to help many crops.

Good rains fell in most of the East during September, but they were too light from southern Maryland northward to bring more than slight relief. At Providence, R. I., the period January through September with only 17.71 inches of precipitation was the driest such period there since earliest records in 1832. The last week of September was almost rainless, and the forest fire hazard again became high in New England where numerous woods and brush fires were reported. In some parts of New England streamflow and ground water levels were unusually low and many wells dry. Soil moisture was short in nearly all sections of southern New England, and pastures were declining rapidly at the end of the month. Early October rains relieved the forest fire hazard, and monthly totals, normal or above, were sufficient to improve topsoil moisture; but, wells and streams remained low. November moisture, above normal along the coast and totaling 2 to over 4 inches either replenished or maintained ample topsoil moisture, but water shortages remained serious in some sections.

December rains, well above normal throughout the Northeast with totals ranging from 3 to 12 inches, further improved soil moisture and replenished water supplies that had been short since May in some sections. In New Jersey reservoir levels were raised 10 to 14 feet.

SNOWFALL.--In January many stations in the central Valley and along the central and southern coast of California had some snowfall for the first time in many years. Monthly totals were much above normal in the Rocky Mountains and Northeast.

February snowfall was much below normal nearly everywhere. March snowfall, below normal in most areas, was notable mainly for some heavy falls in the northern Great Plains and upper Mississippi Basin during a blizzard on the 14th and 15th, and near record amounts in the southwestern Great Plains from the 22d through the 25th. April snowfall was unusually heavy in most northern areas between the Rocky Mountains and the Appalachians.

Some unusually early snows fell in central areas during October, and on November 17 to 19 heavy falls were recorded from the southwestern Great Plains to the upper Mississippi Valley. December snowfall was below normal.

TEMPERATURE.--Areas with average temperatures above and below normal for the year were about equal, with extreme departures ranging from 2° or more above in the Northeast to 2° or more below in the central Great Plains.

January weather in much of the North was the coldest in many years and greatly reduced the peach crop in the Northeast and Pacific Northwest. The following February was abnormally mild in virtually the entire Nation, with average temperatures the highest of record in the Far Southwest while monthly maxima set new records at many stations from Yuma, Ariz., to Jacksonville, Fla., and northward to Columbus, Ohio, and Wilmington, Del.

Spring (March, April, May) temperatures averaged about normal, although April was relatively cool in the western Plains. During a cold snap from March 6 to 11, freezing extended into the Florida Everglades and caused some local crop damage. On April 7-15, another cold period, temperatures fell to record low levels for the season in the lower Great Plains where 30° recorded at Fort Worth, Tex., on the 13th was the latest freeze and lowest temperature ever recorded there in April. East of the Rockies summer heat prevailed during the latter half of the month. A freeze on May 17 in the Northeast caused some local crop damage.

Average summer temperatures were relatively cool in the Pacific Northwest and Great Basin, but unusually hot in the drought area along the northeastern coast. In the latter area temperatures occasionally neared record highs in June and July.

Autumn temperatures averaged above normal in the Northeast and along the west coast and below in most of the remainder of the country. October was relatively cool nearly everywhere, and a cold snap from the 24th to the 29th reduced temperatures to record low levels for the season in many southern areas east of the Rockies where some stations reported their first freeze of the season about a month earlier than normal. November was among the coldest such months of record in Texas and the Great Basin. Elsewhere, temperatures averaged about normal for the month, but were characterized by frequent and sometimes sharp changes.

December was relatively mild except in Florida where average temperatures were slightly below normal. It was among the mildest Decembers on record in northern areas. Nevertheless, a major outbreak of cold air on the 10th to the 13th brought freezing deep into the South, and low readings in Florida on the 12th and 13th, approximating those of December 1934 and January 1940, caused extensive crop damage.

STORMS AND UNUSUAL WEATHER PHENOMENA

TORNADOES.--These storms, setting new records for the greatest number in a single year (924) and for a single month (May, 230), accounted for 191 deaths, and about $75 million damage.

Major outbreaks occurred as follows:

Southern regions.--January 22; April 1-8, 21-25; June 8 and 28; October 15-16; November 7.
Midwest.--May 14; December 18.
North-central regions.--May 20; June 13-14 and 20.
Northeast.--June 18-19.

The year's worst tornado moved through the Kansas City, Mo., suburbs on May 20, killing at least a score of persons, injuring nearly 200, and damaging property to the extent of millions of dollars. Other well known cities hit during the year included Dallas and Austin, Tex., Springfield, Ill., and Fargo, N. Dak. The Fargo tornado, described as the worst in the history of North Dakota, killed 10, injured over 100, and destroyed property valued in millions of dollars on June 20.

HURRICANES.--Only one of these storms entered the mainland of the United States. Audrey, on June 27-29, moved from southwestern Louisiana to Lake Ontario, but lost hurricane strength soon after leaving Mississippi. Deaths totaled 390 and property losses over $150 million. An article on North Atlantic Tropical Storms appears in this publication.

HAIL.--Losses were about $62 million, the least since 1953. Hail caused damage in the neighborhood of a million dollars on August 2 at Cheyenne, Wyo.

Wind and hail in the Northern Great Plains and upper Mississippi Valley on July 2-4 were responsible for property and crop losses of millions of dollars. In western South Dakota at 8 p.m. on July 2, hailstones up to 16 inches in circumference were reported and a few young livestock were killed. In the extreme southeastern part of the same State from 11 p.m. of the 3d to 1 a.m. of the 4th, one of the most destructive hailstorms in the history of the State devastated an area 8 miles wide from Freeman, S. Dak., to Hawarden, Iowa; stones reached baseball size, cattle were bruised, several hogs killed, and bark stripped from trees.

SHOWER OF FROGS AND FISH.--This latest phenomenon occurred at Magnolia Terminal near Thomasville, Ala., according to a story in the "Thomasville Times" of that city on the 3d of July 1957. The story related that little fish fell by the thousands on Friday morning, the 28th of June 1957, during a rainstorm. The fish, many still alive, were found between crossties on the railroad tracks, and residents filled containers with bass, bluegill, bream, and other species. Some crayfish and tiny frogs also fell. The story was confirmed by reliable observers. A tornado, suspected to have occurred in southwestern Alabama before 8 a.m., the 28th, may have been responsible for the event. The above account is the latest documented testimony to these rare phenomena.

INJURY BY HAIL.--On the 23d of June 1957, a few miles west of Fort Stockton, Tex., 21 persons caught without shelter were injured by hailstones ranging up to baseball size.

BLIZZARDS.--The most destructive storm of this type occurred March 22-25 in the western Great Plains from Wyoming to New Mexico. This storm, reaching blizzard proportions in many sections, was among the worst on record for so late in the season. It took a heavy toll of livestock, and damaged power and communication lines.

Another blizzard occurred in eastern and south-central Colorado on April 1-2 when up to 50 inches of snow fell in the mountains, causing hundreds of thousands of dollars damage.

WINDS OTHER THAN HURRICANES AND TORNADOES.--These winds were responsible for about 200 deaths and property damage of more than $40 million. On November 21-22, Santa Ana winds in southern California were responsible for hundreds of thousands of dollars damage and for brush fires spreading over 28,000 acres.

EXCESSIVE PRECIPITATION

(Excessive Short Duration Rainfall)

YEAR 1957

This table contains statistics of maximum amounts of rainfall during the calendar year 1957. Data presented in this table are generally from stations equipped with recording gages. Stations are at City Office locations unless otherwise shown.

Excessive precipitation data for the years 1896-1935 inclusive, generally present the accumulated amounts of precipitation for each 5, 10, or 20 minute intervals during storms in which the rate of fall equaled or exceeded .25 inch in any 5 minute period, or .30 in any 10 minute period, or .35 in any 15 minute period, etc., the tabulation beginning with the 5 minute period where the rate of .05 inch in 5 minutes began and continuing by 10 or 20 minute intervals up to 120 minutes. A detailed explanation of the method used may be found in the publications listed in the last paragraph of this explanation.

The present method, adopted with data for the calendar year 1936, gives the maximum fall of precipitation for the periods 5 to 180 minutes, the maximum amounts being taken for the periods in which the fall is greatest for the given time, and is tabulated to show maximum amounts for 5, 10, 15, 20, 30, 45, 60, 80, 100, 120, 150 and 180 minutes, even if the fall does not equal the excessive rate for some of the periods. (The 15 minute amount was not computed for 1936-43 and the 150 minute amount was not computed for 1944 through 1948).

The following Table A shows limits at which precipitation was considered excessive in this publication:

TABLE A

Duration (minutes)	Depth of precipitation (inches)	Duration (minutes)	Depth of precipitation (inches)
5	.25	60	.80
10	.30	80	1.00
15	.35	100	1.20
20	.40	120	1.40
30	.50	150	1.70
45	.65	180	2.00

This table is made up from the formula, A = t + 20 where A is the accumulated depth in hundredths of inches and t is the time in minutes.

For the years 1936 through 1948 stations in North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Tennessee, Arkansas, Louisiana, Texas, Oklahoma, and San Juan, P. R. used the limits shown in the following Table B:

TABLE B

Duration (minutes)	Depth of precipitation (inches)	Duration (minutes)	Depth of precipitation (inches)
5	.40	60	1.50
10	.50	80	1.90
15	.60	100	2.30
20	.70	120	2.70
30	.90	150	3.30
45	1.20	180	3.90

This table is made up from the formula A = 2t + 30. Its use, however, was discontinued at the end of 1948 and Table A is used by all sections for 1949 and the following years.

Publication of Data. A summary of maximum precipitation data for the years prior to 1896 is published in the annual report of the Chief of the Weather Bureau for 1895-1896. Excessive precipitation data for the period 1881-1896 are published in the annual report of the Chief of the Weather Bureau 1896-1897. Data for the years 1897 through 1934 have been published in the appropriate annual reports of the Chief of the Weather Bureau. For the years 1935 through 1949 these data are published in the appropriate issue of the United States Meteorological Yearbook. For 1950 and succeeding years excessive precipitation are presented in the annual issues of the Climatological Data, National Summary.

EXCESSIVE SHORT DURATION RAINFALL

Station and date	Maximum precipitation in inches (5 to 180 minutes)											
	5	10	15	20	30	45	60	80	100	120	150	180
ALABAMA												
Birmingham Airport												
Jan. 4	0.22	0.30	0.40	0 44	0.63	0.93	1.09	1.46	1.55	1.63	1.64	1.66
Jan. 29	.31	.31	.32	.32	.44	.51	.57	67	.69	.70	.70	.70
Jan. 31	.21	.35	.39	48	.57	.60	.67	.70	.74	.74	.94	.97
Mar. 24	.20	.32	.41	47	.60	.70	.84	.96	1.07	1.09	1.17	1 22
Apr 4	.38	.61	.73	83	1.32	1.41	1.55	1.64	1.71	1.81	1.92	2.03
June 23	.43	62	.92	1.17	1.79	2.20	2.43	2.60	2.60	2.60	2.60	2.60
June 23	20	32	52	70	80	.90	.93	.94	1.01	1.03	1.10	1.14
June 24	.31	.60	.80	90	1.25	1.52	1.55	1.55	1 55	1.55	1.55	1.56
Aug. 4	.45	83	1.09	1.26	1.60	1.72	1.98	2.25	2 26	2.27	2.27	2.27
Sept. 13	.27	.53	.58	.63	.65	.67	.67	.67	.67	.67	.67	.67
Sept. 15	.37	.63	.74	84	1.19	1.59	1.81	1.94	2 03	2.09	2.30	2.39
Oct. 16	.42	.59	.74	.76	.77	.78	.79	80	81	81	.81	82
Nov. 13	28	.45	50	.54	.58	.66	.79	89	1.00	1.08	1.23	1.34
Dec. 20	.35	.38	.45	.63	.73	.83	.95	1.12	1.20	1.27	1.34	1.35
Montgomery Airport												
May 3	.63	1.14	1.57	1.78	1 85	2.02	2.27	2.33	2.34	2.40	2.70	2.72
June 28	.53	.90	1.07	1.17	1.37	1.55	1.64	1.70	1.75	1.77	1 86	1.91
June 28	.32	.55	.86	1.07	1.29	1.49	1 54	1.56	1.56	1 56	1.56	1.56
July 14	.24	43	.59	.67	84	86	.86	.86	86	.86	.86	.86
July 16	.36	.53	.61	.64	.84	1.01	1.01	1.01	1.01	1.05	1.05	1.05
Aug. 17	.20	.33	.39	.44	.46	.48	.49	.57	.79	.79	.79	.79
Aug. 18	.23	.36	.48	.58	.77	.81	.81	.82	.82	82	.82	.82
Sept. 8	.21	.31	42	.51	.65	.91	1.05	1.16	1.24	1.32	1.43	1.53
Sept. 16	.18	.35	.44	.52	.79	.99	1.13	1.19	1.19	1.36	1.44	1.50
Sept. 20	.33	.61	.76	.80	82	.82	.82	.97	.98	.98	.98	.98
Oct. 2	.21	.40	.51	.53	58	58	.58	.58	.58	.58	.58	.58
Nov. 14	.40	.75	.87	.98	1.06	1.13	1.19	1.28	1.36	1.40	1.52	1.61
Nov. 18	.27	.34	.40	.44	.49	.56	.59	.65	.76	.78	.83	.83
Dec. 20	.15	.25	.35	.40	.45	.51	.70	.76	.77	.81	83	.83
ARIZONA												
Phoenix Airport						None						
Prescott Airport												
Aug. 4	.22	.32	.32	.32	.32	.32	.32	32	.32	.32	.32	.32
Aug. 20	.22	.34	.38	39	.49	.56	.58	.58	.58	.59	.59	80
Tucson, Airport												
Aug. 3	.21	.34	.42	.47	.56	.62	63	.63	.64	.65	.66	.66
Aug. 31	.22	.31	.32	.32	.38	42	.59	.69	.71	.75	.99	1.00
Winslow Airport												
July 17	.51	66	.70	.71	.71	.71	.75	.75	.75	.75	.75	1.09
Yuma Airport	Recorder inoperative											
ARKANSAS												
Fort Smith Airport												
Jan. 22	.27	.40	.45	.53	.58	.60	.65	.72	.72	.73	.77	.78
Apr. 3	.48	.87	.98	1.25	1.30	1.50	1.75	1.85	1.95	2.02	2.10	2.23
Apr. 26	.17	.30	.34	.40	.54	.60	.65	.67	.67	.82	.99	1.03
May 11	.55	.95	1.10	1.20	1.28	1.47	1.55	1.56	1.68	1.71	1.72	1.72
May 13	.23	35	.40	.45	.61	.75	1.13	1.20	1.29	1.31	1.35	1.36
May 22	.37	.73	.92	1.04	1.57	2.17	2.23	2.78	2.92	3.02	3.23	3.34
May 25	.31	38	.43	.47	.48	.49	.51	.63	.68	68	.74	.79
May 28	.26	.45	.62	.74	1.00	1.14	1.17	1.19	1.20	1.20	1.21	1.26
May 31	.25	.34	.36	.45	.57	.63	.67	.69	.69	.69	.69	69
June 2	.26	.50	74	.97	1.01	1.07	1.25	1.26	1.28	1.28	1.28	1.28
June 9	.32	.40	.44	.50	.60	.67	.72	.77	.80	81	.82	.96
Aug. 12	.20	.35	.47	.62	.79	1.24	1.39	1.45	1.45	1.47	1.53	1.75
Aug. 14	.22	.37	.52	.74	.92	1.10	1.27	1.30	1.30	1.31	1.31	1.31
Aug 16	.29	.42	.57	66	.84	.86	.96	1.03	1.11	1.17	1.23	1.45
Sept. 21	.21	.41	53	.70	.80	.90	92	.96	.98	1.01	1.12	1.13
Nov. 17	.26	.27	.30	34	.59	.61	.62	.62	.63	.75	80	.85
Nov 17	.37	.55	.59	.62	.69	.78	1.37	1.43	1.47	1.59	1.61	1.61
Little Rock Airport												
Jan. 21	.28	.33	.38	.42	.46	.48	.52	.54	56	60	.60	.62
Jan. 22	.36	.42	.48	.52	.58	.62	.63	.64	.64	.65	66	.66
Feb. 24	.22	.42	.56	.68	.86	.96	1.26	1.36	1.40	1.43	1.52	1.63
Apr. 3	.18	.28	.34	.41	.57	.76	.90	1.11	1.46	1.74	1.94	2.02
Apr. 8	.18	.32	.38	.38	.38	.39	.40	.40	.40	.40	.40	.40
Apr. 18	.32	.39	.39	.39	.39	.39	.43	.44	.44	.44	.44	.44
Apr. 22	.22	.32	.34	.36	38	.38	.38	.38	.46	.70	.81	.88
Apr. 24	.16	.26	36	.48	.52	.56	.64	.71	.74	.74	.74	.74
Apr. 27	.30	.44	.50	.52	.56	.63	.68	.70	.87	.89	.94	1.20
May 13	.24	.43	.45	.65	.73	.73	.73	.74	.74	.74	.74	.74
May 13	.24	.36	.39	.40	.41	.41	.43	.44	.44	.44	.44	.44
May 23	.22	.39	.57	.68	.90	1.15	1.40	1.74	1.94	2.00	2.10	2.24
May 23	.46	.62	.66	.78	1.08	1.52	1.64	1.84	1.92	1.98	2.06	2.08
May 24	.32	.40	.46	.48	.54	.58	.59	.63	.68	.68	.68	68
May 25	.52	.82	1.02	1.32	1.46	1.50	1.52	1.52	1.52	1.52	1.53	1.54
June 4	.26	.32	.35	.40	62	.72	.74	.74	.77	83	.87	.90
July 1	.19	.36	.51	.55	.67	.68	.69	.69	.69	.69	.69	.69
July 29	.18	.34	.48	.56	.68	.75	.76	.77	.77	.77	.79	.79
July 30	.25	.32	.35	.36	.36	.53	.56	.57	.57	.57	.59	.92
Aug. 12	.16	.24	.40	.48	67	76	.90	.96	98	.98	98	.99
Aug. 13	.38	.52	.62	.66	.68	82	1.08	1.16	1.20	1.30	1.33	1.34
Oct. 15	.22	.33	.40	.62	.80	.84	.96	1.19	1.38	1.42	1.56	1.66
Nov. 7	.16	.31	.46	.56	.58	.70	.76	.83	.90	1.20	1.32	1.46
Texarkana Airport												
Feb. 6	.23	.36	.38	.39	.39	.40	.40	.40	.40	46	.47	.52
Apr. 3	.40	.60	.67	.85	1.02	1.04	1.11	1.48	2.04	2.09	2.11	2.23
Apr. 24	.23	.35	.42	.47	.54	.59	.70	.86	90	93	1.04	1.13
Apr. 26	.27	.34	.38	.39	.48	.51	.53	.54	.54	.54	.54	.54
Apr. 26	.34	.42	.44	.47	.52	.58	.63	.66	.74	.82	.95	1.35
May 9	.25	.33	.36	.37	.38	.39	.40	.40	.40	.40	.40	.40
May 13	.19	.32	33	.34	.34	.34	.34	.34	.34	35	.35	.35
May 23	.23	.36	50	63	.81	1.04	1.18	1.46	1.59	1.67	1.73	1.77
May 23	.27	.49	54	.56	.57	.61	.63	.64	.69	.69	.69	.69
May 26	.23	.44	.55	.63	.73	.81	99	1.14	1.16	1.19	1.27	1.35
May 31	.27	.47	.61	.67	.72	.76	77	.78	78	.78	78	.78
June 3	.23	.30	.39	.49	.62	.84	.99	1.01	1.05	1.06	1.07	1.08
June 5	.25	.35	.45	.65	.69	.71	.72	.75	75	75	.75	.75
July 2	.15	.25	.38	.42	.42	.42	.42	.42	.42	.42	.42	.42
July 21	.14	.25	.32	.40	.50	.56	.61	.81	.87	.90	93	.94
Aug. 4	.23	.33	.43	.58	.86	1.06	1.09	1.30	1.35	1.36	1.37	1.40
Sept. 15	.31	.39	.43	.51	.54	.61	.61	.61	.61	.61	.62	.62
Oct. 14	.45	.60	.70	1.05	1.17	1.27	1.31	1.55	1.92	2.08	2.21	2.37
Nov. 7	.33	.51	.63	.69	.75	.79	.79	.79	.85	.85	.85	.87
Nov. 12	.15	.20	.30	.38	.57	.63	.74	.85	.90	.96	1.02	1.05
ARKANSAS (Cont'd.)												
Texarkana Airport (Cont'd.)												
Nov. 12	0.23	0.30	0.32	0.35	0.37	0.40	0.50	0.55	0 64	0 69	0.72	0 75
Nov. 13	20	.32	.40	.43	.54	82	94	.99	1.10	1.21	1.40	1 49
CALIFORNIA												
Bakersfield Airport						None						
Blue Canyon Airport						None						
Burbank												
Oct 11	25	38	.44	.52	.59	68	.73	.73	.73	.74	75	.75
Oct. 20	.27	.34	.39	.40	.41	45	.45	.45	.45	.45	45	.45
Eureka						None						
Fresno Airport						None						
Los Angeles												
Oct. 20	.16	28	36	38	38	38	38	.38	45	45	.45	.45
Mt. Shasta						None						
Red Bluff Airport						None						
Sacramento						None						
San Diego Airport												
Sept. 7	.18	.34	.35	36	36	37	37	.37	37	37	37	.37
San Francisco						None						
COLORADO												
Alamosa												
July 26	.30	.50	.70	.71	.72	.73	73	.73	.73	73	.73	73
Denver Airport												
May 8	.15	.26	.37	.47	.64	.79	1.00	1.13	1 27	1.42	1.69	1 92
June 15	.30	.38	.41	.42	.42	.42	.42	.46	.47	47	48	48
Grand Junction AP						None						
Pueblo Airport												
May 8	.12	.21	.31	38	.55	.72	.73	.76	.76	76	82	.85
July 16	.19	.29	.39	.44	.72	.90	.91	.92	.92	.92	.92	.92
Aug. 2	.40	.60	.87	1.08	1.26	1.30	1.30	1.30	1.30	1.30	1.30	1 30
Oct. 8	.60	1.15	1.65	2.05	2 50	3.15	3.41	3.57	3.69	3.75	3.75	3 75
CONNECTICUT												
Bridgeport AP						None						
Hartford Airport												
June 26	20	.35	.44	.51	.65	.90	1 05	1.07	1 08	1.08	1.09	1 09
July 9	.40	.45	.58	.63	.84	.91	93	.93	93	.95	97	.98
Dec. 21	.33	.42	.49	.53	.60	.70	.76	.83	.93	.98	1 09	1.26
New Haven Airport												
June 19	.30	.42	.43	.44	.44	.44	.44	.44	.44	.44	.44	.44
July 13	.19	.37	.42	.44	47	.48	.49	.50	.52	.54	.54	.54
Oct. 18-19	.26	.33	.37	.54	.76	.94	1.26	1.37	1.41	1.43	1.49	1.56
DELAWARE												
Wilmington *												
Sept. 8	.20	39	.50	58	68	.73	.74	.74	.74	.74	.74	.74
Sept. 10	.27	.54	78	1.02	1.34	1.37	1.43	1.47	1.49	1.51	1.52	1.52
Sept. 12	.31	.61	.75	.86	95	1.01	1 04	1.04	1.15	1.36	1.53	1.54
DIST. OF COLUMBIA												
Washington												
May 13	.27	43	.55	.60	.74	.83	1.00	1.09	1.19	1.22	1.51	1.51
May 14	48	.64	.73	.78	.83	91	96	.99	1.16	1.24	1.26	1 26
June 23	.17	.32	.44	.51	.60	.65	.66	.67	67	67	.67	.67
July 30	.27	.41	41	.41	.41	.41	42	42	.42	.42	.42	.43
FLORIDA												
Apalachicola												
Mar. 24	25	42	.46	.48	.50	.75	88	.91	1.25	1.38	1.57	1 66
Apr. 1	43	.73	.99	1.14	1.32	1.49	1.63	1.74	1.83	1.95	2 08	2.12
Apr. 30	.29	45	.65	76	1 12	1.42	1.86	2.31	2.70	2.76	2.82	3.44
June 7	.22	38	43	46	.51	.65	.87	87	93	1.35	1.61	1 95
July 2	.24	.34	.39	.42	.55	.56	.59	.84	.84	86	86	89
July 8	.26	.48	.59	.72	.87	.94	1.13	1.20	1.21	1.22	1.22	1.22
July 25	.27	.45	.56	.60	.61	.61	73	78	.79	.79	79	.80
Aug. 4	.15	.30	.42	.46	.48	.49	.49	.49	.49	49	49	49
Aug. 5	.17	.25	31	36	.52	.75	94	1.05	1.24	1.26	1.29	1.31
Aug. 7	.20	32	.37	.49	.65	.84	88	.90	.92	.92	92	92
Aug. 8	.23	.32	43	43	43	.46	.46	.55	.55	.55	.55	55
Aug. 17	.45	.79	.99	1 24	1.70	2.11	2 39	2.65	2 84	3 04	3.29	3.38
Aug 30	.31	.56	.84	.91	1.02	1 10	1.11	1.12	1.16	1.26	1.26	1 37
Sept. 4	.24	.34	.37	.37	.37	37	38	38	.38	.38	38	.42
Sept. 7	.23	.36	.50	.51	55	.55	.55	55	.55	.55	.69	1.16
Sept. 7	.18	.28	.35	.46	.60	69	80	.88	.96	99	1.02	1.08
Sept. 9	.40	.53	.60	.62	.73	.93	.94	95	1 06	1.08	1.08	1 09
Sept 9	.25	.46	.54	.57	.59	86	.86	96	1.19	1.19	1.27	1.27
Sept. 13	.31	.41	.43	48	.50	.58	.83	90	91	.96	96	96
Sept. 14	.18	.32	.37	.42	.54	.55	.58	.58	.58	58	70	76
Sept. 17	.24	.31	32	.33	.33	.33	.33	33	46	46	46	.46
Sept. 28	.31	42	44	.48	.55	.82	1.07	1 09	1.20	1.28	1.63	1.75
Oct. 3	.38	.52	.57	.58	.60	.62	.67	70	.70	70	.71	.71
Oct. 17	.27	.39	.57	.59	.59	.84	.84	84	86	.86	.86	86
Nov. 29	.63	98	1.10	1 11	1.12	1.12	1.12	1.27	1.28	1.29	1.31	1.31
Daytona Beach AP												
Mar. 21	.16	28	.35	.42	.47	.52	.69	.77	.85	.92	98	1 00
Mar. 25	.48	.70	.90	1 08	1.11	1.14	1.22	1.26	1.30	1.30	1.30	1.30
Apr. 1	.30	.36	.46	.51	.55	.60	.64	.70	.75	85	91	96
May 1	.15	.30	.47	.54	.57	.58	1.00	1.07	1 08	1 08	1 08	1.08
May 19	.50	.85	1.06	1 12	1 12	1 12	1.12	1.12	1.16	1.16	1 22	1.22
June 7	.30	.57	.85	86	.87	88	.90	.93	.94	94	.94	.94

* Weighing rain gage from Sept. 5

EXCESSIVE SHORT DURATION RAINFALL

Station and date	Maximum precipitation in inches (5 to 180 minutes)											
	5	10	15	20	30	45	60	80	100	120	150	180
FLORIDA (Cont'd.)												
Daytona Beach AP (Cont'd.)												
July 4	0 26	0 51	0.70	0 74	0.78	0.87	0 89	0.95	0.97	0.98	0 99	1.04
July 11	14	28	38	42	.58	.63	70	.90	.93	.95	.97	1.02
July 12	15	27	43	65	.92	1.05	1 15	1.25	1.26	1.26	1.26	1.26
July 17	17	32	35	35	40	41	41	.45	.46	.46	.46	46
July 18	16	30	38	51	58	61	.62	.62	62	.62	.62	.62
July 25	15	25	28	.31	43	68	1.00	1.05	1.06	1.08	1.10	1 13
July 29	27	45	70	77	78	1.00	1.12	1.12	1.12	1.12	1.12	1.12
Aug. 17	35	55	62	.67	82	87	88	.89	.89	.91	92	.94
Sept 4	47	90	1.30	1.61	1.91	2 81	3.07	3.30	3.30	3.30	3 30	3.30
Sept 7	40	70	1.00	1.17	1.25	1 53	1.62	1.85	2.43	2.45	2.45	2.48
Sept. 24	25	.36	.37	.39	.40	.40	40	.40	40	.40	40	.40
Sept. 28	25	36	46	.55	.57	57	57	.57	.57	.57	.57	.58
Sept. 29	30	54	72	.80	.87	.93	1 03	1.04	1.07	1.11	1.16	1.19
Oct. 14	30	35	.36	.37	.38	.40	.40	.40	.40	.40	.40	.40
Fort Myers Airport												
Mar. 4	35	56	67	71	72	73	73	74	77	81	85	.90
Apr. 19	30	55	59	.61	64	.67	67	67	67	95	1 25	1.29
May 3	33	36	40	42	.43	45	47	47	47	47	47	47
May 9	24	33	44	46	56	62	72	75	75	75	76	76
May 10	25	.31	.39	42	.44	45	.45	.45	45	46	.67	67
May 10	.33	.48	65	71	.76	79	.79	81	87	87	.88	.88
May 28	31	47	55	.63	.73	.81	83	83	83	.84	.85	85
May 30	28	50	67	.78	.85	.94	1.04	' 10	1.16	1 18	1 20	1.21
June 9	15	.27	38	.42	.45	.46	46	46	.46	47	47	.60
June 21	46	70	1.10	1.50	1.64	1.70	1.72	1.72	1.73	1.73	1.73	1.73
July 8	36	65	70	1.06	1.13	1 26	1.32	1.38	1.48	1.50	1.52	1.53
July 15	14	23	.33	.40	.44	.45	.45	.45	.45	.45	.45	.45
July 16	33	57	.65	.72	.80	.82	.83	83	.83	.83	.83	.83
July 18	31	60	.85	.95	1.45	2.30	2.50	2.62	2.66	2 67	2 69	2.70
July 20	48	95	1.20	1.44	1.72	1.80	1.82	1 84	1.85	1.85	1.85	1.85
July 23	37	72	1.07	1.32	1.59	1.84	1.92	1.94	1 95	1.95	1.95	1.95
July 24	.43	64	.81	1.07	1.20	1.35	1.40	1.41	1.45	1.46	1.46	1.46
Aug. 1	.50	.71	.72	.75	.86	.89	.89	.90	90	.90	.90	.90
Aug. 12	.35	.54	.63	.67	74	.81	.95	1.02	1.04	1.04	1.04	1.04
Aug. 19	.60	1.20	1.42	1.49	1.51	1.53	1.64	1.67	1.67	1.67	1.67	1.67
Aug. 23	.30	.58	.82	1.03	1.24	1.37	1.39	1.39	1.39	1.40	1.44	1.47
Aug. 24	.40	68	.80	1.00	1.25	1.40	1.75	1.89	2.38	2.45	2.55	2.62
Sept. 2	.65	.80	99	1.05	1.29	1.65	1.85	1.88	1.89	1.90	1.90	1.90
Sept. 4	.15	30	37	.45	.61	.71	.72	.73	.78	.80	.90	.93
Sept. 15	.17	125	.31	.38	.57	.78	.89	.90	.91	.94	1.04	1.06
Sept 17	26	45	71	.94	1.02	1.04	1.05	1.06	1.06	1.06	1.06	1.06
Sept. 20	.33	65	76	.90	.98	1.12	1.18	1 19	1.19	1.20	1.20	1.20
Oct. 1	.29	47	54	.57	.63	.67	.69	.75	.82	.84	.87	.89
Nov. 30	.20	.25	.35	.45	.54	.67	.73	.76	.82	.86	.88	.90
Dec 26	.30	.52	.59	.63	.73	.75	.75	.75	.75	.77	.79	.81
Jacksonville AP												
Mar 24	25	.29	.31	.34	.41	.45	.47	.49	.53	.55	.71	.73
May 1	.23	36	.56	.72	.86	.92	1.16	1.41	1.45	1.47	1 48	1.49
May 11	43	.63	64	.64	.64	.64	.64	.64	.64	.64	.67	.70
May 19	.32	.48	59	.70	.70	.70	.70	.70	.70	70	70	.70
June 4	37	.48	.53	.54	58	.58	.75	.78	78	78	.78	.78
June 8	28	43	.61	71	89	99	1.08	1.32	1.47	1 72	1 78	1.81
June 9	20	25	.35	.39	49	.53	.57	62	.64	.82	.93	.94
June 25	35	52	.65	.67	85	89	89	.89	89	.89	1.16	1.16
July 3	23	39	.48	.54	.59	.66	.71	.75	.82	.89	.94	.96
July 6	22	39	.51	.68	84	.88	.88	88	88	.88	88	88
July 9	51	83	1.13	1.30	1.46	1.56	1 58	1.58	1.58	1 58	1.58	1.58
July 11	.40	.73	.90	1.09	1.16	1.25	1.27	1.34	1.37	1.37	1.37	1.37
July 18	.35	.57	.60	.60	.61	.61	62	.65	.68	69	70	.70
July 19	.23	30	.32	.35	45	.48	.54	.65	.71	.87	1.05	1.16
July 25	33	60	.85	.93	1.13	1.40	1.54	1.60	1 61	1.61	1.61	1.64
July 31	.35	70	.92	.94	1 39	1 49	1.77	1.81	1.81	1.81	1 81	1.81
Aug. 5	37	.54	.65	.69	.71	80	.90	.95	.96	97	1.02	1.11
Aug. 8	19	31	.36	44	60	81	.98	1.06	1.08	1.08	1.10	1.10
Aug. 17	24	46	.58	72	80	89	.89	.90	1.00	1.00	1.00	1.00
Aug. 22	25	.34	.46	51	52	.57	61	.79	.81	.83	.86	.86
Aug 23	.17	.33	.36	.38	42	.46	.47	.50	.55	56	.59	.59
Sept. 7	33	.49	.53	.55	.56	.58	.58	.59	.59	.60	.60	.60
Sept. 9	.23	.45	.52	.56	.63	.68	.68	.69	.69	69	.69	.73
Sept 10	.19	.32	.33	.42	50	.55	.57	.58	.58	58	58	.58
Sept. 17	49	.69	81	88	1.01	1.03	1.04	1 07	1.10	1.10	1.11	1.11
Sept. 19	43	.62	.79	81	.81	81	81	.91	94	.94	.94	.94
Sept. 30	.51	.97	1.18	1.35	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.57
Oct. 1	27	.40	.51	.59	.74	76	.77	.78	78	80	.85	.90
Dec. 26	.21	.28	.38	.44	.48	.52	.53	.53	53	.53	.53	.53
Key West												
Feb. 18	.23	35	50	55	.59	64	.70	.71	.71	.71	.71	.71
Feb. 26	27	.40	.46	52	.60	70	.72	.72	.72	72	.72	.72
Feb. 27	.33	40	41	.41	43	44	.45	.48	.49	.49	50	.51
Feb. 27	35	.39	.40	40	.42	.52	.54	.55	.58	.58	.59	.59
Mar. 5	.19	.27	43	46	.50	.51	.51	.51	.51	.51	.51	.59
Mar. 6	.46	.65	70	.73	.73	.74	.74	.74	.77	.86	.92	.95
May 3	.62	1.02	1 14	1.18	1.21	1.27	1.32	1.36	1.42	1.44	1.47	1.51
May 30	.13	.21	.32	.37	.52	.66	.68	.69	69	71	72	.73
July 10	.29	.53	.57	----	----	----	----	----	----	----	----	----
July 12	30	.42	----	----	----	----	----	----	----	----	----	----
July 13	36	.58	.66	.67	----	----	----	----	----	----	----	----
July 15	.29	48	.57	.58	.58	.58	.58	.80	----	----	----	----
Aug. 9	(.27)	(.42)	(57)	(.79)	(.81)	.82	.82	.82	.82	.82	.82	1.07
Sept 15	20	.31	.34	.38	.38	.39	.43	.47	.48	.48	.49	.49
Sept. 19	.23	.35	.37	.37	.37	.38	.39	.39	.39	.39	.39	.39
Oct [illegible]	27	.53	70	.90	1.08	1.10	1.14	1.15	1.15	1.15	1 17	1.17
Oct. 19	36	.52	.63	.65	.65	.67	.67	.67	.67	67	.67	.67
Oct. 25	.28	.52	.65	.70	.83	.86	91	.92	.96	.98	1.05	1.14
Miami												
Feb. 21	18	32	46	47	.47	47	.47	.47	.47	.47	.47	.47
Feb. 25	20	32	.46	56	.68	.80	1.00	1 10	1.10	1.21	1.23	1.24
Feb. 27	28	40	65	76	.99	1.27	1.50	1.60	1.60	1.61	1.90	2.32
Mar. 15	.37	63	.76	.81	.87	.95	.99	1.00	1.01	1.02	1.03	1.07
Apr. 12	30	40	.43	44	.47	.48	.48	.48	.48	.48	.48	.48
Apr. 12	.32	51	.58	.71	76	76	76	.76	.76	.76	76	76
Apr. 30	22	35	43	.43	43	.43	.43	.43	.43	.43	.43	.43
May 1	50	71	91	1.20	1 46	1 54	1.81	2 50	2.52	2.55	2.56	2.57
May 1	36	.57	.68	70	.74	1.05	1.20	1.29	1.38	1.53	1.65	1.79
May 13	22	.38	49	.69	.83	.93	1.00	1.01	1.01	1.02	1.10	1.10
May 30	30	48	64	.73	81	.90	92	.94	.96	.97	.97	.97
June 25	39	61	.73	79	1.23	1.34	1.34	1.34	1.34	1.35	1.35	1.35
June 26	.14	.26	34	.43	.49	.61	.64	67	.68	.68	.68	.68
July 12	.41	74	.88	1 06	1 35	1.37	1.37	1.37	1.37	1.37	1.37	1.37

( ) Estimated data

Station and date	Maximum precipitation in inches (5 to 180 minutes)											
	5	10	15	20	30	45	60	80	100	120	150	180
FLORIDA (Cont'd.)												
Miami (Cont'd.)												
July 12	0.37	0 61	0.68	0.86	1.00	1.33	1.40	1.43	1.46	1.46	1.46	1.46
July 13	25	.35	.40	.45	.60	.80	1.00	1.35	1.70	1.96	2.05	2.08
July 30	.24	38	.57	.65	.66	66	.67	70	.71	.72	.72	.72
Aug. 5	.38	.59	69	.76	.84	86	.91	93	.93	.93	.97	1.04
Aug. 19	.28	45	.70	.81	1.14	1.42	1.49	1.52	1.55	1.58	1.58	1.63
Aug. 21	33	.52	.67	73	.83	1.24	1.48	1.87	1.92	1.93	1.93	1.93
Aug. 28	59	1.10	1 36	1.51	1.75	1.81	1.89	1.94	1 95	1.97	1.97	1.97
Sept. 1	32	.52	.77	.78	.79	.79	.80	.80	.81	.81	.81	.81
Sept 26	.24	.37	.54	.68	.75	1.00	1.07	1.08	1.10	1.13	1.14	1.23
Oct. 7	25	.43	.57	61	.72	.75	.77	.79	79	.80	.80	.80
Oct. 10	.38	.65	.91	1.14	1.58	1.86	1.88	1.96	1.99	2.00	2.00	2.00
Nov 21	.68	1.12	1.43	1.72	2.12	2.20	2.60	2.64	2.94	3.00	3.11	4.50
Nov. 27	.51	.93	1.21	1 47	2.18	2.93	3.22	3.54	3.93	4.38	4.55	4.57
Dec. 26	.17	.31	.31	.32	.47	.48	.48	.49	.49	.49	.49	.49
Miami Airport												
Feb. 27	.35	.45	.55	.60	.75	1.25	1.55	1.65	1.65	1.66	1.70	1.80
Mar. 5	.28	.37	.38	.40	.40	55	.79	.80	.80	.81	.81	.81
Mar. 15	.35	.60	.75	.80	.82	.82	.82	.82	.82	.82	.82	.85
Apr. 12	.27	.29	.29	.30	.31	.33	.34	.34	.34	.34	.34	.34
Apr. 18	.25	.40	43	45	.45	.45	.46	.47	.50	.50	.84	1.02
Apr. 29	.28	.41	.53	61	.74	.86	.92	1.00	1.03	1.04	1.05	1.07
May 1	.35	.50	.55	.60	.67	.70	.75	.75	.90	.95	1 20	1.37
May 1	70	1.10	1.35	1.85	2.45	3 35	3.60	4.20	4.53	4.85	4.95	5.15
May 13	.21	.31	.51	.59	.62	.62	.63	.65	.66	.66	.66	.66
June 16	.30	50	.65	.76	1.05	1 19	1.19	1.19	1.19	1.19	1.19	1.19
June 18	.28	37	41	.45	.48	.48	.49	.49	.49	.49	.59	.64
June 18	.30	.45	.57	.62	.62	.62	.62	.62	.62	.62	.62	.62
July 3	.83	.90	.93	95	.95	.95	.95	.95	.95	.95	.95	.95
July 4	.37	.73	.98	1 13	1.33	1.68	1.83	2.00	2.01	2.02	2.08	2.08
July 13	.45	.68	.80	.95	1.13	1.15	1.16	1.46	1.90	2.25	2.30	2.42
Aug. 2	.45	.90	1.15	1.22	1.43	1.55	1.87	2.10	2.20	2.20	2.20	2.21
Aug. 5	.25	46	.55	.63	.66	.69	.72	.73	.74	.75	.82	87
Aug. 11	.40	.72	1.00	1.07	1.15	1.17	1.75	1.90	1.90	1.90	1.90	1.90
Aug. 19	.25	.30	.55	.65	.70	.75	.90	1.20	1.25	1.30	1.31	1.66
Aug. 21	.36	.58	.66	.76	1.28	1.80	1.90	1.92	1.93	1.95	1.96	1.97
Aug. 26	.34	.41	.75	.94	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Aug. 27	.19	.34	47	.49	.49	.49	.49	.50	.51	.51	.51	.51
Aug. 28	.60	.85	1.45	1 65	2.05	2.30	2.48	2.50	2.53	2.53	2.53	2.53
Sept. 1	.30	.40	.44	.45	.46	.48	.48	.48	.48	.48	.48	.48
Oct. 2	.30	.50	.70	.80	1.25	1.65	2.10	2.20	2.22	2.23	2.23	2.23
Oct. 3	.27	.44	52	.65	.74	.78	.82	.87	.95	.99	1.01	1.03
Oct. 10	.23	.32	.37	.45	.53	.59	.60	.61	.61	.61	.61	.61
Oct. 19	.26	.37	.42	.58	65	.73	.74	.74	.74	.74	.74	.74
Nov 27	.22	.27	.40	.44	.47	.48	.63	.70	.77	.83	.86	.94
Orlando Airport												
Mar. 21	.35	.50	.60	.73	.92	.98	1.03	1.11	1.12	1.13	1.14	1.21
Mar. 25	.25	.27	.29	.30	.42	.55	.72	.76	.80	.82	.83	.83
Apr. 1	.38	.53	.71	85	1.00	1.16	1.22	1.30	1.36	1.42	1.53	1.59
Apr. 18	.45	.72	.76	.77	.79	.79	.93	1.24	1.25	1.25	1.25	1.25
May 1	.21	.39	.50	.63	.72	.75	.79	.83	.84	.84	.84	.90
May 11	.30	.55	.63	.65	.66	.66	.66	.66	97	1.00	1.05	1.07
May 28	.27	.53	65	.70	80	.82	.88	.91	.91	.91	.91	.93
May 29	.41	.78	85	1.15	1.75	1.89	2.03	2.12	2.13	2.15	2.17	2.17
May 30	.25	.35	.38	.40	.56	.57	.58	.60	.60	.60	.60	.60
June 4	.19	.32	.40	.42	.43	.44	.45	.46	.46	.46	.46	.46
June 23	.27	42	.51	.60	.63	.83	.84	.89	.89	.90	.91	.94
June 25	.25	.40	.46	.50	.54	.70	.74	.82	.83	.83	.83	.84
July 10	.27	37	.37	.37	.37	.37	.37	37	.37	.37	.37	.37
July 19	.55	87	1.04	1.16	1.27	1.30	1 31	1.34	1.35	1.36	1.37	1.38
Aug. 1	35	.48	.50	.51	.51	.51	.51	.51	.51	.51	.51	.57
Aug. 22	.25	.47	60	.68	.69	.69	.69	.69	.69	.69	.69	.69
Aug. 23	.36	.50	.63	.75	1.02	1.12	1.20	1.37	1.65	1.77	2.39	2.45
Aug. 24	.30	.53	67	.72	.74	.74	.74	.74	.74	.74	.75	.78
Sept. 5	.27	.45	.49	.59	.72	1.07	1.14	1.17	1.19	1.21	1.25	1 26
Sept. 7	.31	.42	.53	.54	.54	.55	.77	.83	.84	.90	.99	1.01
Sept. 15	.23	.44	.58	.69	97	1.25	1.45	1 48	1.50	1.52	1.55	1.57
Sept 29	.30	.53	.65	.68	.73	.76	.77	.79	.82	.86	.94	.94
Oct. 14	.19	.25	36	.41	.45	.47	.48	.48	.67	.73	.73	.73
Dec. 26	16	----	----	----	----	----	----	1.34	1.52	1.63	1.84	2.00
Pensacola												
Mar. 23	.29	.45	.49	.54	.55	.59	.63	.63	.64	.74	.76	.77
Apr. 1	.69	1.00	1.11	1.17	1.28	1.40	1.59	1.79	2.15	2.44	2.67	2.88
Apr. 5	.18	.31	.36	.37	.50	.54	.70	.79	.80	.87	.92	.92
May 3	.32	.54	.61	.82	.93	.94	.94	1.02	1.03	1.04	1.04	1 04
May 19	.40	66	.82	1 04	1.31	1.51	1.54	1.55	1.56	1.57	1.66	1.67
July 18	15	.28	.37	.45	.58	.61	.61	.61	.61	.67	.69	.70
July 25	.28	.40	.57	.61	.65	.67	.86	1.02	1.06	1.06	1.06	1.06
Aug. 1	.24	.39	.55	.62	.70	.74	.76	1.05	1.20	1.22	1.23	1.23
Aug. 17	.41	.78	1.08	1.39	1.86	2.18	2.53	2.63	2.63	2.63	2.63	2.63
Aug. 30	.33	.51	.64	.69	.72	.99	1.19	1.50	1.97	2.04	2.06	2.17
Sept. 8	.31	.60	.81	1.02	1.32	1.66	1.76	1.95	2.01	2.02	2.03	2.03
Sept. 9	.26	.43	.55	.72	.92	1.21	1.38	1.45	1.49	1.53	1.57	1.58
Sept. 10	.17	.27	.35	.45	.53	.57	.57	.57	.57	.57	.67	.77
Sept. 13	.27	.36	.47	.61	.66	.76	.79	.91	.98	.99	.99	.99
Sept. 16	.27	.30	.30	.30	.30	.40	.42	.46	.46	.46	.56	.57
Sept. 19	.15	.23	.29	.40	.41	.43	.45	.45	.45	.45	.45	.58
Sept. 27	.26	.43	.54	.61	.73	.91	1.06	1.14	1.17	1.17	1.37	1.50
Oct 16	.58	.85	.96	.99	1.02	1.07	1.08	1.11	1.15	1.21	1.33	1.42
Oct. 23	.17	28	.34	.43	.48	.62	.74	.75	.75	.75	.75	.75
Oct. 24	.31	.47	.62	.64	.66	.67	.70	.70	.70	.70	.70	.70
Nov. 8	.23	.44	.57	72	.90	.97	.97	.99	1.06	1.07	1.08	1.09
Nov. 22	.25	.42	.47	.52	.64	.72	.84	.91	.98	1.04	1.07	1.19
GEORGIA												
Atlanta Airport												
Jan. 4	.30	.32	.33	.35	.36	.43	.47	.54	.64	.73	.75	.83
Mar. 24	.25	.30	.30	.38	.46	.60	.65	.78	.88	.92	.96	.99
May 11	.21	.35	.63	.68	.85	.90	.90	.90	.90	.90	.90	.90
June 4	.25	.45	.60	.64	.68	.71	.72	.73	.73	.73	.73	.73
June 6	.15	.30	.45	.55	.61	.64	.64	.64	.64	.64	.64	.64
June 28	.35	.65	.74	.75	.75	.75	.75	.75	.75	.75	.75	.75
July 2	.15	.25	.40	.55	.75	.94	.95	.95	.95	.95	.95	.96
July 3	.25	.45	.55	.60	.72	.80	.80	.87	.87	.90	.90	.92
Aug. 12	.45	.85	.95	1 05	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27
Oct. 3	.40	.55	.65	.80	1.05	1.10	1.11	1.17	1.17	1.18	1.18	1.18
Nov. 17	.50	.82	.92	1.02	1.15	1.17	1.18	1.28	1.30	1.30	1.30	1.30
Dec. 19	.20	.30	.30	.31	.32	.32	.33	.35	.35	.35	.35	.35
Augusta Airport												
May 15	.35	.60	.75	.80	1.08	1.16	1.16	1.16	1.16	1.16	1.52	1 60
June 19	.40	.60	.75	.88	.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00

EXCESSIVE SHORT DURATION RAINFALL

Station and date	Maximum precipitation in inches (5 to 180 minutes)											
	5	10	15	20	30	45	60	80	100	120	150	180
GEORGIA (Cont'd.)												
Augusta Airport (Cont'd.)												
July 17	0.24	0.30	0.35	0.38	0.40	0 40	0 42	0 43	0.43	0 43	0.43	0.43
Aug. 18	.18	.28	.43	.47	.50	.52	52	54	60	70	.71	.71
Sept. 7	18	.28	.34	.43	58	82	85	86	90	98	1.04	1.08
Sept. 10	19	.31	39	.40	44	46	46	.47	47	48	48	.48
Sept. 17	25	32	.52	.53	.55	62	63	63	.63	.63	63	.63
Sept 20	28	28	.28	.28	.28	28	28	28	28	28	28	.28
Oct. 17	.28	34	34	.34	.34	34	34	.34	.34	.34	34	.34
Nov. 18	.32	.42	.43	44	.55	58	59	.59	59	61	.61	61
Nov. 19	35	.44	53	62	.64	83	96	1 04	1 23	1 30	1.31	1 32
Columbus Airport												
Mar. 24	.30	.45	52	.59	.70	.71	75	.76	76	.76	77	.78
Apr. 4	.33	.37	.44	.53	.59	.89	.98	1.17	1.19	1.21	1 23	1.25
Apr. 5	.40	.65	87	1.00	1.03	1.06	1.10	1.13	1 16	1.23	1 29	1.35
Apr. 8	25	.25	.25	.25	25	.25	30	.30	30	.30	.30	.30
May 2	50	1.00	1.15	1.25	1.35	1.37	1.38	1.39	1.40	1.40	1 40	1.41
May 3	35	.50	.75	1.00	1.27	1.75	2 17	2.55	2.74	2.91	3.16	3.32
June 28	.25	.30	.36	.45	.61	66	.66	.66	.66	.66	.66	.66
June 28	.27	.36	.47	.62	.82	.86	.87	87	.87	.87	.87	.87
Aug 15	.25	.48	.70	.74	.76	.76	.76	.76	.76	76	.76	.76
Aug. 18	20	.28	.35	.43	.56	.71	.72	.72	72	.72	.72	.72
Nov. 8	.15	.20	.30	.40	.50	.73	90	1.05	1.06	1.07	1.07	1.07
Nov. 14	.45	.60	.71	80	.96	1.02	1.09	1.16	1.25	1.30	1.41	1.54
Nov. 19	.35	.70	.95	1.05	1.25	1.37	1.55	1.60	2.42	2.58	2.72	2.80
Nov. 23	.18	.31	37	.43	.49	.53	.55	.56	.56	.58	.65	.75
Nov. 30	.25	.35	.45	.52	.54	.55	.56	.56	.56	56	.57	.59
Macon Airport												
Apr. 5	.52	.92	1.20	1.31	1.41	1 54	1.68	1.85	2.00	2.14	2.18	2.20
May 2	.26	.37	.40	.41	.43	.46	.47	.47	47	47	.47	.47
May 15	.17	.25	.42	.50	.54	55	.56	.59	.62	.64	.65	.66
May 23	.83	1.35	1.80	2.13	2.80	3.01	3.11	3.19	3.19	3.22	3.23	3.25
May 24	.39	.50	.73	.93	1.22	1.30	1.30	1.30	1.30	1.31	1.31	1.31
July 19	.16	.32	.42	.59	.79	1.04	1.33	1.42	1.49	1.56	1.63	1.65
Aug. [illegible]	.16	.32	.45	.52	.68	.69	.71	.72	.72	.72	.72	.96
Sept. 9	.32	.48	.58	.75	.88	.91	.93	.93	98	1.00	1.00	1.00
Nov. 19	.30	.40	.45	.60	.75	.95	1 00	1.04	1 08	1.10	1.10	1.10
Rome Airport												
Jan. 4	.13	.23	.35	.40	.50	.60	.75	1.00	1.10	1.23	1.35	1.45
Jan. 23	.25	.27	.33	.33	.59	.63	.65	.69	.69	69	.69	69
Jan. 28	.20	.30	.34	34	44	.44	.47	.49	.49	.49	49	.49
Jan. 29	.25	.35	.36	.36	.36	.36	.38	.39	.40	.43	44	.45
Apr. 4	.20	.35	.47	.63	.89	1.27	1.44	1.54	1.61	1.68	1.84	1.93
May 15	.22	.40	.44	.45	.45	.45	.45	.46	.47	.47	.47	.47
May 24	.26	.43	.64	.73	.77	.81	.81	.81	.81	.81	.81	.81
June 4	.37	.39	.44	.47	.49	.52	.54	.64	.76	.83	.87	1.00
June 13	.12	.21	.33	.34	.93	.95	1.01	1.01	1.01	1.01	1.01	1.01
June 24	.41	.57	.63	.64	.69	.77	.78	.85	1.18	1.43	1.51	1.53
July 15	.28	.46	.52	.57	.61	.62	.63	.63	.64	.64	.64	.64
Sept. 16	.22	.42	.48	.50	.63	.72	.73	.75	.82	.87	.88	.90
Oct. 24	.45	.64	.67	.71	.76	.77	.77	.77	.77	.77	.81	.83
Nov. 18	.28	.43	.48	.57	.65	.72	.76	.79	.85	.87	94	.97
Dec. 20	.34	.47	.49	.52	.64	.74	.83	.89	.96	1.05	1.10	1.11
Savannah Airport												
Apr. 18	.40	.67	.80	.80	.80	.80	.80	.98	1.01	1.01	1.01	1.01
May 12	.25	.40	.44	.53	.60	.76	.88	.89	.91	.92	.92	.92
May 15	.34	.58	.66	.74	83	.86	.87	.87	.87	.87	.87	87
May 17	.33	51	52	68	78	.78	.78	.78	.78	.78	1.31	1.31
May 18	.25	.43	.51	.57	.64	.86	.95	1.04	1.06	1.07	1.08	1.08
May 26	.33	.53	.68	.80	.93	.95	96	.96	.96	.96	96	.96
June 9	12	.22	.29	.36	.48	.72	85	1 01	1.12	1.36	1.65	1.70
June 25	.28	43	.54	.60	.92	1.14	1 14	1.18	1.19	1.20	1.20	1.23
July 1	.20	.35	.42	.47	50	.51	.52	.54	.55	.55	.55	.55
July 2	.19	.29	.43	.48	.48	.57	68	.68	.68	.68	.68	68
July 6	.17	.37	.51	.58	.78	.95	1.21	1.24	1.25	1.25	1 25	1.25
July 12	.25	.33	.34	.34	.35	.35	.35	.43	43	.43	.43	.43
July 18	.24	.36	.36	.37	.38	.38	38	.38	.38	39	.40	.40
July 27	.28	.57	66	.69	.72	.83	1.05	1.08	1 09	1.09	1 12	1.15
July 27	.26	.39	.49	.66	.94	1.09	1.09	1.10	1.12	1.19	1.19	1.20
July 28	.24	.41	.61	.81	1.16	1.61	1.88	2.23	2.39	2.48	2.54	2.60
Aug. 2	.44	.78	1.07	1.22	1.44	1.79	1.80	1 80	1.80	1.80	1.80	1.80
Aug. 18	.48	.82	1.13	1.41	1.78	1 89	1.94	1.97	2.05	2.06	2.09	2.09
Aug. 19	.20	.34	.34	.34	.52	56	.56	.57	.58	.58	83	.85
Sept. 6	.27	.53	74	.97	1.32	1.61	1.76	1 91	2 06	2.11	2.21	2.31
Sept. 9	.42	.69	.89	1.15	1.44	1.50	1.80	2.34	2.37	2.38	2.38	2.38
Sept. 20	.24	.35	.53	.68	.80	.81	.81	.81	.81	.81	.90	.90
IDAHO												
Boise Airport						None						
Pocatello Airport						None						
ILLINOIS												
Cairo												
Jan. 22	.42	.58	.62	.65	.73	.83	.90	.98	1.05	1.12	1.21	1.43
Mar. 11	.21	.28	.36	.46	.54	.59	.65	.67	.67	.67	.67	.68
Apr. 3	.42	.46	.46	.47	.47	.49	.51	.53	.55	.60	.69	.71
Apr. 8	.21	.37	.47	.56	.69	.87	94	.99	1.04	1.18	1.29	1.32
Apr. 22	.26	.39	.57	65	.68	.69	.72	.73	.73	.73	.73	.73
May 1	.35	.47	.62	.68	.74	.76	.79	.82	83	.85	.86	.86
May 22	.26	.46	.58	.68	.82	.89	.93	.99	.99	1.00	1.04	1.04
May 22	.33	.50	.55	.57	1.00	1.15	1.19	1.23	1.25	1.28	1.29	1.29
May 22	.25	.33	.35	.42	.44	.45	.47	.49	.49	.49	.49	.49
May 23	.36	.62	.83	.91	.95	.97	.99	1.04	1.10	1.20	1.28	1.35
June 4	.37	.64	.96	1.23	1.60	1.87	2.00	2.03	2.03	2.05	2.12	2.12
June 14	.30	.41	44	.49	.56	.58	.61	.62	.62	73	.73	.73
June 22	.38	.52	.85	.95	1.22	1.61	1.81	1.85	1.87	1.88	1.89	1.89
June 24	.29	.41	.50	.51	.52	.52	.52	.52	.55	.61	.99	1.11
July 4	.36	.61	.83	.92	1.00	1.02	1.03	1.03	1.03	1.03	1 03	1.03
July 17	.37	.68	.89	1.03	1.17	1.19	1.19	1.19	1.19	1.19	1.19	1.19
July 23	.28	.53	.66	.72	.75	.75	.79	.80	.80	1.09	1.49	1 55
Oct. 23	.27	.41	.52	.58	.61	.64	.68	.72	.74	.75	.80	.80
Nov. 14	17	.26	.33	.38	.53	.67	.70	.79	.95	1.05	1.09	1.10
Nov. 18	.28	.41	.48	.56	.68	94	1 19	1.40	1 48	1 56	1 78	1.87
Chicago Airport												
Apr. 22	.19	.28	.44	.46	.49	.50	.53	.60	.60	.64	.67	.87
Apr. 24	.43	.53	.60	.61	.64	.66	.67	.69	.73	.79	.88	.95
Apr. 25	.24	.29	.36	.39	.52	.59	.77	.89	.90	.93	.95	97
Jun. 13	.24	.41	.54	.67	.96	1.11	1.13	1.13	1.33	1.39	1.41	1.44

Station and date	Maximum precipitation in inches (5 to 180 minutes)											
	5	10	15	20	30	45	60	80	100	120	150	180
ILLINOIS (Cont'd.)												
Chicago Airport (Cont'd.)												
June 22	0.20	0.37	0.50	0.54	0.56	0.59	0.66	0.66	0.66	0 66	0 66	0.66
July 12	.59	.98	1 18	1.21	1 61	2.02	2.33	2.48	2.54	2.56	2.81	2.95
July 29	.23	.42	55	.72	88	.95	98	1.02	1.05	1.05	1.06	1.06
Aug. 3	.22	.36	.58	.60	.78	1.08	1.38	1.47	1.48	1.63	1.67	1.73
Aug. 10	.22	.32	.34	49	.51	.53	58	.64	.74	.77	83	88
Aug. 18	.16	.29	36	.40	.43	.44	.47	.48	.49	.50	50	.50
Sept. 20	.19	28	.40	43	.43	.43	.43	.43	.43	.43	.43	.43
Oct. 23	.16	28	.36	.42	49	.59	.61	.67	.79	82	.83	.84
Moline Airport												
May 31	.23	.38	.48	.52	.66	.71	.72	.72	.72	.72	.72	.72
June 5	.21	.36	.37	.38	.38	.38	.40	.48	48	.48	.48	.48
July 13	.22	.42	.57	58	.58	.58	.58	58	.58	.58	.58	59
July 22	.28	.46	.60	.66	.76	.88	1.06	1.17	1.18	1.24	1.40	1.60
July 31	.22	.38	.39	.40	.40	.40	.40	40	.40	.40	.43	.43
Aug. 23	.32	.38	.41	.63	.81	1.21	1.28	1.33	1.37	1.39	1.41	1.43
Aug. 28	.18	.30	.38	.44	.58	.75	.80	.87	.91	.97	1.09	1.21
Peoria Airport												
May 13	.45	.60	.74	.81	.96	1.06	1.40	1.79	2.12	2 36	2.36	2.41
July 16	.34	.48	.53	.62	.76	.81	.81	.81	.81	.81	81	.81
Aug. 28	.18	.34	.52	.62	.76	.84	.84	.86	.86	.86	.86	.86
Springfield AP												
Apr. 20	.18	.30	.35	42	.45	.55	.63	.66	.69	.69	.69	.69
Apr. 24	.22	.33	.45	.55	.55	.55	.87	.96	96	.96	.96	.96
Apr. 26	.26	.50	.70	.77	.85	.90	.90	.90	.90	.90	.90	.90
May 16	.18	.27	.28	.33	.53	.59	.60	.67	.93	1.05	1.14	1.20
June 10	.39	.50	.73	.88	1.09	1.28	1.30	1.31	1.31	1.31	1.31	1.31
June 14	.27	.35	.36	.37	.41	.44	.48	.53	.55	.56	.56	.56
June 27	.25	.40	.41	.41	41	.41	.41	.41	.41	.41	.41	.41
July 13	.43	.64	.86	1.01	1.15	1.34	1.48	1.51	1.51	1.51	1.51	1.66
July 15	.31	.48	.68	.72	.82	.91	.97	.99	1.00	1.00	1.00	1.00
July 16	.25	.35	.37	.38	.38	.38	.38	.38	.38	.38	.38	.38
Aug. 12	.18	.33	.35	.37	.38	.39	.40	.40	.40	.40	40	.40
Aug. 28	.22	.40	.62	.72	.83	96	.97	.97	.98	.98	.98	.98
Sept. 21	.24	.36	.54	.55	.55	.56	.56	.60	.60	.60	.60	.60
INDIANA												
Evansville AP												
Apr. 8	.19	.25	.36	.40	.48	.56	.85	1.10	1.18	1.20	1.27	1.27
May 21	.35	.55	.63	.65	.67	.92	1.00	1.05	1.12	1.25	1.37	1.46
May 22	.24	.44	.61	.70	.82	1.02	1.07	1.12	1.16	1.19	1.22	1.23
June 1	.37	.42	.44	.45	.45	.46	.50	.50	.50	.50	50	.50
June 12	.35	.60	.65	.66	.67	.67	.67	.67	.67	.67	.67	.67
June 17	.24	.35	.43	.49	.65	.77	.90	.96	.97	.99	1.00	1.01
July 14	.25	.37	.45	.50	.53	.56	.57	.62	.65	.70	.74	.75
July 23	.32	.42	.63	.70	.73	.77	.77	.77	.77	.77	.77	.77
Aug. 3	.27	.47	.57	.67	.75	.77	.83	.85	.85	.85	.85	.86
Aug. 16	.17	.22	.35	.42	.45	.47	.47	.47	.47	.47	.47	.47
Sept. 13	.30	.33	.38	.40	.41	.41	.41	.41	.41	.41	.41	.41
Fort Wayne AP												
May 13	.38	.59	.60	.61	.61	.62	.63	.65	.68	.68	.69	.71
June 11	.20	.30	.35	.40	.47	.70	.78	.80	.80	.82	.84	.84
June 27	.34	.62	.85	1.07	1.14	1.19	1.19	1.19	1.22	1.23	1.59	1.78
July 4	.27	.46	.60	.63	.65	.66	.66	.66	.66	.66	.71	.71
July 4	.42	.44	.46	.47	.47	.48	.48	.48	.48	.48	.49	.49
Aug. 9	.35	.40	.50	.58	.72	.87	1.25	1.65	1.78	1.90	2.16	2.23
Aug. 15	.37	.42	.42	.42	.42	.57	.80	.82	.82	.82	.82	.82
Sept. 21	.36	.49	.53	.55	.58	.58	.58	.58	.58	.58	.58	.58
Indianapolis AP												
May 10	.25	.36	.42	.43	.54	.72	.73	.73	.74	1.01	1.25	1.28
May 19	.25	.44	.55	.59	.62	.81	.85	.87	.92	.94	.97	.98
May 21	.46	.70	1.00	1.22	1.43	1.45	1.47	1.48	1.48	1.48	1.48	1.48
May 30	.27	.33	.33	.33	.34	.48	.48	.49	.49	.49	.49	.49
June 18	.21	.40	.52	.66	.73	.73	.75	.76	.78	.81	.82	84
June 27	.29	.37	.37	.37	.37	.37	.37	.37	.37	.37	.37	.37
June 27	.26	.30	.37	.50	85	.89	1.00	1.08	1.20	1.25	1.42	1.81
July 4	.24	.32	.42	.52	.70	.91	1.13	1.15	1.16	1.16	1.16	1.16
July 4	.43	.81	1.15	1.20	1.23	1.24	1.24	1.24	1.24	1.24	1.23	1.24
July 8	.14	.28	.37	.38	.38	.38	.38	.38	.38	.38	.41	41
July 23	.44	.76	1.06	1.10	1.12	1.13	1.13	1.13	1.14	1.14	1.14	1.14
Aug. 10	.31	.50	.74	.74	.74	.74	86	.98	1.00	1.01	1.01	1.01
Aug. 15	.21	.34	.47	.50	.81	.97	.97	.97	.97	.97	.97	.97
Aug. 27	.22	.36	.43	.46	.48	.53	.58	.62	.68	.75	.79	.82
Dec. 18	.20	.32	.40	.48	.59	.68	.69	.77	.81	.85	.90	.91
South Bend AP												
Apr. 25	.20	.36	.40	.41	.41	.41	.41	.41	.41	.41	.41	.41
Apr. 26	.20	.26	.35	.40	.45	.48	.50	.52	.52	.52	.55	.66
June 22	.18	.30	.46	.47	.50	.51	.51	.51	.51	.51	.66	.66
July 4	.35	.48	.51	.57	.60	.60	.61	.61	.61	.61	.61	62
July 20	.25	.35	.36	.37	.39	.39	.39	39	.39	.39	.39	.39
Aug. 3	.50	.90	1.18	1.23	1.55	1.60	1.61	1.66	1.75	1.79	1.81	1.81
Aug. 29	.25	.40	.53	.57	.69	.82	.90	1.08	1.21	1.43	1.55	1.63
IOWA												
Burlington AP												
May 25	.28	.38	.40	.42	.47	.53	.70	.86	.98	1.07	1.16	1.16
June 10	.20	.37	.45	.50	.70	.77	.81	.85	1.03	1.07	1.10	1.10
June 26	.35	.46	.58	.67	.76	.80	.80	.81	81	.83	83	.84
July 22	.36	.60	.84	.99	1.16	1.37	1.42	1.46	1.48	1.52	1.56	1.57
July 28	.21	.32	.36	.52	.64	.65	.65	.65	.65	.65	.65	.65
Des Moines AP												
May 9	.16	.30	.39	.49	.61	.69	.70	.71	.71	.71	.74	.76
May 29	.26	.42	.44	.46	.54	.56	58	.59	.59	.59	.60	.60
May 30	.18	.27	.35	42	.52	.54	.56	.56	.56	.56	.56	.56
June 10	.16	.30	.44	.56	.63	.70	.74	74	.74	.74	.75	.80
July 19	.11	.21	.30	.41	.57	64	.76	84	.98	1.00	1.00	1.00
July 27	.22	.42	.64	.82	.99	1.08	1.11	1.13	1.13	1.13	1.14	1.14
Dubuque Airport												
May 14	.29	.42	.49	.51	.55	.56	.57	.57	.57	.79	.81	.81
May 21	.24	.33	.37	.40	.41	.41	.43	.77	.83	.84	.84	.84
May 30	.27	.47	.61	.73	.86	.91	1.30	1.65	1.68	1.70	1.71	1.72
July 8	.33	.53	.68	.88	.98	1.06	1.07	1.25	1.26	1.27	1.29	1.29
July 12	.19	.32	.40	.42	.55	.58	.59	.59	.59	89	1.00	1.00
July 16	.24	.35	.52	.57	.62	.62	.62	.62	.62	.62	.63	.63
July 21	.27	.50	.62	.74	.79	.81	.84	.86	.89	1.08	1.21	1.23

EXCESSIVE SHORT DURATION RAINFALL

YEAR 1957

Station and date	Maximum precipitation in inches (5 to 180 minutes)											
	5	10	15	20	30	45	60	80	100	120	150	180
IOWA (Cont'd)												
Dubuque AP (Cont'd.)												
July 31	0.40	0.80	1.05	1.30	1 50	1.55	1.75	1.76	1.77	1.78	1.83	1.83
Aug. 3	.26	43	.55	.65	72	.80	.81	.86	1 01	1.06	1.08	1.08
Aug. 30	.27	.53	.68	.96	1.41	1.95	2.20	2.25	2 58	2.63	2.75	2.89
Sioux City Airport												
June 13	28	.53	.73	.84	1.24	1.48	1 73	2.35	2.83	3.02	3.20	3.21
June 21	26	.28	.28	28	.30	.31	.32	.33	.33	.33	.34	.35
June 25	.26	.46	50	51	.51	.51	.51	.51	.51	.51	51	.51
July 1	.28	45	.61	.73	1.00	1.10	1.14	1.16	1.18	1.22	1.36	1.44
Sept. 1	.26	.40	.56	.60	.60	.72	.82	.87	.90	1.40	1.44	1.45
KANSAS												
Concordia												
May 13	.30	.53	.60	.65	.70	75	78	.80	.81	.81	.82	.84
May 13	21	.37	.46	.54	62	.70	.74	.74	.74	.74	.74	.74
May 20	.19	.34	.43	.48	.50	.50	.50	.50	.50	.50	.50	.50
June 14	.28	.40	.44	45	.46	48	49	.52	.52	.53	.53	.53
Dodge City Airport												
June 11	.20	.35	.45	.47	.55	.68	.69	.69	.69	.69	.69	.69
June 21	.27	.36	.38	.38	.38	.38	.38	.39	.40	.40	.40	.40
June 23	.30	44	.48	.50	.54	.59	.62	.72	.77	.84	.86	.89
June 29	.16	.31	.46	.60	.65	.66	.66	66	.66	.66	.66	.66
June 30	.15	.24	.31	.42	.56	.60	.61	.65	.68	.72	.77	.79
July 24	.45	.60	.75	.85	1.25	1.35	1.40	1.45	1.47	1.47	1.47	1.47
Aug. 3	.17	.32	.46	.50	.63	.81	.92	1.12	1.25	1 29	1.30	1.30
Sept. 13	.24	.44	.68	.84	1.12	1.39	1.53	1.61	1.68	1.71	1.77	1.80
Goodland Airport												
May 14	.15	.25	.35	.44	.59	.64	.67	.68	.68	.69	.70	.71
May 24	.25	.30	.48	.50	.52	.52	.52	.52	.52	.52	.52	.52
June 30	.35	.62	.77	.87	1.02	1.16	1.21	1.22	1.22	1.22	1.22	1.22
Aug. 13	.19	.35	.40	.45	.45	.45	.45	.45	.45	45	.45	.45
Topeka Airport												
Apr. 30	.20	.32	.46	.58	.70	.72	.73	.75	.79	.81	.83	.83
May 12	.14	.26	.34	.42	.58	.61	.62	.63	.65	.68	68	.69
May 13	.21	.35	.46	.54	.57	.68	.79	.82	.82	.83	.84	.85
June 14	.22	.36	.48	.52	.58	.64	64	.64	.64	.64	.64	.64
June 29	18	.28	.42	.52	.64	.67	.68	.68	.68	.68	.68	.68
July 9	.32	.40	.41	.41	.42	.57	.80	.85	.86	1.01	1.01	1.15
July 10	.18	.25	.36	.46	.64	.76	.98	1.06	1.18	1.42	1.65	1.86
July 20	.14	.24	.36	.44	.51	.60	.62	.62	.62	.62	.62	.63
Sept. 6	.26	.46	.61	.69	.79	.83	.85	.88	.94	1.01	1.06	1.07
Oct. 23	.21	.34	.45	.53	.63	.84	1 24	1.46	1.53	1 59	1.72	1.77
Wichita Airport												
Apr. 22	.20	.32	.42	.48	.55	.57	.62	.66	.72	.79	.92	1.00
May 24	.18	.30	.32	.35	.45	.54	.56	.56	.60	.61	.62	.62
May 29	.26	.44	.54	.63	.67	.67	.70	.70	.71	.74	.77	.79
June 11	.23	.28	.36	.38	.40	.45	.49	.52	.52	.54	.62	.65
June 12	.21	.29	.37	.53	.64	.64	.64	.64	.64	.64	.64	.64
June 22	.21	.42	.55	.59	.62	.64	.70	.71	.77	.97	1.01	1.09
June 26	.18	.31	.44	.53	.59	.60	.61	.62	.62	.62	.62	.62
June 26	.26	.48	.69	.78	1.00	1.13	1.16	1.25	1.26	1.27	1.28	1.28
June 27	.21	.35	.39	.43	.52	.60	.63	.67	.73	.79	.85	1.06
June 27	.38	.58	.60	.64	.67	.69	.69	.69	.69	.69	.69	.69
July 21	.27	.38	.47	.56	.60	.61	.61	.61	.61	.72	.77	.78
Sept. 6	.16	.30	.40	.45	.59	.65	.66	.71	.73	.78	.80	.85
Sept. 20	.30	.40	.43	.43	.43	.43	.43	.43	.44	.44	.44	.45
KENTUCKY												
Lexington Airport												
Feb. 9	.20	.30	.36	.40	.54	.61	.65	.67	.72	.76	.79	.80
Apr. 22	.30	.45	.60	.67	.68	.82	1.03	1.04	1.04	1.04	1.04	1.10
Apr. 22	.40	.60	.68	.75	.87	1.00	1.12	1.27	1.28	1.30	1.30	1.30
May 22	.25	.48	.55	.57	.62	.67	.76	.85	.90	.95	.98	1.22
June 7	.37	.39	.59	.60	.63	.63	.64	.64	.64	.64	.70	.70
June 17	.40	.62	.75	1.05	1.40	1.50	1.90	1.91	1.91	1.91	1.91	1.93
Aug. 11	.76	1.20	1.52	1.62	1.67	1.70	1.72	1.74	1.76	1.78	1.81	2.21
Sept. 10	.14	.24	.36	.46	.59	.65	.75	.79	.84	.86	.88	.92
Oct. 23	.20	.34	.38	.45	.52	.53	.54	.54	.54	.54	.58	.64
Nov. 18	.20	.29	.36	.38	.41	.44	.51	.57	.64	.69	.78	.86
Louisville Airport												
Apr. 8	.16	.30	.40	.44	.50	.58	.68	.74	.74	.80	.90	1.00
Apr. 21	.22	.30	.38	.40	.54	.68	.79	.81	.83	.86	.86	.86
May 13	.26	.29	.32	.33	.36	.39	.41	.42	.42	.42	42	.42
May 22	.16	.29	.42	.46	.58	.67	.72	.80	.87	.94	.98	.99
May 31	.17	.29	38	.40	.41	.41	.41	.41	.41	.41	.41	.41
June 18	.31	.52	.75	.80	.94	.95	.98	1.01	1.05	1.05	1.06	1.06
June 22	.26	.47	.52	.54	.76	.83	.85	.85	.85	.87	.87	.97
June 28	.10	.16	.24	.34	.52	.74	.94	1.20	1.28	1.47	1.57	1.68
July 16	.16	.32	.40	.54	.66	.96	1.04	1.05	1 05	1.05	1.05	1.05
July 23	.46	.60	.88	.92	1.24	1.46	1.55	1.87	2.08	2.17	2.26	2.39
Aug. 11	.24	.34	.34	.34	.34	.34	.34	.45	.45	.45	.45	.45
Aug. 14	.15	.30	.33	.35	.36	.37	.44	.47	.48	.48	.48	.48
LOUISIANA												
Baton Rouge												
Mar. 3	.19	.30	.39	.50	.58	.58	.58	.63	.66	.67	.71	.71
Apr. 3	.23	.45	.57	.60	.89	.95	1.05	1.28	1.35	1.39	1.44	1.45
Apr. 4	.15	.25	.29	.41	.56	.80	1.04	1.12	1.14	1.14	1.20	1.24
Apr. 30	.19	.29	.35	.44	.49	.49	.49	.49	.49	.49	.49	.49
June 1	.20	.28	.35	.46	.58	.60	.62	.66	.71	.74	.77	.78
June 2	.25	.26	.35	.36	.37	.38	.42	.45	.46	.46	.47	.47
June 5	.30	.38	.50	.55	.55	.55	.55	.55	.55	.55	.55	.55
June 27	.20	.37	.41	.45	.51	.60	.64	.83	.90	.93	.95	.97
July 14	.35	.65	.93	1.08	1.35	1.47	1.54	1.59	1.60	1.60	1.60	1.60
July 19	.15	.25	.33	.43	.67	1.02	1.16	1.16	1.16	1.16	1.16	1.16
July 21	.24	.40	.61	.83	1.15	1.45	1.62	1.62	1.62	1.62	1.62	1.63
July 31	.26	.36	.38	.48	.59	.63	.63	.63	.63	.63	.63	.63
Aug. 2	.22	.40	.47	.67	.84	1.13	1.28	1.38	1.41	1.45	1.45	1.45
Aug. 18	.38	.68	.86	.89	.92	.93	.93	.93	.93	.93	.93	.93
Sept. 12	.20	.33	.37	.50	.50	.52	.53	.73	.80	.80	.83	1.16
Sept. 26	.26	.43	.54	.75	1.02	1.35	1.70	2.00	2.20	2.38	2.48	2.55
Oct. 16	.26	.31	.32	.34	.43	.45	.51	.76	.87	.95	1.01	1.06
Oct. 23	.30	.35	.36	.36	.37	.37	.39	.39	.39	.39	.39	.39
Nov. 8	.25	.44	.48	.54	.57	.63	.67	.71	.75	.80	.82	.82
Nov. 18	.30	.60	.75	.87	1.29	1.41	1.53	1.58	1.59	1.60	1.61	1.65
Dec. 7	.18	.32	.37	.42	.47	.52	.54	.59	.65	.71	.75	.79
Dec. 27	.16	.30	.33	.35	.37	.44	.63	.72	.76	.81	.89	.95
LOUISIANA (Cont'd.)												
Lake Charles												
Mar. 21	0.28	0.35	0.47	0.55	0.61	0.66	0.68	0.69	0.71	0.75	0.77	0.83
Mar. 31	.25	.45	.50	.56	.64	.70	.74	.78	.80	.81	.84	.84
Apr. 3	.15	.25	.35	.50	.65	.80	.95	1.03	1.03	1.03	1.03	1.03
Apr. 11	.15	.25	.31	.40	.53	.67	.86	1.13	1.22	1.36	1.40	1.48
Apr 16	.17	.28	.40	.53	.68	.80	.94	1.10	1.36	1.49	1.64	1.75
Apr. 21	.25	.47	.58	.59	.67	.85	1.02	1.04	1.14	1.48	1.80	1.87
Apr. 27	.20	.26	.27	.40	.56	.62	.62	.63	.63	.63	.63	.63
Apr. 30	.25	.43	.58	.77	.82	.93	1.00	1.05	1.22	1.27	1.33	1.38
Apr. 30	.30	.41	.43	.45	.48	.58	.65	.97	1.02	1.07	1.10	1.12
June 1	.28	.32	.40	.48	.50	.54	.55	.62	.65	.72	.88	.98
June 2	.32	.34	.42	.44	.46	.47	.53	.56	.63	.64	.65	.65
June 23	.32	.60	.80	1.03	1.26	1.34	1.40	1.40	1.40	1.40	1.40	1.40
June 27	.25	.30	.34	.39	.59	.65	.75	.83	.92	1.03	1.08	1.18
June 27	.35	.55	.68	.90	1.13	1.55	1.88	2.22	2.76	3.06	3.36	3.60
July 22	.21	.30	.35	.41	.56	.70	.73	.79	.86	.91	.95	.96
July 26	.35	.38	.38	.38	.38	.38	.38	.38	.38	.38	.38	.38
July 26	.17	.34	.46	.62	.71	.76	.78	.87	.87	.87	.87	.87
Sept. 12	.28	.40	.52	.69	.85	1.02	1.04	1.06	1.10	1.13	1.18	1.18
Sept. 26	.40	.70	.90	1.10	1.45	1.64	1.82	2.00	2.17	2.30	2.41	2.51
Oct. 14	.30	.49	.58	.60	.73	.82	.84	.87	.88	.90	.95	.99
Oct. 15	.20	.31	.35	.40	.56	.71	.75	.80	.80	.82	.82	.82
Oct. 15	.29	.55	.80	.91	1.08	1.25	1.39	1.51	1.63	1.75	1.85	2.10
Nov. 7	.23	.37	.50	.63	.66	.70	.73	.76	.79	.79	.79	.79
Nov. 13	.35	.60	.80	.97	1.15	1.32	1.50	1.80	1.90	2.01	2.42	3.22
Nov. 13	.21	.29	.46	.51	.54	.58	.62	.69	.72	.73	.75	.75
Nov. 18	.26	.48	.50	.51	.51	.52	.53	.53	.55	.55	.55	.56
Dec. 7	.20	.35	.40	.42	.47	.62	.74	.78	.93	1.00	1.02	1.05
Dec. 27	.22	.35	.42	.49	.53	.59	.68	.78	.82	.87	1.05	1.13
New Orleans												
Feb. 1	.20	.28	.35	.40	.40	.40	.40	.42	.45	.47	.51	.52
Mar. 12	.25	.40	.60	.69	.83	.93	1.20	1.69	1.92	2.26	2.55	2.77
Mar. 18	.32	.56	.65	.71	.74	.87	.97	1.05	1.09	1.13	1.16	1.19
Mar. 21	.32	.51	.63	.71	.78	.91	1.04	1.09	1.10	1.13	1.17	1.22
Mar. 31	.37	.57	.85	1.04	1.10	1.16	1.18	1.25	1.81	1.98	2.14	2.20
Apr. 4	.48	.62	.64	.65	.65	.65	.65	.65	.65	.65	.66	.67
Apr. 17	.37	.65	.84	1.06	1.37	1.63	1.71	1.74	1.76	1.76	1.76	1.76
May 2	.21	.31	.32	.33	.34	.35	.35	.35	.35	.35	.36	.37
June 2	.21	.30	.41	.45	.56	.66	.74	.75	.81	1.03	1.03	1.05
June 4	.21	.30	.40	.50	.57	.59	.59	.60	.60	.60	.60	.60
June 8	.17	.27	.33	.40	.46	.47	.47	.47	.47	.47	.47	.47
June 22	.27	.37	.53	.58	.85	.86	1.09	1.10	1.13	1.13	1.13	1.13
June 24	Total excessive 1.05 in one hour.											
July 17	.39	.60	.91	1.05	1.19	1.25	1.25	1.26	1.26	1.26	1.27	1.27
July 19	.33	.56	.73	.89	1.01	1.16	1.19	1.20	1.20	1.20	1.20	1.20
July 21	.26	.28	.31	.31	.31	.31	.31	.31	.31	.31	.31	.31
July 30	.39	.57	.72	.82	.90	.96	.99	1.01	1.04	1.09	1.14	1.16
July 31	.40	.68	.83	1.03	1.23	1.34	1.42	1.56	1.58	1.60	1.60	1.63
Aug. 1	.39	.68	.84	1.04	1.23	1.34	1.42	1.56	1.58	1.60	1.60	1.74
Aug. 2	.29	.46	.65	.82	1.06	1.26	1.33	1.34	1.35	1.36	1.37	1.38
Aug. 30	.32	.54	.79	.95	1.19	1.81	2.25	2.33	2.37	2.38	2.38	2.49
Aug. 31	.26	.38	.45	.53	.64	.76	.97	1.13	1.33	1.53	1.57	1.59
Sept. 12	.21	.31	.42	.44	.47	.49	.53	.55	.55	.55	.56	.61
Sept. 18	.39	.64	.78	1.08	1.41	1.55	1.72	1.76	1.85	2.00	2.51	3.20
Sept. 26	.45	.85	1.09	1.16	1.33	1.45	1.53	1.54	1.57	1.63	1.64	1.65
Oct. 16	.36	.52	.62	.65	.69	.72	.75	.80	.85	.90	.96	1.00
Nov. 8 *	.33	.45	.51	.59	.67	.70	.73	.76	.76	.76	.76	.76
Nov. 14	.26	.44	.59	.72	.77	.81	.85	.88	.91	.92	.92	.94
Dec. 25	.30	.52	.77	.97	1.16	1.20	1.25	1.26	1.27	1.27	1.27	1.27
Dec. 28	.24	.40	.48	.57	.68	.77	.81	.84	.87	.87	.88	.89
MAINE												
Caribou Airport												
July 14	.26	.38	.38	.40	.42	.44	.46	.48	.51	.53	.54	.54
July 15	.18	.34	.48	.60	.88	1.21	1.21	1.23	1.24	1.24	1.24	1.25
July 31	.22	.32	.37	.42	.54	.82	.82	.82	.82	.82	.82	.82
Sept. 23	.22	.30	.34	.43	.60	.66	.82	.84	.84	.86	.86	.86
Portland Airport						None						
MARYLAND												
Baltimore												
May 14	.19	.33	.40	.55	.71	.75	.80	.80	.80	.80	.80	.80
June 24	.32	.42	.50	.54	.55	.55	.55	.55	.55	.55	.80	.80
July 28	.22	.43	.55	.63	.65	.66	.70	.76	.77	.77	.77	.77
Sept. 10	.42	.82	1.04	1.17	1.41	1.61	2.11	2.76	3.05	3.28	3.34	3.48
Sept. 12	.27	.49	.51	.52	.53	.55	.59	.59	.59	.59	.59	.59
Baltimore Airport												
Aug. 25	.20	.35	.49	.54	.57	.58	.60	.61	.63	.63	.63	.63
Sept. 7	.46	.50	.51	.54	.68	.75	.80	.81	.82	.82	.82	.82
Sept. 10	.40	.60	.78	.88	1.13	1.25	1.29	1.35	1.35	1.35	1.35	1.46
Frederick Airport												
Apr. 24	.23	.30	.48	.53	.68	.73	.78	.83	.87	.89	.90	.95
May 26	.25	.37	.42	.44	.47	.48	.49	.49	.49	.50	.50	.50
Sept. 10	.25	.30	.38	.40	.40	.40	.40	.40	.40	.40	.40	.40
Sept. 13	.44	.58	.59	.69	.70	.71	.71	.72	.73	.91	.94	.94
Nov. 8	.30	.35	.40	.55	.63	.65	.81	.86	.86	.86	.86	.86
MASSACHUSETTS												
Boston Airport						None						
Nantucket Airport												
July 30	.30	.46	.64	.75	.95	1.18	1.45	1.51	1.51	1.53	1.53	1.53
Sept. 23	.22	.37	.40	.40	.41	.42	.43	.43	.45	.45	.46	.56
Nov. 2	.18	.33	.41	.45	.46	.49	.52	.54	.54	.55	.55	.56
MICHIGAN												
Alpena												
Apr. 24	.24	.43	.53	.60	.68	.89	.96	.99	1.02	1.03	1.04	1.04
May 22	.19	.35	.48	.66	.70	.78	.88	.93	.98	1.10	1.17	1.25
June 17	.23	.39	.42	.44	.45	.46	.46	.46	.47	.47	.56	.59
June 18	.32	.40	.41	.42	.43	.43	.43	.43	.43	.43	.43	.43
June 26	.27	.33	.36	.38	.40	.41	.41	.43	.44	.44	.44	.45
July 3	.22	.41	.53	.62	.74	1.07	1.18	1.20	1.20	1.21	1.28	1.29
July 21	.60	.96	1.16	1.20	1.20	1.20	1.20	1.20	1.20	1.21	1.21	1.21
Sept. 1	.23	.32	.36	.39	.39	.40	.40	.40	.40	.40	.40	.40

* Clock failed during period.

EXCESSIVE SHORT DURATION RAINFALL

Station and date	Maximum precipitation in inches (5 to 180 minutes)											
	5	10	15	20	30	45	60	80	100	120	150	180
MICHIGAN (Cont'd.)												
Detroit Airport												
Apr. 27	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.38	0.38	0 38	0 38	0.38
July 4	.32	.37	45	.48	.49	.74	.82	1.30	1.30	1.30	1.31	1.31
July 8	.20	.31	38	46	.70	80	.91	.97	1.07	1.37	1.64	1.74
East Lansing												
July 4	.20	35	.40	40	46	.76	.84	84	.92	93	.93	93
July 8	.45	.76	.90	96	.98	1.01	1.18	1.28	1.29	1.30	1.40	1.48
July 11	.35	.55	.67	.73	.75	.82	1.04	1 28	1.63	1 86	2.15	2.45
Escanaba												
Apr. 20	.30	.37	.42	.48	.71	94	1.00	1.14	1.17	1.20	1.23	1.27
July 2	.25	40	.50	54	54	.54	.54	.54	.54	.54	.54	.54
July 4	.35	.50	60	.70	.78	.78	.78	.78	78	.78	.78	.78
July 8	.20	.29	36	.36	.36	.36	.36	.36	.36	.36	.36	.36
July 20	.32	.48	.52	.57	.62	.62	.63	.63	.63	63	.63	.76
July 29	.53	.67	.73	.79	.81	82	.83	.86	.95	.96	.97	.97
Grand Rapids AP												
Apr 24	.53	.65	.67	68	.69	.73	.75	.81	1.31	1.36	1.36	1.41
Apr. 25	.33	.40	.43	.48	.50	67	.71	72	.72	.72	.72	.72
June 16	.20	.38	.50	.67	.70	.72	.72	.72	.72	.72	.72	.72
June 22	24	.39	.46	.49	.54	.55	.80	85	.87	89	.93	.95
June 28	.22	.41	.55	.71	.87	.96	1 02	1.13	1.17	1.18	1.47	1.54
July 8	.30	.40	.50	.60	.70	.85	.92	.93	1.02	1.25	1.26	1.39
July 22	.25	.45	.60	.62	.63	.68	.73	.75	.75	.81	1.10	1.39
July 22	.15	.30	.39	.40	.40	.40	.47	.47	.47	.47	.47	.47
Marquette												
June 22	.30	.39	.40	.40	.40	.40	.40	.40	.40	.40	.40	40
Sept. 2	21	.35	.50	.58	.75	.91	.97	1.00	1.03	1.08	1.18	1.25
Muskegon Airport												
Apr. 25	.28	.43	.52	.60	.78	.88	.93	.93	1.06	1.08	1.08	1.08
May 21	21	.29	.40	.57	.58	.58	.58	.58	.59	.61	.61	.61
June 18	.20	.30	.32	.34	.35	.35	.35	.35	.35	.36	.36	.36
June 22	.20	.36	.49	.54	.61	.80	.84	.90	.93	.94	.94	.94
July 8	.25	.28	.32	.35	.43	.48	.53	.58	.58	.58	.58	.58
Aug. 15	.25	.40	.45	.50	.50	.50	.50	.50	.50	.50	50	.50
Aug. 29	.13	.22	.29	.35	55	.70	.75	.78	.81	.82	.83	.84
Sault Ste. Marie AP												
Apr. 20	.24	.31	.32	.33	.35	.48	.52	.63	.73	.78	.79	.82
May 8	.60	.70	.73	.77	.87	.94	1.03	1.14	1.19	1.29	1.32	1.34
July 2	.20	.40	.60	.80	1.07	1.17	1.28	1.37	1.42	1.46	1.49	1.50
July 4	.35	.58	68	.73	.93	1.05	1.10	1.10	1.10	1.11	1.11	1.15
Ypsilanti Airport						None						
MINNESOTA												
Duluth Airport												
June 21	.53	.77	1.32	1.73	2.14	2.46	2.51	2.58	2.65	2.69	2.70	2.71
July 19	.38	.62	82	.92	1.07	1.10	1.11	1.27	1.37	1.56	1.69	1.76
Aug. 13	.23	45	.60	.70	.85	.91	.94	1.00	1.06	1.10	1.10	1.12
International Falls AP												
July 12	.50	.62	.66	.82	.95	1.13	1.37	1.37	1.37	1.59	1.70	1.74
Minneapolis AP												
June 21	22	38	.49	.57	.67	.78	.79	.79	.83	.93	1.07	1.20
July 14	.20	.38	.57	.68	.87	1.00	1.05	1.10	1.14	1.14	1.14	1.14
July 19	.33	.55	.70	.88	1.20	1.50	1.57	1.67	1.67	1.71	1.73	1.75
Aug. 13	.28	.46	.62	.67	.79	1.00	1.19	1.31	1.37	1.41	1.56	1.78
Rochester Airport												
May 25	.15	.21	.36	.41	.46	.53	.63	68	.68	.69	.70	.70
June 17	.40	.64	.73	.83	.87	.88	88	.89	89	.91	.91	.91
June 22	.24	.46	.60	.66	.74	.81	.85	87	87	.92	.97	1.06
July 15	.14	.25	.35	.45	.57	.57	.58	.60	.68	.84	.94	.97
July 16	34	.56	.76	.82	.82	.82	.82	.82	.82	.84	.84	1 35
St. Cloud Airport												
June 13	.19	.33	.44	.50	.57	.57	.60	.60	.60	.60	.60	.60
June 16	.21	.36	.46	.54	.61	.74	.82	.88	.92	1.00	1.06	1.11
June 16	.18	.26	.31	.40	.59	.73	84	.93	.95	1.02	1.09	1.30
June 21	.42	.52	.60	.64	.86	1.10	1.24	1 27	1.27	1.27	1.28	1.37
June 25	.49	.86	.90	.92	.94	.95	.95	.95	.95	.95	.95	.95
July 7	.26	.31	.34	.34	.34	.34	.34	.34	.34	.34	.34	.34
July 12	.20	.28	.32	.37	.53	.53	.53	.53	.53	.53	.53	.53
July 19	.27	.32	.32	.32	.32	.32	.32	32	.32	32	.32	.32
Aug. 13	37	.61	.80	.91	1.08	1.19	1.22	1.25	1.26	1.29	1.37	1.53
Aug. 30	.20	.32	.38	.40	.45	.48	.75	.80	83	.90	.98	1.01
Aug. 31	.18	.31	.33	.33	.33	.33	.33	.33	.33	.33	.33	.33
MISSISSIPPI												
Jackson Airport												
Feb. 25	.25	.42	.46	.47	.48	.49	.50	.51	.52	.52	.52	.53
Mar. 31	.21	.38	.46	.49	.61	.67	69	.71	.74	.80	.89	.92
Apr. 3	.41	.63	.79	1.03	1.24	1.45	2.12	2.36	2.37	2.39	2.45	2.48
Apr. 7	.15	.26	.35	.43	.51	.51	.51	.51	.51	.51	.51	.51
Apr. 21	.25	.31	.39	.47	.53	.57	.57	.57	.57	.60	.61	.61
May 1	.36	.48	.72	.76	90	.93	.93	.93	.93	.93	1.00	1.04
May 26	.20	.25	.30	.44	.50	.50	.50	50	.54	.54	.55	.55
June 2	.27	.36	.40	.44	.56	.70	.73	.74	.76	.77	.77	.77
June 3	.38	.44	.58	.75	.96	1.05	1.10	1.14	1.19	1.24	1.34	1.39
June 22	.44	.72	.93	1.06	1.39	1.85	2.01	2.47	2.48	2.49	2.50	2.50
June 27	.17	.32	.38	.41	.49	.60	.72	99	1.15	1.24	1.43	1.59
July 16	.24	.43	.49	.52	.56	.57	.60	.60	.60	.60	.60	.60
July 17	.25	.34	.35	.35	.35	.35	.35	.35	35	.35	.35	.35
July 20	.20	.31	.32	.33	.33	.33	.33	.33	.33	.33	.33	.50
July 21	.17	.27	.30	.34	.55	.66	.73	.81	.81	.81	.81	.81
Sept. 11	.37	.51	58	.64	.69	.73	.74	.75	.77	.80	.93	.94
Sept. 14	.24	.38	.40	.40	.40	.40	.40	.40	.40	.40	.40	.40
Sept. 27	.17	.26	.39	.45	.59	.74	.80	.86	.90	1.03	1.10	1.17
Nov. 7-8	.64	.90	.95	.97	1.02	1.07	1.11	1.21	1.30	1.36	1.45	1.50
Nov. 13	.37	.62	.76	.80	.85	.90	.95	1.04	1.08	1.13	1.19	1.21
Meridian Airport												
Feb. 25	.31	.35	.37	.42	.55	.65	.65	.65	.65	.65	.65	.65
Apr. 4	.15	.25	.33	.45	.55	.75	.83	1.05	1.40	1.50	1.65	1.75
June 28	.35	.50	.55	.58	.77	.80	.80	.80	.80	.80	.80	.80
July 19	.34	.67	.77	.77	.77	.78	.78	.85	88	88	.88	.88
July 21	.25	.45	.50	.54	.55	.55	.55	.55	.55	.55	.55	.55

Station and date	Maximum precipitation in inches (5 to 180 minutes)											
	5	10	15	20	30	45	60	80	100	120	150	180
MISSISSIPPI (Cont'd.)												
Meridian AP (Cont'd.)												
Oct 20	0 10	0 20	0 30	0 40	0 60	0.60	0 60	0.60	0 60	0 60	0 60	0.60
Nov 13	43	70	1 10	1 48	1 88	2.05	2 29	2.47	2.72	2.80	2 88	2.95
Vicksburg												
Jan. 22	25	34	34	34	35	36	36	36	36	36	36	36
Mar 31	17	31	34	37	41	54	57	60	64	67	67	68
Apr. 2	.23	35	44	53	65	72	77	80	85	85	87	89
May 1	17	28	36	44	50	56	56	56	56	58	58	.60
May 23	20	27	35	37	62	76	86	92	94	95	95	.95
May 24	15	27	37	39	39	39	39	39	.39	39	39	39
June 1	20	30	32	32	33	34	37	37	.37	37	37	37
June 2	25	45	57	68	68	68	68	68	68	68	68	68
June 3	25	41	55	65	76	76	85	86	.95	95	95	1.02
June 19	31	51	62	65	65	65	65	65	.65	65	65	.65
June 22	27	31	31	31	31	55	56	56	.56	56	56	.56
June 27	18	28	31	34	53	60	60	61	.61	61	61	.61
July 2	30	57	74	85	1 19	1 30	1 30	1 31	1.32	1 32	1 32	1.32
July 21	35	46	46	46	46	46	46	56	.56	56	56	.56
Aug. 4	25	38	43	.43	43	43	43	43	.43	43	43	.43
Aug. 31	15	22	31	42	53	55	.61	64	.67	71	75	.75
Sept 2	48	79	1 04	1 11	1 12	1 14	1 15	1 17	1.17	1 17	1 17	1.17
Sept 4	22	37	45	49	54	54	54	54	.54	55	57	.58
Sept. 12	17	32	44	50	63	69	72	77	78	79	80	.81
Oct. 15	.45	69	77	85	94	1 06	1 12	1 16	1.20	1 23	1 29	1.35
Nov. 7	50	84	90	98	1 23	1 56	1 70	1 81	1.87	1 93	1 93	2 14
Dec 6-7	19	36	51	58	90	98	1 02	1 07	1.14	1 17	1 20	1 20
MISSOURI												
Kansas City AP												
June 8	30	46	58	62	68	.70	.72	.73	73	75	.75	.75
June 14	.34	60	85	88	1.18	1.37	1.38	1.38	1.38	1.38	1 38	1.38
June 29	30	.48	58	.70	.87	94	.94	.94	.95	.98	99	1.00
Sept. 20	19	30	39	41	.43	44	.45	46	.46	.46	85	.93
Sept. 20	16	29	.39	45	.49	49	.51	.59	79	----	----	----
Oct. 23	21	33	47	57	.78	89	.96	97	97	1.00	1 00	1.04
St. Joseph												
May 12	23	.38	43	45	.46	.46	.50	53	53	55	59	.62
May 13	25	.34	.37	39	.40	.42	.43	43	45	46	.72	.83
June 7	65	1.10	1.35	1.52	1.78	1.94	2.04	2 06	2.06	2.06	2.06	2.06
June 14	27	28	29	.30	.31	.31	.31	31	31	.31	.31	.31
June 29	27	29	30	.30	.30	.30	.31	32	32	.32	.32	.32
July 22	35	49	53	54	.54	.54	.55	.55	55	.55	.55	.55
Aug. 15	.27	45	60	.78	92	1.06	1.20	1.35	1.46	1.51	1.67	1.70
Aug. 16	12	.22	30	.40	.62	.71	.80	.80	.80	.80	82	90
St. Louis												
May 22	.43	.80	90	.91	.92	.96	1.12	1.12	1.12	1.12	1.12	1.12
June 13	.25	43	.59	.69	.72	.78	80	.80	.81	82	.83	.84
June 14	38	.73	79	.90	1.27	1.89	2 40	3.06	3.62	3.80	4.11	4.49
June 15	20	34	.45	.55	70	.78	94	1.04	1.13	1.17	1 48	1.57
June 15	.34	59	.73	.81	84	1.20	1 51	1.70	1.89	1.99	2 08	2.19
July 29	.35	60	78	1.03	1.21	1.33	1.37	1.38	1.39	1.40	1.43	1.43
Aug. 3	.49	89	1 07	1.22	1.30	1.37	1.37	1.37	1.37	1.37	1.37	1 37
Springfield AP												
Apr. 18	17	.32	33	.34	.40	41	41	.42	.43	.44	.55	.66
May 16	20	29	41	.46	.57	61	.62	.63	.64	.64	.64	.64
May 21	28	38	56	.58	94	1 00	1.02	1.20	1.61	1.72	1.76	1.94
May 22	32	.49	81	84	87	1.49	1.53	1.56	1.62	1.66	1.66	1 66
June 8	12	23	29	.37	.56	80	.87	.99	1.01	1.02	1.02	1.02
June 30	.30	.47	68	.85	.92	1.06	1.16	1.22	1.24	1.26	1.31	1.36
July 1	.27	.50	66	.73	.86	.93	.95	1.01	1.08	1.15	1 19	1.21
July 22	.30	.56	82	1.02	1.19	1.23	1.25	1.26	1.26	1.26	1.26	1 26
Aug. 1	26	43	51	.53	.55	60	.65	.68	.70	.72	.72	.72
Sept. 6	24	.40	.48	.52	.60	65	.70	74	.80	88	.92	.94
Sept. 6	22	32	.33	.33	.34	35	.37	40	40	40	.40	.40
Oct. 23	25	31	32	.33	33	34	.34	.35	.35	35	.36	.36
MONTANA												
Billings Airport												
June 6	.34	45	51	51	51	51	51	51	51	56	78	83
Great Falls AP						None						
Havre						None						
Helena Airport						None						
Kalispell Airport						None						
Missoula Airport						None						
NEBRASKA												
Grand Island AP												
Apr. 22	.36	.50	68	80	1 07	1.20	1.30	1 60	1.68	1.74	1 76	1.85
May 1	17	.33	35	36	36	36	.36	36	36	.36	36	.36
May 13	.25	.32	39	.43	48	51	52	.52	.58	.65	66	.67
May 20	.24	.41	.60	.70	76	1.07	1.10	1 10	1.10	1.10	1 10	1.10
June 6	26	.44	.48	49	.50	.53	.57	59	.61	.62	62	.62
June 15	19	32	38	43	47	.48	.50	62	63	.64	65	.71
June 16	14	22	34	.43	53	.69	.73	85	.95	1.02	1 06	1.08
July 1	30	52	56	57	57	.57	.57	57	.57	.57	57	57
July 8	.35	55	68	73	80	.82	83	83	.85	.85	87	.87
Aug. 15	.25	47	55	64	77	82	.88	92	.97	1.03	1 11	1.16
Sept. 1	.30	.44	.47	47	.50	.54	.54	60	60	.60	62	88
Lincoln												
June 6	21	28	39	41	52	.57	.58	59	59	61	.62	.62
June 14	28	45	54	58	62	66	.71	78	81	83	.85	.85
June 15	34	54	73	77	78	88	1.02	1 03	1 04	1.05	1.06	1.08
June 15	23	42	.64	73	82	82	.83	84	94	99	1.01	1.02
June 16	21	39	.48	.52	58	.63	.65	65	.66	67	.69	80
June 21	30	36	41	.46	48	.52	55	60	64	70	77	77
July 1	24	45	64	88	1 24	1.62	2.04	2 51	2.62	2 64	3 26	3 80
July 20	22	36	48	.68	81	.91	94	96	97	98	1 03	1.04
Aug. 13	30	52	73	.80	1.02	1.35	1 60	1 76	1 82	1 83	1.83	1.83
Sept. 1	26	36	40	.45	49	49	49	49	49	54	.67	.71
Oct. 12	19	38	49	.58	.71	.93	1 03	1.13	1 37	1 49	1 63	1.87

EXCESSIVE SHORT DURATION RAINFALL

Station and date	Maximum precipitation in inches (5 to 180 minutes)											
	5	10	15	20	30	45	60	80	100	120	150	180
NEBRASKA (Cont'd.)												
Norfolk Airport												
May 1	0 30	0 47	0 63	0.68	0.38	0.92	0.94	0.96	1 00	1.01	1.02	1.02
July 13	.25	.47	.58	.67	.82	.92	.92	.96	96	96	.97	.97
July 14	38	55	.62	.67	.73	80	83	.83	.84	.85	.89	.92
Aug. 8	.25	28	.33	37	.43	44	44	.48	.54	54	.54	.54
North Platte AP												
Apr 25	.30	.48	.54	.60	.62	.63	.63	.63	63	.63	63	.63
May 8	.26	.30	38	.43	.54	.65	.81	.97	1.09	1 19	1 29	1.38
May 24	.30	43	.51	52	.54	.55	57	.60	61	62	.67	71
May 31	.23	.36	45	61	.70	72	.78	.79	.83	87	.89	89
June 10	.20	.31	.38	.43	.68	85	1.01	1.02	1 02	1.03	1.03	1.03
June 16	49	.77	.87	.92	.93	.93	.93	.93	.98	1.00	1.00	1.00
July 19	.32	.59	.73	.85	1.00	1.03	1.04	1.04	1.05	1.06	1.09	1.11
Aug. 7	.22	.42	.50	.58	.75	.80	.81	83	.85	.95	1.20	1.30
Aug. 29	.29	.53	.74	.79	.96	1.19	1.32	1.50	1.54	1.69	2.24	2.65
Sept. 18	.55	.84	.96	.98	98	.98	.98	.98	.99	1.11	1.13	1.13
Omaha Airport												
Apr. 25	.25	.37	.44	57	.64	.71	1.06	1.16	1.16	1.16	1.36	1.38
May 20	.15	28	.40	.46	.51	.51	.52	.54	.67	89	.89	.89
May 29	.25	.45	.67	.73	.75	.75	.75	.75	.75	.75	.75	.80
June 15	.33	.52	.63	.73	.88	.99	1.00	1.00	1.10	1.11	1.14	1.17
Aug. 13	.37	.70	1.02	1.13	1.18	1.22	1.23	1.23	1.23	1.23	1.24	1.26
Aug. 28	.24	.37	.61	74	1.07	1.24	1.31	1.46	1.85	2.13	2.24	2.33
Aug. 29	.25	.42	.50	57	.82	.93	96	.99	1.03	1.03	1.04	1.05
Scottsbluff AP												
May 19	.37	.66	.89	1.05	1.15	1.53	1.86	1.90	1.91	1.92	2.02	2.13
June 10	.29	.51	.70	.81	.96	1.33	1.66	1 69	1.69	1.69	1.69	1.69
July 18	.64	1.12	1.33	1.52	1 84	2.03	2.06	2.06	2.09	2.11	2.14	2.16
July 29	.27	.52	.70	.78	.91	.98	1.04	1.10	1.10	1.10	1.10	1.10
Aug. 28	.39	.53	.65	.70	.73	.75	.82	.83	.83	.83	.83	.85
Valentine Airport												
Aug. 8	.20	.34	.40	.41	.42	.42	.42	.42	.42	.42	.42	.42
Aug. 22	.19	.26	.29	.47	.53	.53	.53	.53	.53	.53	.53	.53
Sept. 18	.27	.32	.32	.32	.32	.33	.33	.34	.34	.36	.53	.58
NEVADA												
Elko Airport						None						
Ely Airport						None						
Reno Airport						None						
Winnemucca Airport						None						
NEW HAMPSHIRE												
Concord												
June 19	.35	.55	.73	.75	.75	.79	.79	.84	.84	.84	.84	.84
NEW JERSEY												
Atlantic City												
June 7	.25	.47	.54	.59	.59	.59	.59	.66	.68	.69	.69	.69
Aug. 4	.27	.54	.65	.75	.80	.80	.80	.80	.80	.80	.80	.80
Aug. 15	.26	.43	.51	.54	.54	.54	.54	.54	.54	.54	.54	.54
Aug. 26	.25	.48	.60	.73	.75	.75	.75	.75	.75	.75	.75	.75
Newark Airport												
Aug. 12	.23	.33	.35	.37	.39	.41	.42	.43	.44	.44	.44	.44
Aug. 25	.22	.44	.57	73	.96	1.03	1.10	1.13	1.14	1.16	1.21	1.26
Sept. 10	.23	.32	.39	.62	.91	1.19	1.24	1.31	1.37	1.40	1.41	1.42
Trenton												
May 20	.15	.27	.38	.51	66	.73	.81	.84	.85	.86	.86	.86
May 26	.25	.29	.32	.33	.33	.33	.33	.33	.33	.33	.39	.40
NEW MEXICO												
Albuquerque AP												
July 22	.26	.52	.55	.55	.55	.61	.64	.64	.64	.64	.64	.64
Oct. 19	.50	.51	.54	.58	.64	.74	.75	.75	.75	.75	.75	.75
Raton Airport												
July 20	.17	.33	.44	.50	.55	.58	.63	.63	.63	.63	.63	.63
July 31	.26	.38	.44	.45	.45	.45	.45	.45	.45	.45	.45	.45
Aug. 24	.46	.83	1.06	1.38	1.60	1.69	1.70	1.70	1.70	1.70	1.70	1.70
Roswell Airport												
July 22	.23	.34	.35	.35	.35	.36	.36	.36	.36	.36	.36	.36
Sept. 22	.43	.73	.84	.90	1.04	1.10	1.12	1.13	1.15	1.15	1.15	1.15
NEW YORK												
Albany Airport												
May 26	.14	.23	.25	.35	.50	.56	.57	.57	.58	.58	.58	.58
June 29	.25	.34	.37	.40	.44	.46	.47	.47	.47	.47	.47	.47
Sept. 22	.17	.34	.41	.55	.61	.62	.63	.63	.65	.71	.75	.83
Nov. 19	.20	.35	.42	.45	.46	.49	.49	.49	.49	.49	.50	.50
Binghamton Airport												
June 13	.28	.33	.36	.38	.38	.41	.41	.41	.41	.41	.41	.41
June 14	.30	.38	.56	.69	.72	.74	.75	.75	.75	.75	.75	.75
July 5	.24	.40	.45	.50	.53	.53	.53	.53	.53	.53	.53	..53
July 13	.24	.32	.47	.60	.85	.94	.99	1.04	1.09	1.12	1.17	1.17
July 22	.18	.28	.36	.37	.37	.39	.42	.51	.53	.53	.53	.59
Sept. 22	.24	.34	.36	.42	.45	.50	.55	.65	.76	.86	.87	.87
Buffalo Airport												
Apr. 25	.17	.33	.41	48	.50	.53	.60	.71	.80	.80	.80	.80
July 22	.17	.23	.27	.39	.51	.59	.72	.75	.75	.75	.75	.75
July 30	.15	.29	.41	.43	.43	.43	.43	.43	.43	.43	.43	.43
Aug. 3	.18	.33	.34	.41	.56	.56	.56	.59	.59	.59	.59	.59
New York												
Aug. 12	.21	.34	.36	.37	.38	.40	.42	.43	.44	.45	.46	.46
New York Airport												
May 14	.32	.52	.68	.73	.89	.99	1.14	1.44	1.47	1.53	1.57	1.64
May 23	.23	.32	.33	.33	.37	.42	.48	.49	.49	.49	.49	.49
Sept. 10	.20	.34	.39	.41	.45	.49	.53	.59	.61	.61	.61	.61
NEW YORK (Cont'd.)												
New York AP (Cont'd.)												
Sept. 16	0.15	0.26	0.39	0.48	0.72	0.97	1.21	1.25	1.27	1.46	1 58	1.74
Rochester Airport												
June 28-29	.24	.35	.37	.39	.43	.45	.47	.52	.54	.63	.67	.70
July 7	20	.28	35	.36	.36	.37	.37	.37	.37	.37	.37	.37
July 27	.22	.32	.36	.43	.44	.44	.44	.44	.44	.44	.44	.44
Aug. 3	.24	.48	.63	.64	.68	.69	.69	.69	.69	.69	.69	.69
Sept. 20	.19	.33	.38	.46	55	.57	.59	.60	.60	.60	.60	.60
Syracuse Airport												
May 26	.17	.31	.38	.44	.48	.54	.58	.59	.59	.60	.61	.61
June 14	.23	.34	.57	.61	.61	.61	.61	.61	.61	.61	.61	.61
June 24	.29	.39	.39	.39	.39	.39	.39	.39	.39	.39	.39	.39
July 3	.27	.34	.45	.54	.67	.72	.75	.76	.77	.77	.79	.80
July 29	.34	.61	.82	.91	.96	1.40	1.43	1.43	1.43	1.43	1.92	2.36
July 30	.25	.38	.43	.46	.47	.47	.47	.47	.47	.47	.47	.47
July 30	.57	.85	1.03	1.20	1.29	1.37	1.38	1.38	1.38	1.38	1.38	1 38
Aug. 3	.32	.46	.55	.62	.75	1.29	1.40	1.42	1.43	1.53	1.56	1.62
Sept. 22	.28	.34	.37	.42	.45	.46	.47	.47	47	.47	.47	.47
NORTH CAROLINA												
Asheville												
May 27	.22	.37	.44	.46	.47	.48	.49	.54	.56	.57	.58	.58
June 3	.23	.39	.48	.51	.54	.55	.59	.61	.62	.64	.70	.76
June 4	.16	.27	.35	.42	.51	.61	.74	.86	.97	1.04	1.08	1.11
July 17	.17	.25	.33	.42	.51	.53	.54	.54	.54	.54	.54	.54
Sept. 21	.24	.41	.48	.48	.49	.49	.50	.50	.50	.50	.50	.50
Cape Hatteras												
May 19	.25	.32	.43	.46	.52	.54	.60	.65	.67	85	.86	.86
May 30	.14	.24	.36	.47	.60	.74	.76	.79	.79	.87	.95	.96
May 31	.17	.27	.39	53	.57	.70	.79	.86	.87	.87	.87	.88
June 8	.18	.36	.44	.52	.64	.87	1.06	1.28	1.58	1.90	1.95	2.13
July 27	.36	.61	.72	.93	1.31	1.48	1.81	1.85	1 87	1.90	1.90	1.90
July 30	.33	.56	.68	.88	1.03	1.13	1.17	1.23	1.25	1.94	2.15	2 24
Aug. 16	.20	33	49	.54	.68	.76	.79	.83	85	.94	.94	.96
Sept. 30	.20	.34	.39	.43	.50	.59	.75	.95	1.09	1.14	1.23	1.26
Charlotte												
Apr. 5	.20	.32	.36	.38	.38	.38	.38	.38	.72	.75	.77	80
Apr. 22	.27	.40	.58	.65	.71	72	.74	.78	.81	.82	.84	.86
May 14	.25	.40	.50	.53	.56	.60	.60	.63	.64	64	.64	.64
June 8	.20	.30	.37	.45	.48	60	.77	.80	.90	1.02	1.02	1.02
June 17	.54	1.08	1.09	1.10	1.12	1.18	1.18	1.23	1.25	1.50	1.53	1.55
June 19	.28	.52	.63	.73	75	.75	.75	.75	.75	.75	.75	.75
July 23	.26	.28	.28	.28	.37	.40	.49	.50	.67	.69	.69	.69
Aug. 17	.35	.45	.70	.98	1.21	1.35	1.39	1.44	1.50	1.55	1.60	1.64
Sept. 16	.30	.44	.58	.65	.68	.68	.68	.68	.71	.72	.78	.80
Sept. 17	.18	.35	.38	.39	.39	.39	.39	.42	46	.46	.46	.46
Oct. 17	.23	.33	.40	.45	.53	.56	.58	.58	.58	.58	.58	.58
Greensboro AP												
May 26	.23	.40	.51	.52	.61	.73	.75	.76	.76	76	.76	.76
June 5	.17	.23	.31	.40	.43	.48	.49	.53	.56	.56	.56	.59
June 5	.22	.32	.39	.46	.52	.58	.62	.64	.65	.67	.69	.69
June 28	.30	.41	.48	.50	.51	.52	.53	.54	.54	.54	.54	.54
July 17	.27	.48	.75	.89	1.13	1.34	1 36	1.38	1.39	1.41	1.49	1.55
Aug. 1	.22	.37	.45	.61	67	72	.78	.80	.81	.81	.85	.89
Sept. 6	.19	.37	.45	.47	.49	.71	79	1 03	1.03	1.03	1.03	1.04
Sept. 7	.17	.27	.36	.38	.38	.38	38	.38	.38	.38	.38	.38
Sept. 10	.28	.35	.38	.38	38	.38	.38	.38	.38	.38	.38	.38
Raliegh Airport												
Apr. 29	.21	.31	.31	.31	.31	.31	.31	.32	.32	.32	.32	.32
May 11	.22	.41	50	.58	.98	1.30	1.51	2.13	2.40	2.65	2.78	2.90
June 3	.40	.80	1.13	1.50	1.83	2.13	2.25	2.33	2.42	2.52	2.59	2.61
June 6	.25	.38	.48	.49	.50	.53	.56	.56	.56	.56	.56	.56
June 19	.13	.25	.36	.45	.65	.65	.65	.65	.65	.65	.66	.70
July 15	.33	.64	.77	.77	.77	.77	.77	.77	.77	.77	.77	.77
Aug. 18	.20	.35	.45	.60	.82	1.14	1.31	1 37	1.43	1.49	1.50	1.50
Nov. 8	.42	.43	.43	.44	.45	.47	.47	.47	.47	.47	.47	.48
Dec. 20	.13	.25	.37	.39	.42	.45	.48	.49	.50	.52	.52	.52
Wilmington AP												
May 19	.29	.41	.43	.44	.48	.50	.57	.81	.84	.84	.84	.84
June 6	.15	.26	.35	.44	.54	.63	.75	.80	.81	.86	.89	.90
July 15	.40	.62	.69	.73	.75	.75	.77	.83	.87	.92	.93	.93
July 16	.23	.31	.35	.40	.42	.43	.43	.43	.43	.43	.43	.43
July 24	.29	.39	.45	.61	.80	1.12	1.55	1.67	1.70	1.71	1.73	1.73
Aug. 12	.22	.35	.35	.35	.35	.36	.36	.36	.42	.45	.46	.47
Aug. 15	.26	.49	.64	.81	.85	.86	.88	1.06	1.19	1.20	1.22	1.23
Aug. 15	.30	.39	.39	.39	.39	.39	.39	.39	.39	.39	.39	.39
Sept. 4	.22	.40	50	.61	.67	.80	.89	.90	.91	.91	.91	.91
Sept. 18	.19	.26	.31	.45	.52	.52	.52	.52	.52	.52	.52	.52
Sept. 18	.22	.39	.48	.56	64	.76	.83	.87	1 24	1.57	1 70	1.71
Sept. 18	.16	.29	.37	.55	.61	.80	.84	.85	1.24	1.57	1.70	1.71
NORTH DAKOTA												
Bismarck Airport												
May 2	.29	.44	.57	.64	.70	.72	.81	.83	.84	.85	.85	.85
July 6	.24	.38	.40	.40	.40	.40	.40	.40	.40	.40	.40	.40
Devils Lake												
June 9	.28	.48	.54	.57	.63	.67	.70	.73	.76	.84	.91	.95
June 12	.31	.37	.42	.44	.44	.44	.44	.44	.45	.45	.45	.45
Aug. 12	.40	.69	.76	.89	1.02	1.18	1.22	1.24	1.25	1.26	1.31	1.36
Fargo Airport												
June 22	.17	.28	.36	.44	.48	.48	.50	.50	.50	.57	.58	.58
July 3	.18	.30	.31	.32	.32	.32	.33	.33	.33	.33	.33	.33
July 14	.29	.44	.58	.64	.70	.79	.81	.82	.83	.83	.83	.83
July 16-17	.24	.46	.62	.76	.86	.94	.98	.99	1.00	1.01	1.08	1.10
Aug. 12	.18	.30	.39	.47	.55	.59	.62	.64	.64	.65	.66	.66
Sept. 2	.25	.42	.59	.80	1.18	1.38	1.53	1.68	1.74	1.84	1.90	2.01
Williston												
July 16	.19	.35	.40	.40	.40	.40	.40	.40	.40	.40	.40	.40
July 22	.25	.38	.41	.41	.42	.45	.45	.45	.45	.45	.45	.45

EXCESSIVE SHORT DURATION RAINFALL

YEAR 1957

Station and date	Maximum precipitation in inches (5 to 180 minutes) 5	10	15	20	30	45	60	80	100	120	150	180
OHIO												
Akron Airport												
May 14	0.20	0.33	0.45	0.47	0.48	0.50	0.52	0.55	0.56	0.56	0.56	0.56
June 28	.12	.24	.34	.40	.43	.44	.44	.45	.45	.45	.46	.49
Cincinnati (Abbe Obs.)												
May 31	.49	.73	1.15	1.54	1.96	2.48	2.66	2.99	3.03	3.04	3.05	3.09
June 14	.34	.40	.43	.44	.45	.45	.46	.50	.50	.50	.50	.53
June 17	.36	.71	.88	1.27	1.49	1.61	2.19	2.34	2.37	2.37	2.37	2.38
July 4	.23	.38	.51	.58	.70	.82	.90	.93	.96	.96	.96	1.00
July 27	.25	.38	.51	.55	.74	1.06	1.17	1.30	1.56	1.58	1.89	1.98
Aug. 11	.33	.65	.85	1.04	1.22	1.24	1.31	1.55	1.66	1.68	1.69	1.72
Aug. 12	.19	.29	.35	.49	.64	.64	.64	.64	.64	.82	.84	.84
Aug. 12	.30	.55	.61	.70	.85	.85	.85	.85	.85	.85	.85	.85
Sept. 13	.23	.33	.44	.47	.52	.58	.74	1.02	1.10	1.18	1.43	1.62
Cleveland Airport												
Apr. 23	.20	.37	.43	.45	.49	.53	.55	.57	.57	.57	.57	.57
May 31	.17	.30	.36	.48	.53	.76	.80	.87	.90	.93	.98	1.00
June 16	.25	.40	.55	.70	.73	.73	.73	.73	.73	.73	.73	.73
June 18	.18	.25	.37	.37	.37	.42	.46	.49	.49	.49	.49	.49
June 18	.23	.33	.40	.41	.43	.44	.44	.45	.46	.46	.46	.46
June 22	.20	.32	.36	.36	.36	.36	.36	.36	.36	.36	.36	.36
Aug. 25	.25	.33	.48	.60	.80	.93	1.00	1.26	1.29	1.30	1.30	1.30
Columbus Airport												
May 10	.25	.30	.30	.30	.46	.55	.59	.67	.67	.68	.71	.73
May 11	.22	.32	.45	.49	.52	.52	.52	.52	.52	.52	.52	.52
May 18	.28	.43	.47	.48	.53	.61	.65	.66	.68	.68	.68	.68
May 22	.20	.30	.32	.35	.41	.53	.59	.69	.73	.83	.99	1.04
June 13	.34	.44	.45	.45	.45	.45	.45	.45	.45	.45	.45	.45
June 15	.47	.57	.57	.57	.57	.57	.57	.58	.59	.59	.68	.68
July 4	.18	.30	.33	.35	.35	.39	.41	.42	.43	.45	.45	.49
July 29	.35	.60	.85	.95	1.15	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Sept. 2	.21	.35	.45	.50	.58	.59	.59	.62	.63	.63	.63	.63
Dayton Airport												
May 13	.32	.37	.43	.45	.71	.81	.84	.88	.98	1.07	1.15	1.20
May 18	.32	.60	.71	.74	.80	.83	.89	.94	.96	.96	.96	.96
May 19	.19	.30	.46	.57	.72	.92	1.16	1.23	1.28	1.31	1.31	1.43
May 31	.20	.31	.50	.53	.57	.66	.71	.75	.76	.82	.87	.97
June 23	.34	.48	.55	.57	.59	.97	1.17	1.20	1.22	1.22	1.22	1.22
July 4	.19	.31	.43	.47	.66	.70	.72	.73	.73	.73	.73	.75
July 6	.15	.25	.30	.49	.50	.58	.68	.68	.68	.68	.68	.68
Sandusky												
May 31	.26	.33	.61	.66	.72	.93	.98	1.04	1.09	1.29	1.35	1.38
June 28	.23	.35	.55	.70	.80	.87	.94	1.03	1.14	1.17	1.29	1.36
Toledo Airport												
June 13	.25	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30
Aug. 3	.26	.31	.51	.59	.75	1.18	1.26	1.26	1.26	1.26	1.26	1.26
Youngstown Airport												
Apr. 24	.35	.53	.60	.77	.86	1.08	1.14	1.22	1.33	1.35	1.41	1.44
May 14	.25	.32	.36	.38	.40	.44	.51	.58	.64	.65	.65	.65
June 16	.24	.41	.42	.42	.42	.42	.43	.44	.44	.45	.45	.45
June 24	.21	.40	.45	.50	.55	.55	.56	.59	.63	.69	.69	.69
June 28	.25	.45	.60	.77	1.00	1.15	1.25	1.32	1.48	1.58	1.67	1.79
OKLAHOMA												
Oklahoma City AP												
Apr. 19	.16	.25	.41	.45	.52	.56	.57	.57	.57	.58	.58	.61
Apr. 20	.25	.32	.34	.42	.45	.51	.54	.57	.59	.60	.71	.80
Apr. 22	.30	.55	.75	.80	.88	.92	.95	.97	1.01	1.06	1.15	1.28
May 22	.24	.45	.56	.61	.74	.78	.82	.84	.85	.86	.88	.91
May 24	.42	.74	1.02	1.16	1.33	1.46	1.49	1.53	1.58	1.70	1.73	1.76
May 30	.21	.38	.45	.50	.50	.58	.60	.65	.67	.70	.73	.81
June 12	.31	.41	.59	.63	.63	.63	.63	.63	.63	.63	.63	.63
June 22	.12	.22	.30	.39	.60	.78	1.02	1.06	1.28	1.36	1.68	1.80
Sept. 14	.30	.39	.59	.75	.85	.88	.91	.92	.92	.92	.92	.92
Sept. 14	.50	.80	1.10	1.20	1.41	1.45	1.47	1.75	1.83	1.84	1.85	1.97
Sept. 14	.58	.70	.71	.71	.71	.72	.72	.72	.72	.72	.72	.72
Sept. 21	.15	.30	.31	.34	.38	.46	.51	.69	.69	.73	.90	1.02
Tulsa Airport												
Apr. 2	.24	.30	.37	.42	.46	.49	.60	.65	.72	.74	.88	1.12
May 13	.19	.34	.44	.47	.49	.52	.55	.56	.58	.58	.58	.58
May 20	.25	.38	.53	.57	.64	.65	.65	.65	.65	.65	.65	.65
May 21	.40	.51	.54	.54	.54	.67	.77	1.02	1.21	1.37	1.50	1.53
May 24	.30	.60	.67	.73	.93	1.08	1.15	1.22	1.29	1.37	1.47	1.55
June 10	.18	.33	.43	.49	.59	.64	.66	.68	.70	.71	.71	.71
June 14	.44	.64	.82	.88	.95	1.15	1.25	1.60	1.70	1.72	1.73	1.73
June 23	.37	.48	.53	.56	.73	.88	.94	.94	.96	.98	1.04	1.11
Aug. 4	.30	.45	.60	.72	.98	1.29	1.77	1.89	1.99	1.99	1.99	2.01
Aug. 16	.22	.41	.57	.69	.81	.86	1.17	1.22	1.24	1.25	1.28	1.31
Sept. 11	.22	.34	.46	.55	.62	.64	.69	.77	.87	.89	.90	.90
Sept. 11	.19	.34	.45	.48	.55	.61	.68	.74	.80	.82	.83	.83
OREGON												
Astoria Airport												
June 13	.17	.25	.43	.49	.51	.53	.54	.55	.55	.55	.56	.57
Burns												
June 7	.38	.38	.38	.38	.38	.38	.38	.38	.38	.38	.38	.38
Eugene Airport						None						
Meacham Airport						None						
Medford Airport						None						
Pendleton Airport												
May 17	.21	.34	.36	.37	.37	.38	.38	.38	.38	.38	.38	.38
Portland Airport						None						
Roseburg Airport												
Apr. 29	.25	.37	.51	.56	.65	.67	.77	.78	.79	.80	.82	.82
Sexton Summit												
Mar. 31	.12	.24	.35	.40	.40	.40	.40	.45	.45	.45	.45	.45

Station and date	Maximum precipitation in inches (5 to 130 minutes) 5	10	15	20	30	45	60	80	100	120	150	180
PENNSYLVANIA												
Allentown Airport												
May 14	0.15	0.27	0.37	0.41	0.49	0.56	0.62	0.72	0.78	0.83	0.98	1.10
May 18	.22	.36	.49	.57	.57	.57	.57	.57	.57	.57	.57	.57
June 24	.37	.53	.76	.79	.81	.87	.90	.90	1.07	1.66	1.70	1.70
June 24	.25	.30	.34	.37	.52	.55	.55	.55	.55	.55	.55	.55
Harrisburg AP												
June 23	.30	.38	.39	.39	.39	.39	.39	.39	.41	.41	.68	1.10
June 23	.18	.33	.42	.49	.59	.64	.68	.72	.73	.74	.74	.74
Sept. 10	.20	.36	.41	.44	.47	.52	.55	.55	.56	.57	.58	.65
Philadelphia AP												
Mar. 15	.18	.30	.35	.43	.56	.65	.66	.80	.86	.89	.93	.93
Apr. 6	.28	.45	.48	.50	.52	.52	.52	.52	.52	.56	.58	.59
May 26	.38	.48	.51	.51	.51	.52	.53	.55	.59	.62	.66	.66
June 16	.35	.56	.76	.99	1.12	1.18	1.20	1.21	1.21	1.22	1.27	1.31
Aug. 25	.32	.41	.44	.46	.70	.85	.99	1.34	1.35	1.35	1.35	1.35
Aug. 26	.17	.25	.35	.47	.65	1.05	1.29	1.44	1.49	1.54	1.55	1.55
Sept. 10	.31	.39	.43	.45	.48	.50	.59	.60	.64	.67	.67	.67
Pittsburgh AP												
May 11	.25	.45	.60	.70	.90	1.00	1.05	1.20	1.27	1.29	1.30	1.33
June 13	.20	.35	.43	.45	.46	.46	.48	.63	.63	.69	.69	.69
June 28	.27	.29	.31	.34	.34	.34	.34	.34	.34	.35	.36	.39
July 8	.34	.64	.94	1.24	1.50	1.52	1.78	2.02	2.23	2.23	2.29	2.32
Aug. 10	.15	.20	.30	.45	.51	.51	.51	.51	.51	.51	.51	.51
Sept. 20	.16	.22	.25	.36	.55	.69	.79	.86	1.06	1.10	1.10	1.10
Sept. 22	.26	.43	.55	.63	.75	.77	.82	.84	.84	.84	.84	.84
Pittsburgh												
May 11	.27	.52	.68	.70	.73	.75	.81	.84	.85	.86	.86	.86
June 12	.24	.41	.58	.62	.62	.62	.62	.62	.62	.62	.62	.62
June 13	.20	.34	.35	.38	.39	.40	.43	.47	.48	.48	.48	.48
June 24	.23	.37	.44	.48	.49	.51	.56	.56	.56	.56	.56	.56
July 8	.28	.37	.44	.54	.62	.66	.71	1.12	1.34	1.38	1.43	1.53
Sept. 20	.24	.36	.54	.64	.71	.81	.88	.97	1.03	1.09	1.19	1.26
Reading												
Apr. 5	.30	.35	.37	.39	.40	.40	.43	.43	.46	.46	.47	.47
May 26	.40	.64	.79	.80	.81	.82	.82	.84	.84	.86	.87	.87
June 25	.17	.27	.31	.42	.45	.60	.61	.78	.79	.79	.86	1.06
Sept. 16	.23	.36	.46	.55	.59	.59	.92	1.06	1.09	1.09	1.24	1.25
Scranton Airport												
June 15	.25	.50	.75	.90	1.13	1.17	1.18	1.18	1.18	1.18	1.18	1.18
July 28	.20	.40	.58	.75	.77	.82	.84	.84	.84	.84	.84	.84
Sept. 22	.27	.33	.38	.44	.47	.48	.48	.48	.49	.66	.76	.80
Nov. 14	.18	.30	.48	.51	.56	.58	.65	.67	.69	.73	.77	.78
RHODE ISLAND												
Providence AP												
Aug. 10	.20	.27	.37	.50	.68	.80	.87	1.00	1.04	1.10	1.12	1.12
SOUTH CAROLINA												
Charleston												
Feb. 25-26	.22	.34	.40	.43	.45	.46	.63	.87	.89	.90	1.06	1.16
Mar. 25	.22	.33	.34	.34	.47	.55	.80	.91	.94	.95	.96	.96
May 25	.38	.66	.88	1.08	1.41	1.60	1.60	1.60	1.60	1.60	1.60	1.60
May 27	.40	.54	.59	.61	.62	.62	.62	.62	.62	.62	.63	.63
June 5	.30	.49	.69	.76	.92	.94	.99	.99	.99	.99	.99	.99
June 9	.14	.23	.29	.35	.50	.65	.75	.95	1.08	1.17	1.35	1.45
July 6	.40	.75	.92	1.23	1.43	1.43	1.45	1.60	1.75	1.78	1.78	1.78
July 18	.44	.75	1.01	1.18	1.39	1.50	2.13	2.21	2.22	2.23	2.30	2.33
July 24	.38	.65	.82	1.04	1.20	1.29	1.43	1.50	1.52	1.52	1.55	1.55
Aug. 16	.31	.46	.47	.47	.47	.48	.54	.55	.55	.55	.55	.55
Aug. 19	.30	.46	.66	.73	.80	.84	.90	1.14	1.55	1.68	1.81	1.95
Sept. 6	.36	.67	.82	.89	.91	.91	.92	.92	.92	.92	.92	.92
Sept. 8	.22	.31	.33	.33	.34	.34	.34	.34	.34	.34	.34	.36
Sept. 9	.28	.37	.48	.57	.63	.63	.64	.65	.65	.65	.65	.65
Sept. 23	.23	.39	.53	.57	.62	.68	.69	.70	.70	.70	.70	.70
Columbia Airport												
Mar. 15	.26	.27	.28	.29	.30	.31	.31	.34	.35	.36	.36	.36
Mar. 24	.30	.45	.48	.51	.64	.71	.75	.80	.91	.92	1.01	1.06
May 24	.17	.30	.40	.50	.66	.66	.67	.69	.69	.71	.73	.75
Aug. 4	.30	.50	.60	.65	.68	.75	.93	.95	.95	.95	.95	.95
Aug. 15	.25	.50	.65	.71	.93	.94	.94	.94	.94	.94	.94	.94
Aug. 19	.14	.28	.36	.46	.56	.62	.63	.64	.64	.64	.64	.65
Sept. 6	.56	.97	1.35	1.53	1.83	2.18	2.30	2.32	2.33	2.33	2.33	2.33
Sept. 9	.46	.49	.50	.51	.52	.52	.52	.52	.52	.52	.52	.66
Nov. 19	.35	.48	.55	.57	.68	.83	.95	1.00	1.08	1.11	1.18	1.21
Florence Airport												
Mar. 14	.35	.53	.75	.87	.90	.92	.94	.94	.94	.94	.94	.94
Mar. 23	.20	.34	.54	.59	.76	.87	1.09	1.17	1.22	1.29	1.35	1.57
May 18	.33	.48	.50	.51	.52	.53	.54	.55	.55	.55	.55	.55
May 24	.30	.40	.43	.45	.45	.50	.52	.60	.60	.61	.61	.62
June 6	.38	.43	.47	.50	.50	.50	.50	.50	.50	.50	.50	.50
June 15	.28	.45	.53	.57	.65	.67	.67	.67	.67	.72	.80	.80
June 19	.26	.30	.32	.50	.58	.62	.62	.64	.74	.76	.81	.82
June 28	.17	.25	.38	.42	.48	.52	.54	.55	.60	.61	.61	.61
July 15	.50	.90	1.10	1.22	1.25	1.25	1.25	1.25	1.25	1.26	1.27	1.28
Aug. 1	.20	.35	.40	.57	.70	1.15	1.18	1.20	1.20	1.20	1.20	1.20
Aug. 5	.15	.23	.37	.43	.49	.52	.56	.61	.65	.65	.68	.68
Aug. 12	.60	.88	.95	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
Aug. 14	.25	.38	.48	.60	.69	.71	.71	.71	.71	.71	.71	.71
Aug. 15	.40	.43	.46	.50	.59	.59	.60	.60	.60	.60	.60	.60
Sept. 4	.40	.53	.68	.88	1.21	1.24	1.83	1.93	2.08	2.58	3.00	3.26
Sept. 6	.28	.32	.35	.35	.35	.35	.36	.36	.36	.36	.36	.36
Greenville AP												
Jan. 31	.19	.30	.41	.48	.56	.56	.56	.56	.56	.56	.56	.57
May 19	.25	.32	.42	.47	.55	.58	.63	.65	.66	.68	.73	.77
June 17	.29	.39	.48	.53	.55	.55	.55	.55	.55	.55	.76	.76
Aug. 4	.27	.47	.58	.70	.85	.89	1.08	1.08	1.08	1.08	1.08	1.08
Aug. 18	.22	.38	.48	.61	.74	.87	.92	.95	.95	.96	1.00	1.12
Sept. 8	.17	.33	.41	.52	.77	.80	.82	.84	.84	.85	.85	.85
Sept. 20	.25	.47	.64	.67	.67	.67	.67	.67	.67	.67	.67	.67
Nov. 19	.20	.32	.39	.42	.57	.80	.92	1.01	1.06	1.14	1.17	1.26
Spartanburg AP												
May 15	(.14)	(.27)	(.41)	(.57)	(.70)	.75	.75	.75	.75	.75	.75	.75
May 19	.20	.37	.55	.74	.86	.89	.89	.89	.99	1.16	1.20	1.20

( ) Estimated data

EXCESSIVE SHORT DURATION RAINFALL

YEAR 1957

Station and date	Maximum precipitation in inches (5 to 180 minutes)											
	5	10	15	20	30	45	60	80	100	120	150	180
SOUTH CAROLINA (Cont'd.)												
Spartanburg AP (Cont'd.)												
May 19	0.21	0.35	0.48	0.50	0.50	0.50	0.50	0.64	0.64	0.64	0.64	0.64
June 25	.25	.50	.65	.73	.76	.78	.80	.80	.80	.80	.80	.80
July 24	----	----	----	----	----	----	.95	1.04	1.10	1.11	1.11	1.11
Aug 25	.18	.35	.40	.40	.40	.40	.40	.40	.40	.40	.40	.40
Sept. 9	.25	.48	.65	.83	.97	1.05	1.14	1.21	1.27	1.38	1.43	1.45
Sept. 20	.38	.61	.83	.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Sept. 22	.13	.23	.29	.37	.52	.56	.58	.58	.58	.58	.58	.58
Nov. 17	.31	.56	.66	.75	.83	.93	.99	1.08	1.13	1.16	1.18	1.18
Nov 19	.31	.42	.55	.71	.99	1.47	1.75	1.91	2.02	2.15	2.26	2.36
SOUTH DAKOTA												
Huron Airport												
Apr. 18	.43	.52	.66	.69	.71	.71	.71	.72	.73	.74	.74	.74
June 11	.25	.45	.55	.58	.60	.70	.72	.77	.79	.82	.84	.87
Oct. 15	.27	.52	.62	.64	.72	.81	.94	1.01	1.19	1.23	1.24	1.27
Rapid City Airport												
May 20	.16	.29	.41	.51	.57	.59	.61	.69	.74	.79	.81	.84
June 21	.15	.28	.38	.45	.50	.52	.52	.52	.52	.52	.52	.55
July 14	.42	.65	.82	1.12	1.29	1.33	1.35	1.36	1.37	1.38	1.38	1.45
Sioux Falls AP												
Apr. 19	.26	.33	.34	.34	.37	.38	.49	.52	.69	.80	.82	.97
June 16	.49	.90	1.19	1.46	1.56	1.68	1.73	1.76	1.79	1.82	2.53	2.88
July 3	.29	.57	.73	.87	1.04	1.18	1.21	1.21	1.21	1.22	1.30	1.30
July 27	.14	.22	.36	.42	.56	.62	.66	.68	.68	.68	.68	.68
Aug. 13	.18	.31	.32	.36	.40	.42	.45	.52	.53	.53	.54	.60
Aug. 22	.22	.32	.40	.50	.69	.92	1.16	1.22	1.29	1.35	1.39	1.42
TENNESSEE												
Bristol Airport												
May 17	.28	.32	.43	.44	.45	.45	.45	.45	.45	.45	.45	.45
June 16	.35	.50	.60	.65	.68	.70	.70	.75	.75	.75	.79	.80
June 19	.30	.45	.45	.46	.47	.48	.48	.49	.50	.50	.60	.62
June 23	.45	.90	1.05	1.10	1.22	1.27	1.30	1.35	1.45	1.47	1.48	1.48
June 24	.27	.42	.45	.45	.52	.53	.60	.73	.83	.91	1.05	1.06
Aug. 11	Excessive occurred - clock failure.											
Sept. 10	.22	.40	.51	.55	.65	.75	.90	1.10	1.20	1.25	1.30	1.37
Sept. 20	.40	.60	.80	1.07	1.35	1.42	1.43	1.44	1.45	1.45	1.45	1.45
Chattanoogo AP												
Feb. 25	.18	.30	.42	.51	.51	.61	.68	.78	.90	.96	1.06	1.17
May 22	.23	.33	.38	.39	.41	.42	.42	.42	.43	.44	.44	.44
Aug 14	.25	.42	.47	.51	.55	.56	.57	.57	.57	.57	.57	.64
Aug. 18	.20	.35	.43	.47	.63	.78	.82	.88	1.00	1.00	1.00	1.00
Sept. 13	.28	.56	.68	.80	.90	.92	.97	1.02	1.45	1.60	1.67	1.80
Sept. 14	.51	.70	.74	.77	.84	.84	.98	1.31	1.40	1.46	1.49	1.49
Sept. 14	.25	.33	.48	.53	.68	.94	1.41	1.75	2.07	2.13	2.43	2.74
Nov. 14	.26	.46	.54	.57	.62	.74	.82	.90	.97	1.01	1.05	1.12
Nov. 15	.23	.30	.35	.42	.49	.55	.61	.72	.74	.81	.94	1.12
Nov. 16	.23	.33	.38	.52	.55	.57	.58	.59	.66	.68	.71	.71
Nov. 18	.23	.29	.39	.41	.45	.48	.58	.65	.69	.81	.84	.88
Knoxville Airport												
Jan. 28	.20	.35	.37	.46	.52	.57	.67	.77	.78	.79	.80	.85
Apr. 8	.30	.40	.44	.45	.55	.70	.82	1.01	1.20	1.33	1.50	1.65
May 24	.35	.50	.78	1.10	1.14	1.15	1.19	1.20	1.20	1.20	1.20	1.20
June 9	.25	.40	.60	.75	1.03	1.40	1.53	1.58	1.65	1.75	1.83	1.88
June 24	.25	.40	.60	.75	.85	.94	1.05	1.08	1.10	1.18	1.22	1.24
Aug. 4	.18	.33	.55	.57	.65	.66	.66	.67	.67	.68	.68	.68
Aug. 17	.30	.55	.77	.95	1.07	1.16	1.19	1.20	1.20	1.20	1.20	1.20
Sept. 13	.30	.42	.44	.44	.49	.50	.50	.68	.68	.68	.68	.68
Sept. 13	.20	.30	.35	.40	.49	.49	.50	.50	.50	.50	.50	.55
Memphis Airport												
Jan. 22	.21	.24	.27	.40	.55	.67	.74	.80	.94	1.14	1.31	1.42
Jan. 28	.33	.46	.49	.49	.49	.76	.78	.81	.82	.89	.90	.90
Mar. 11	.39	.47	.56	.61	.67	.88	.95	1.07	1.09	1.10	1.10	1.10
Apr 3	.46	.78	.91	.95	1.03	1.13	1.23	1.29	1.37	1.50	1.67	1.98
Apr 8	.21	.36	.40	.41	.43	.43	.43	.43	.43	.43	.43	.43
Apr 18	.49	.69	.81	.86	.88	.91	.94	.98	1.03	1.08	1.10	1.10
Apr 21	.38	.51	.52	.53	.53	.59	.60	.60	.60	.60	.60	.60
Apr 21	.33	.47	.48	.48	.48	.48	.48	.48	.48	.48	.48	.48
May 14	.41	.67	.91	.94	.97	1.55	1.78	1.84	2.18	2.21	2.22	2.24
May 19	.25	.37	.44	.48	.51	.53	.54	.54	.54	.56	.56	.56
May 22	.33	.49	.59	.64	.73	.81	.83	.90	.91	1.01	1.09	1.10
May 23	.44	.69	.83	.95	1.03	1.07	1.09	1.09	1.10	1.10	1.11	1.11
June 2	.23	.38	.47	.50	.56	.57	.57	.57	.57	.58	.58	.61
June 30	.46	.78	.99	1.14	1.20	1.38	1.42	1.43	1.44	1.45	1.45	1.45
July 1	.22	.35	.44	.49	.52	.54	.54	.55	.55	.55	.55	.55
July 9	.27	.35	.37	.37	.37	.37	.37	.38	.38	.38	.38	.38
July 18	.37	.66	.81	.85	.87	.87	.87	.87	.87	.87	.87	.87
July 21	.35	.46	.47	.48	.48	.48	.48	.48	.48	.48	.48	.48
July 29	.22	.38	.50	.55	.64	.66	.69	.72	.77	.80	.82	.86
Aug. 2	.17	.30	.46	.57	.64	.65	.66	.67	.67	.67	.67	.67
Aug. 3	.21	.34	.48	.57	.60	.62	.62	.63	.63	.63	.63	.63
Aug. 14	.20	.32	.46	.51	.55	.64	.68	.81	1.01	1.06	1.07	1.16
Sept. 12	.28	.39	.53	.64	.79	.81	.81	.81	.81	.81	.81	.81
Sept 21	.26	.37	.37	.37	.37	.40	.51	.65	.67	.94	1.06	1.12
Sept. 21-22	.32	.51	.61	.68	.79	.88	1.04	1.26	1.49	1.64	2.11	2.39
Oct. 16	.25	.40	.46	.51	.57	.64	.68	.75	.79	.85	.87	.88
Oct. 23	.24	.48	.55	.59	.66	.75	.83	.86	.90	.92	.93	.95
Nov. 7	.25	.39	.41	.45	.56	.70	.88	.98	1.09	1.18	1.31	1.45
Nov. 18	.45	.56	.59	.61	.67	.75	.97	1.10	1.17	1.21	1.56	1.71
Dec. 19	.19	.30	.37	.42	.45	.57	.61	.64	.65	.67	.68	.68
Nashville Airport												
Jan. 29	.23	.32	.52	.56	.68	1.02	1.34	1.37	1.50	1.58	1.58	1.58
May 13	.25	.45	.65	.79	.85	.90	.90	.90	.90	.90	.90	.90
May 17	.38	.63	.81	.86	.92	.93	.93	.93	.94	.97	.97	.97
May 19	.33	.40	.42	.50	.53	1.00	1.03	1.07	1.09	1.09	1.09	1.09
May 22	.35	.65	.85	.88	.89	.91	.93	1.03	1.11	1.20	1.38	1.53
June 2	.45	.70	1.25	1.40	2.00	2.06	2.08	2.08	2.10	2.12	2.14	2.14
June 24	.25	.50	.51	.58	.62	.74	1.00	1.03	1.08	1.17	1.19	1.20
July 23	.32	.48	.50	.51	.51	.65	.75	.76	.76	.77	.83	.85
Aug. 13	.20	.30	.33	.48	.56	.60	.62	.62	.62	.62	.62	.62
Aug. 17	.15	.20	.30	.40	.55	.71	.79	1.02	1.02	1.06	1.10	1.20
Dec. 19-20	.15	.28	.44	.58	.70	.83	.92	.99	1.05	1.12	1.13	1.14
TEXAS												
Abilene Airport												
Apr. 22	.15	.26	.38	.43	.52	.66	.69	.71	.73	.80	.86	.90
TEXAS (Cont'd.)												
Abilene AP (Cont'd.)												
Apr. 25	0.35	0.54	0.70	0.75	0.90	1.50	1.71	1.78	1.80	1.80	1.80	1.92
Apr. 26	.30	.39	.46	.63	.75	.85	1.02	1.13	1.20	1.25	1.30	1.40
May 9	.28	.45	.55	.62	.80	.89	1.31	1.68	1.82	1.85	1.87	1.94
May 10	.30	.40	.47	.50	.62	.76	.82	.85	.85	.85	.85	.85
May 11	.30	.51	.70	.82	.87	1.10	1.22	1.51	1.56	1.67	1.71	1.78
May 13	.20	.33	.37	.39	.43	.47	.52	.52	.52	.53	.55	.55
May 17	.27	.43	.65	.76	.84	1.02	1.07	1.15	1.21	1.26	1.27	1.27
May 23	.26	.51	.63	.73	.85	1.06	1.12	1.14	1.17	1.20	1.22	1.41
May 24	.36	.60	.74	.85	.89	.95	1.00	1.00	1.00	1.00	1.00	1.00
May 31	.24	.34	.44	.48	.50	.52	.54	.62	.68	.74	.79	.84
Sept. 3	.18	.28	.41	.47	.50	.50	.50	.50	.50	.50	.51	.51
Sept. 21	.27	.39	.62	.68	.72	.74	.74	.74	.75	.76	.78	.80
Oct. 8	.26	.44	.65	.76	.88	.89	.90	.90	.90	.90	.90	.90
Oct. 13	.38	.49	.54	.60	.80	1.00	1.25	1.34	1.41	1.55	----	2.18
Amarillo Airport												
May 30	.46	.75	.85	.90	1.00	1.06	1.10	1.15	1.21	1.26	1.30	1.31
Aug. 10	.20	.25	.37	.39	.40	.40	.40	.40	.40	.40	.40	.40
Aug. 14	.33	.49	.73	.94	1.35	1.83	2.01	2.07	2.09	2.09	2.09	2.09
Aug. 17	.29	.50	.71	.82	1.01	1.09	1.12	1.15	1.17	1.20	1.26	1.32
Sept. 26	.22	.33	.38	.39	.40	.40	.40	.40	.40	.40	.40	.40
Austin Airport												
Mar. 11	.57	.82	.94	.95	.95	.95	.95	.95	.95	.95	.95	.95
Mar. 20	.49	.95	1.06	1.17	1.21	1.24	1.24	1.28	1.30	1.37	1.37	1.41
Apr. 22	.34	.53	.68	.80	1.02	1.14	1.21	1.23	1.28	1.30	1.34	1.38
Apr. 23	.18	.31	.43	.54	.61	.72	.83	.89	.91	.98	1.00	1.04
Apr. 24	.18	.28	.37	.48	.65	.81	.88	.92	.99	1.05	1.13	1.13
Apr. 26	.22	.41	.51	.71	.89	1.58	1.67	1.82	1.84	1.85	1.88	1.92
Apr. 28	.19	.36	.49	.61	.78	1.00	1.20	1.29	1.30	1.30	1.32	1.32
May 26	.25	.36	.55	.68	.94	1.33	1.60	1.70	1.71	1.71	1.71	1.71
May 27	.15	.17	.36	.42	.58	.68	.72	.75	.77	.80	.85	.88
June 12	.44	.78	1.01	1.10	1.42	1.63	2.14	2.19	2.39	2.40	2.69	2.92
July 9	.29	.39	.39	.39	.39	.39	.39	.39	.39	.42	.43	.63
Sept. 22	.33	.52	.65	.92	1.15	1.27	1.39	1.55	1.63	1.70	1.80	1.90
Oct. 14	.28	.49	.64	.67	.70	.76	.81	.89	1.18	1.34	1.50	1.53
Oct. 15	.18	.25	.39	.49	.60	1.00	1.26	1.41	1.47	1.48	1.51	1.53
Brownsville AP												
Feb. 16	.49	.78	1.18	1.43	1.93	2.32	2.90	3.37	3.65	3.85	3.92	3.94
Mar. 12	.29	.47	.61	.71	.81	.86	.86	.90	.91	.91	.92	.92
May 29	.17	.27	.46	.48	.52	.54	.56	.59	.62	.63	.63	.77
June 6	.28	.47	.57	.66	.74	.76	.84	.88	.89	.89	.89	.89
June 18	.38	.67	.88	1.01	1.13	1.38	1.78	2.27	2.33	2.37	2.73	2.77
Aug. 7	.32	.63	.92	1.11	1.47	1.86	2.03	2.11	2.11	2.11	2.11	2.11
Sept. 4	.21	.34	.47	.57	.63	.71	.72	.74	.74	.74	.75	.75
Oct. 17	.26	.48	.64	.80	.99	1.23	1.58	1.74	1.84	1.91	1.99	1.99
Nov. 21	.32	.55	.66	.84	1.10	1.67	2.03	2.50	2.89	3.10	3.41	3.47
Corpus Christi AP												
Mar. 3	.47	.83	1.06	1.09	1.09	1.10	1.10	1.12	1.15	1.16	1.16	1.16
Apr. 15	.15	.27	.40	.48	.51	.52	.59	.60	.60	.60	.60	.60
Apr. 27	.21	.30	.41	.47	.58	.66	.69	.71	.71	.71	.71	.71
Apr. 28	.18	.27	.31	.34	.48	.68	.83	.87	.88	.88	.88	.88
May 13	.25	.27	.29	.30	.30	.30	.31	.31	.31	.31	.31	.31
May 27	.25	.39	.48	.53	.59	.76	.99	1.12	1.25	1.30	1.36	1.39
May 29	.25	.42	.51	.58	.63	.64	.64	.64	.64	.64	1.13	1.16
June 1	.44	.77	.96	1.12	1.25	1.36	1.41	1.42	1.45	1.49	1.54	1.58
June 5	.27	.48	.68	.79	.90	.96	.97	.97	.97	.97	.97	.97
Aug. 19	.21	.34	.38	.41	.52	.54	.54	.54	.54	.54	.54	.54
Aug. 31	.26	.44	.54	.58	.79	.98	1.11	1.25	1.34	1.34	1.34	1.34
Sept. 4	.22	.34	.39	.48	.67	.68	.68	.68	.68	.68	.68	.68
Dallas Airport												
Mar. 17	.30	.43	.49	.52	.58	.59	.65	.67	.68	.70	.70	.70
Mar. 31	.37	.66	.87	.97	1.15	1.61	1.97	2.10	2.27	2.32	2.37	2.40
Apr. 2	.36	.39	.40	.40	.40	.40	.40	.40	.40	.40	.40	.40
Apr. 20-21	.19	.33	.50	.66	.81	.87	.90	.91	.92	.93	.98	1.08
Apr. 24	.28	.37	.41	.47	.52	.57	.62	.78	.91	.96	1.03	1.09
Apr. 26	.27	.51	.63	.76	1.20	1.77	1.98	2.26	2.45	2.69	2.99	3.20
Apr. 26	.23	.36	.43	.48	.56	.68	.73	.75	.78	.81	1.03	1.07
May 1	.29	.36	.50	.59	.73	.93	1.16	1.41	1.50	1.54	1.66	1.80
May 12	.23	.42	.50	.57	.75	.84	.91	1.15	1.23	1.26	1.34	1.40
May 12	.27	.41	.62	.64	.66	.67	.68	.68	.68	.68	.68	.68
May 13	.17	.28	.38	.47	.60	.63	.64	.67	.70	.78	.94	1.00
May 23	.20	.23	.28	.36	.55	.69	.87	1.15	1.33	1.55	1.68	1.70
May 23	.45	.72	1.02	1.33	1.44	1.46	1.50	1.56	1.61	1.65	1.66	1.66
May 25	.53	.79	.99	1.08	1.17	1.22	1.23	1.26	1.26	1.26	1.26	1.26
June 5	.17	.23	.36	.37	.52	.63	.65	.65	.65	.65	.65	.65
June 18	.20	.33	.42	.46	.66	.78	.83	.88	.90	.90	.91	.95
Oct. 15	.25	.34	.41	.44	.49	.57	.62	.68	.69	.70	.70	.70
Del Rio *												
Mar. 20	.29	.41	.42	.42	.46	.48	.51	.60	.60	.60	.60	.60
Mar. 31	.28	.44	.57	.71	.77	.82	.82	.82	.82	.82	.82	.82
Apr. 12	.36	.58	.72	.79	.87	1.00	1.01	1.02	1.03	1.03	1.03	1.03
Apr. 18	.33	.54	.66	.74	.91	1.29	1.44	1.59	1.66	1.68	1.69	1.69
Apr. 21	.20	.36	.42	.46	.55	.62	.66	.67	.67	.67	.67	.67
Apr. 28	.13	.26	.32	.38	.53	.74	.89	1.03	1.15	1.23	1.48	1.58
May 10	.59	1.08	1.40	1.93	2.43	2.82	3.12	3.35	3.41	3.51	3.52	3.62
May 13	.22	.36	.52	.63	.67	.70	.70	.70	.70	.70	.70	.70
May 17	.25	.29	.30	.32	.39	.41	.47	.62	.70	.73	.74	.75
May 31	.50	.81	1.06	1.28	1.55	1.83	2.28	2.43	2.45	2.53	2.53	2.71
June 12	.19	.34	.40	.42	.45	.46	.46	.46	.46	.46	.46	.46
El Paso Airport												
July 22	.27	.50	.59	.72	1.06	1.06	1.06	1.10	1.10	1.10	1.10	1.10
July 23	.29	.49	.60	.65	.78	.78	.78	.78	.78	.78	.78	.78
Aug. 4	.43	.70	.94	.95	.96	.96	.96	.96	.96	.96	.97	.97
Aug. 31	.15	.30	.42	.50	.65	.80	1.00	1.30	1.52	1.60	1.62	1.70
Fort Worth AP												
Mar. 31	.34	.37	.38	.40	.42	.49	.52	.56	.68	.75	1.02	1.15
Apr. 19	.16	.31	.40	.43	.47	.57	.74	.84	.95	1.07	1.10	1.29
Apr. 20	.23	.40	.55	.61	.65	.67	.69	.73	.73	.74	.75	.79
Apr. 26	.21	.32	.48	.59	.72	1.02	1.22	1.43	1.67	1.88	2.06	2.17
Apr. 28	.20	.39	.51	.64	.79	.82	.85	.85	.87	.87	.87	.87
May 12	.29	.57	.66	.74	.78	.81	.86	.91	.96	.98	1.01	1.07
May 13	.16	.25	.34	.43	.54	.58	.60	.65	.70	.77	.83	.83
May 22	.45	.61	.65	.69	.71	.72	.72	.72	.72	.72	.72	.72
May 23	.18	.29	.37	.44	.65	.96	1.25	1.53	1.68	1.69	1.78	1.88

* Station moved from Airport to Post Office Building, automatic record discontinued, effective Sept. 1, 1957.

EXCESSIVE SHORT DURATION RAINFALL

Station and date	Maximum precipitation in inches (5 to 180 minutes) 5	10	15	20	30	45	60	80	100	120	150	180
TEXAS (Cont'd.)												
Fort Worth AP (Cont'd.)												
May 23	0.45	0.74	0.92	0.97	0.99	1.03	1.07	1.13	1.18	1.18	1.18	1.18
May 26	.28	.45	.65	.85	1.10	1.28	1.44	1.61	1.75	1.76	1.87	1.89
May 31	.28	.55	.56	.59	.66	.71	.71	.71	.71	.71	.71	.71
June 4	.39	.73	1.00	1.20	1.44	1.69	1.86	2.09	2.19	2.20	2.20	2.20
Sept. 21	.25	.40	.45	.46	.50	.56	.74	.85	1.07	1.35	1.47	1.54
Oct. 13	.12	.24	.34	.43	.56	.63	.65	.68	.71	.74	.76	.81
Nov. 17	.22	.32	.44	.48	.53	.54	.54	.54	.54	.54	.54	.54
Galveston												
Mar. 17	.20	.30	.39	.43	.55	.61	.66	.72	.91	1.01	1.08	1.12
Mar. 17	.26	.40	.57	.71	.77	.79	.82	.83	.84	1.00	1.17	1.19
Mar 17	.19	.30	.41	.48	.55	.60	.63	.64	.64	.64	.64	.64
Mar. 21	.22	.27	.44	.49	.54	.55	.57	.75	.85	1.12	1.25	1.27
Apr. 28	.21	.39	.44	.48	.52	.60	.65	.68	.72	.76	.83	.91
June 21	.25	.36	.53	.58	.60	.81	.90	.94	.94	.94	.94	.94
Aug. 18	.11	.21	.30	.38	.53	.59	.62	.63	.63	.63	.63	.63
Aug. 30	.29	.48	.56	.61	.67	.67	.67	.71	.75	.76	.76	.77
Sept. 3	.26	.47	.67	.81	.95	1.03	1.08	1.11	1.12	1.13	1.14	1.15
Houston												
Mar. 28	.22	.34	.40	.45	.50	.54	.58	.62	.64	.68	.79	.83
Mar. 31	.13	.23	.30	.40	.55	.64	.68	.71	.74	.75	.75	.76
Apr. 27	.41	.56	.72	.82	.96	1.16	1.27	1.42	1.52	1.62	2.14	2.44
Apr 28	.35	.60	.61	.77	1.03	1.03	1.08	1.20	1.26	1.44	1.50	1.65
Apr. 28	.21	.38	.49	.58	.75	.93	1.04	1.21	1.24	1.32	1.45	1.51
June 5	.20	.29	.41	.47	.62	.65	.66	.69	.70	.70	.70	.70
June 21	.34	.48	.52	.52	.52	.52	.52	.55	.55	.55	.57	.58
July 20	.28	.45	.62	.86	1.21	1.53	1.58	1.58	1.58	1.58	1.58	1.58
July 21	.28	.47	.59	.67	.75	.75	.75	.75	.75	.75	.75	.75
July 25	.50	.60	.73	.77	1.01	1.08	1.08	1.08	1.08	1.08	1.08	1.08
July 26	.27	.49	.61	.77	1.02	1.15	1.15	1.15	1.15	1.15	1.15	1.15
Sept. 1	.14	.25	.35	.47	.65	.77	.78	.78	.78	.78	.78	.78
Sept. 3	.38	.70	.96	1.17	1.57	1.94	2.32	2.78	3.01	3.13	3.14	3.16
Sept. 22	.27	.44	.57	.61	.93	1.00	1.01	1.03	1.13	1.14	1.14	1.23
Oct. 14	(.50)	(.90)	(1.25)	(1.45)	1.69	2.30	2.51	2.51	2.67	2.78	2.88	2.91
Oct. 15	.34	.58	.75	.80	.96	1.37	1.48	2.06	2.52	2.61	2.65	2.65
Nov. 7	.37	.54	.64	.65	.66	.71	.73	.79	.82	.85	.91	.92
Nov 13	.34	.52	.55	.59	.68	.82	.93	1.10	1.36	1.39	1.41	1.43
Nov. 18	.19	.29	.36	.39	.51	.72	.86	.93	1.02	1.03	1.07	1.07
Laredo Airport												
Feb. 16	.29	.44	.48	.55	.81	.94	1.00	1.00	1.00	1.00	1.00	1.00
Apr. 27	.35	.43	.43	.43	.43	.43	.43	.43	.43	.43	.43	.43
Apr. 28	.40	.60	.75	.90	1.02	1.09	1.22	1.25	1.25	1.34	1.38	1.38
May 27	.52	.97	1.11	1.40	1.57	1.66	1.77	2.46	2.53	2.54	2.54	2.54
May 27	.24	.30	.36	.44	.63	.74	.77	.77	.77	.77	.77	.79
May 27	.32	.40	.43	.45	.48	.51	.53	.55	.57	.57	.57	.58
Aug. 28	.22	.37	.42	.46	.48	.48	.48	.48	.48	.48	.48	.48
Sept. 22	.35	.55	.70	.75	1.00	1.22	1.33	1.58	1.67	1.72	1.76	1.83
Oct. 9	.20	.31	.37	.39	.42	.55	.75	.79	.80	.80	.80	.81
Midland Airport												
May 11	.20	.29	.47	.56	.64	.95	1.00	1.00	1.00	1.00	1.00	1.00
May 17	.19	.34	.39	.47	.56	.69	.80	.83	.83	.83	.83	.83
May 30	.29	.55	.73	.85	1.00	1.10	1.12	1.14	1.17	1.20	1.24	1.25
May 31	.39	.68	.74	.80	.83	.84	.84	.84	.84	.84	.84	.84
June 12	.46	.64	.79	.82	.86	.87	.87	.87	.87	.87	.87	.87
June 23	.54	.63	.65	.74	.85	.86	.86	.86	.86	.86	.86	.86
Nov 3	.26	.31	.40	.46	.48	.52	.55	.58	.60	.64	.65	.66
Port Arthur Airport												
Mar. 17	.20	.35	.43	.45	.53	.57	.59	.59	.63	.71	.79	.88
Mar. 17	.25	.43	.59	.77	1.11	1.37	1.52	1.73	1.92	1.98	2.06	2.38
Mar. 21	.39	.66	.80	.83	.87	.92	1.00	1.05	1.07	1.12	1.27	1.33
Mar. 28	.27	.34	.35	.37	.39	.43	.46	.48	.49	.49	.49	.50
Mar. 31	.50	.63	.71	.75	.81	.89	.96	1.02	1.05	1.06	1.06	1.06
Apr. 11	.33	.60	.92	1.15	1.45	1.71	1.85	1.93	1.96	1.97	1.99	1.99
June 2	.19	.32	.42	.53	.67	1.03	1.18	1.37	1.62	1.66	1.66	1.67
June 27	.36	.64	.79	.90	1.01	1.11	1.22	1.34	1.51	1.81	2.35	2.52
June 27	.22	.35	.51	.59	.78	.93	1.01	1.18	1.41	1.51	1.68	1.86
June 27	.31	.40	.63	.72	.82	1.00	1.14	1.24	1.25	1.26	1.28	1.28
July 16	.23	.42	.60	.71	.77	.78	.78	.78	.78	.78	.78	.78
July 19	.20	.35	.49	.58	.70	.73	.73	.74	.74	.74	.74	.74
July 20	.17	.29	.37	.47	.55	.86	.99	1.17	1.21	1.21	1.21	1.21
July 22	.36	.63	.92	1.12	1.27	1.36	1.50	1.67	1.75	1.79	1.85	1.92
Sept. 11	.27	.44	.49	.56	.66	.75	1.17	1.22	1.23	1.24	1.28	1.29
Sept. 12	.31	.51	.70	.86	1.17	1.48	1.50	1.50	1.51	1.52	1.60	1.67
Sept. 22	.60	1.07	1.56	1.94	2.46	2.66	2.72	2.78	2.79	2.80	2.86	3.01
Sept. 26	.26	.38	.51	.56	.59	.88	1.14	1.40	1.56	1.62	1.76	1.84
Oct. 9	.21	.34	.40	.43	.43	.43	.44	.46	.47	.47	.48	.48
Oct. 14	.31	.53	.75	.89	1.24	1.75	2.14	2.42	2.48	2.58	2.65	2.69
Oct. 15	.27	.35	.46	.66	.80	1.04	1.17	1.28	1.69	1.92	2.16	2.29
Nov. 13	.27	.43	.50	.59	.70	.75	.75	.75	.83	.91	.91	.91
Dec. 27	.19	.28	.32	.41	.61	.80	.95	.99	1.09	1.17	1.22	1.23
San Angelo												
Apr. 22-23	.14	.26	.34	.42	.50	.70	1.00	1.28	1.38	1.44	1.46	1.48
Apr. 26	.42	.54	.92	.98	1.08	1.15	1.19	1.21	1.23	1.32	1.98	2.07
May 8-9	.20	.32	.42	.48	.56	.74	.84	.88	1.00	1.03	1.04	1.08
May 11	.22	.40	.48	.60	.69	.78	.84	.88	.91	.92	.93	.94
May 12	.26	.48	.60	.63	.65	.65	.68	.70	.71	.71	.75	.78
May 13	.22	.36	.54	.62	.72	.74	.74	.74	.74	.74	.74	.74
May 23	.25	.30	.34	.36	.38	.44	.45	.46	.46	.46	.46	.46
San Antonio Airport												
Mar. 17	.35	.59	.69	.78	.89	.92	.92	.92	.92	.92	.92	.92
Mar. 31	.22	.40	.53	.64	.70	.72	.75	.75	.76	.76	.76	.76
Apr. 19	.66	1.05	1.29	1.33	1.36	1.38	1.40	1.44	1.47	1.50	1.55	1.60
Apr. 24	.40	.69	.88	1.02	1.12	1.70	1.83	1.89	1.89	1.89	1.89	1.89
Apr. 26	.26	.38	.46	.70	.89	1.05	1.08	1.08	1.08	1.08	1.08	1.08
Apr. 28	.18	.28	.33	.39	.65	.84	1.01	1.12	1.13	1.17	1.22	1.26
May 13	.16	.32	.46	.56	.72	.74	.76	.76	.76	.76	.76	.76
May 18	.22	.42	.60	.74	.84	.97	1.02	1.15	1.18	1.21	1.27	1.31
May 27	.47	.68	.77	.81	1.10	1.36	1.42	1.82	2.13	2.40	3.13	3.27
June 1	.51	.90	1.19	1.40	1.67	1.78	1.80	1.89	1.92	1.94	1.97	2.00
July 9	.20	.37	.47	.50	.54	.55	.65	.65	.65	.65	.65	.65
Sept. 3	.19	.32	.50	.62	.87	1.07	1.09	1.09	1.09	1.10	1.10	1.10
Sept. 12	.16	.29	.37	.42	.59	.82	.85	.87	.88	.88	.88	.88
Sept. 22	.33	.66	.79	.97	1.42	1.66	1.87	2.12	2.32	2.65	2.91	3.01
Sept. 25	.13	.26	.33	.42	.53	.65	.75	.86	.94	1.03	1.22	1.39
Oct. 21-22	.11	.18	.29	.34	.51	.68	.80	1.01	1.17	1.37	1.53	1.64
Victoria												
Mar. 20	.25	.45	.60	.75	1.00	1.25	1.85	2.10	2.20	2.32	2.32	2.44

( ) Estimated data

Station and date	Maximum precipitation in inches (5 to 180 minutes) 5	10	15	20	30	45	60	80	100	120	150	180
TEXAS (Cont'd.)												
Victoria (Cont'd.)												
Mar 31	0.50	0.83	1.45	1.55	1.68	1.82	1.85	1.87	1.87	1.87	1.87	1.87
Apr. 27	.24	.41	.53	.58	.68	.75	.90	.95	1.02	1.10	1.17	1.77
Apr 28	.40	.80	.90	1.25	1.55	1.95	2.45	2.50	2.51	2.51	2.51	[illegible]
May 18	.32	.57	.77	.97	1.47	1.92	2.37	2.47	2.50	2.56	2.62	2.75
May 27	.20	.33	.45	[illegible]	.73	.82	.85	.94	.96	1.00	1.05	1.12
May 31	.23	.45	.63	.65	.65	.65	.65	.65	.65	.65	.65	.65
June 1	.28	.55	.80	1.05	1.40	1.60	1.65	1.70	1.75	1.80	1.85	1.87
June 5	.40	.43	.44	.52	.55	.55	.57	.58	.59	.59	.59	.60
Sept. 22	.25	.35	.40	.50	.70	.85	1.10	1.33	1.42	1.65	2.00	2.16
Oct. 14	.27	.52	.70	.83	1.08	1.22	1.29	1.30	1.30	1.31	1.33	1.60
Nov 11	.17	.32	.38	.42	.52	.57	.60	.66	.70	.72	.73	.74
Nov 11	.15	.24	.30	.35	.50	.57	.70	.96	1.10	1.23	1.45	1.57
Nov. 22	.20	.35	.45	.55	.60	.67	.67	.75	.90	.93	.95	.96
Waco Airport												
Feb. 1	.25	.50	.65	.73	.79	.83	.85	.87	.90	.91	.93	.93
Mar 11	.32	.39	.45	.49	.53	.55	.58	.62	.69	.77	.85	.86
Mar 20	.40	.54	.60	.65	.74	.80	.87	.93	1.06	1.14	1.29	1.41
Mar 27	.25	.45	.47	.48	.49	.51	.51	.52	.53	.56	.58	.60
Mar 31	.25	.40	.47	.50	.55	.59	.64	.68	.72	.75	.79	.79
Apr 19	.35	.65	.90	1.00	1.25	1.30	1.42	1.55	1.60	1.62	1.65	1.70
Apr 20	.30	.58	.85	1.10	1.25	1.54	2.38	2.66	2.68	2.72	2.76	3.00
Apr 23	.20	.31	.45	.49	.53	.62	.81	1.02	1.14	1.45	1.72	2.07
Apr 24	.35	.65	.90	1.00	1.25	1.30	1.42	1.55	1.60	1.62	1.65	1.70
Apr 26	.21	.35	.42	.56	.69	.81	.93	1.07	1.10	1.14	1.23	1.25
May 3	.28	.50	.65	.77	1.10	1.22	1.25	1.27	1.28	1.29	1.32	[illegible]
May 11	.20	.30	.38	.41	.53	.64	.98	1.04	1.15	1.17	1.36	[illegible]
May 11	.25	.35	.38	.40	.42	.42	.50	.57	.76	.76	.76	.76
May 13	.40	.64	1.04	1.24	1.50	1.56	1.57	1.92	1.96	1.97	1.97	1.97
May 13	.15	.27	.40	.53	.65	.78	.85	.88	.94	1.01	1.06	1.06
Sept. 22	.25	.45	.60	.85	1.05	1.38	1.68	1.95	2.11	2.18	2.31	2.57
Nov. 13	.20	.37	.50	.59	.65	.67	.69	.70	.70	.70	.70	.70
Wichita Falls												
Jan. 22	.27	.39	.39	.39	.39	.39	.39	.39	.42	.42	.42	.42
Apr. 20	.18	.35	.53	.70	.87	1.00	1.10	1.60	1.72	1.76	1.77	1.82
Apr 25	.30	.60	.90	.98	1.06	1.16	1.24	1.25	1.28	1.34	1.47	1.52
May 2	.20	.25	.35	.55	.77	1.00	1.27	1.32	1.36	1.37	1.44	1.48
May 13	.18	.25	.36	.37	.58	.65	.78	.81	.87	.90	.96	.98
May 17	.60	.90	1.25	1.50	1.75	2.50	2.65	2.85	3.03	3.08	3.10	3.20
May 30	----	----	----	----	----	1.23	1.23	1.23	1.23	1.23	1.23	1.23
June 18	.30	.45	.50	.60	.75	.95	1.27	1.30	1.33	1.38	1.46	1.46
Sept. 14	.15	.30	.35	.38	.39	.39	.39	.39	.39	.40	.40	.41
Oct. 7	.18	.26	.36	.42	.54	.61	.64	.68	.75	.81	.85	.90
UTAH												
Milford Airport						None						
Salt Lake City AP												
Aug. 29	.21	.32	.36	.42	.46	.51	.52	.52	.52	.52	.52	.52
VERMONT												
Burlington AP												
Apr. 21	.19	.34	.37	.38	.39	.39	.39	.39	.39	.39	.39	.39
June 6	.15	.28	.39	.44	.49	.53	.61	.69	.75	.75	.78	.78
June 23	.36	.62	.90	.95	.97	.99	1.01	1.01	1.03	1.03	1.03	1.03
June 25	.20	.34	.40	.50	.82	1.05	1.17	1.26	1.33	1.36	1.43	1.56
July 22	.22	.34	.41	.43	.45	.51	.54	.54	.54	.54	.55	.55
VIRGINIA												
Lynchburg Airport												
Apr. 5	.34	.46	.58	.68	.71	.71	.71	.71	.71	.72	.72	.72
Apr. 8	.28	.32	.33	.34	.35	.37	.37	.37	.37	.39	.42	.43
June 2	.22	.32	.38	.42	.48	.67	.79	.81	.82	.82	.83	.83
June 3	.25	.41	.51	.65	.74	.89	.90	.90	.91	.91	.91	.91
June 23	.28	.48	.60	.64	.64	.64	.67	.67	.67	.84	.84	.84
June 28	.17	.33	.37	.41	.44	.44	.44	.44	.44	.45	.49	.49
Sept. 14	.29	.46	.53	.54	.54	.55	.55	.55	.55	.55	.56	.56
Sept. 17	.18	.30	.46	.54	.65	.78	.95	1.10	1.20	1.31	1.40	1.45
Norfolk Airport												
Apr. 8	.23	.30	.36	.36	.36	.40	.46	.75	.75	.75	.79	.88
June 5	.44	.72	.96	1.17	1.32	1.39	1.54	1.69	1.95	1.99	2.04	2.07
June 30	.20	.30	.32	.32	.32	.32	.32	.32	.32	.32	.32	.32
July 23	.28	.38	.40	.44	.56	.56	.56	.56	.56	.56	.56	.56
Aug. 4	.33	.62	.79	.98	1.01	1.03	1.03	1.03	1.04	1.04	1.04	1.04
Aug. 15	.13	.24	.30	.38	.55	.77	.93	.96	.98	.98	1.13	1.22
Sept. 9	.32	.59	.79	.88	.93	.95	1.02	1.07	1.07	1.08	1.21	1.24
Sept. 10	.29	.43	.59	.70	.73	.91	.98	.99	.99	.99	.99	.99
Sept. 17	.15	.25	.35	.39	.49	.59	.75	.94	1.11	1.22	1.37	1.41
Richmond Airport												
Apr. 5	.31	.32	.32	.32	.33	.34	.35	.36	.37	.38	.42	.43
Apr. 8	*	*	*	.53	.55	.55	.56	.57	.57	.57	.57	.57
May 18	.21	.34	.47	.62	.79	.99	1.00	1.02	1.06	1.08	1.09	1.10
May 26	.24	.44	.60	.63	.64	.70	.74	.74	.74	.74	.74	.74
June 7	.21	.32	.37	.42	.53	.64	.67	.85	.92	.93	.95	.96
July 23	.12	.23	.33	.43	.57	.74	.77	.79	.81	.82	.82	.84
Dec. 20	.50	.65	.70	.74	.82	.87	.92	.94	.99	1.01	1.04	1.08
Roanoke Airport												
June 2	.25	.48	.64	.74	.75	.80	.83	.95	1.07	1.10	1.14	1.15
June 24	.30	.35	.37	.37	.37	.37	.37	.37	.37	.45	.45	.45
July 27	.18	.32	.46	.48	.49	.49	.49	.49	.49	.49	.49	.51
WASHINGTON												
Seattle						None						
Spokane Airport						None						
Tatoosh Island						None						
Walla Walla												
May 8	*	*	*	.70	.92	1.00	1.01	1.04	1.04	1.04	1.04	1.04
Yakima												
June 5	.18	.27	.32	.37	.50	.62	.63	.67	.72	.80	.81	.81

* Instrument failure.

EXCESSIVE SHORT DURATION RAINFALL

YEAR 1957

Station and date	Maximum precipitation in inches (5 to 180 minutes)											
	5	10	15	20	30	45	60	80	100	120	150	180
WEST VIRGINIA												
Charleston Airport												
Feb. 9	.25	.29	.30	.31	.32	35	.41	.44	.50	.54	.56	.57
Apr. 22	.22	.42	.60	.62	.62	62	62	.62	.62	.62	.63	.63
May 26	.28	.30	.32	.72	.95	.95	.95	.95	.95	.95	.95	.95
July 9	.30	.58	.79	.80	.89	1.10	1.34	1.35	1.90	1 90	1.90	1.90
July 27	.54	.79	80	80	.80	.80	.80	.80	.80	.80	.80	.80
Sept. 12	.38	.40	.41	.42	.43	44	44	.44	.44	.45	.46	.47
Huntington												
Apr. 5	.28	.36	39	.42	.45	.51	.54	.54	.54	.54	.54	.55
May 18	.32	.47	.58	65	.72	.74	.75	.75	.75	.75	.75	.75
June 18	.35	.45	.70	85	.92	92	.93	.94	.97	.99	.99	.99
Aug. 25	.25	.35	.45	.49	.49	49	49	.49	.49	.49	.49	.49
Sept. 12	.30	.53	.54	.55	.63	.71	.73	.74	.76	.76	.76	.76
Nov. 18	20	.25	.35	.40	.49	.60	.69	.77	.85	.90	.95	1.02
Parkersburg												
May 12	.20	.30	.31	.33	.34	.34	.34	.34	.34	.34	.34	.34
May 19	.32	.46	.48	.51	.62	1.04	1.38	1.62	1.71	1.77	1.78	1.78
June 13	.27	.42	.49	.51	.53	.54	.59	59	59	59	.59	.59
June 22	.35	46	.50	.50	.50	50	.69	.72	1.11	1.15	1.15	1.15
July 23	.17	.27	.31	.36	.51	55	60	.65	.70	.73	.74	.74
July 27	.27	.45	.48	54	72	.79	79	.79	.79	.79	.79	.79
Nov. 18	.25	.37	.40	.42	.45	.49	.55	.60	.63	.68	.74	.82
WISCONSIN												
Green Bay Airport												
Apr. 19	.23	.37	.40	.42	.44	.44	.44	.44	.45	.45	.45	.45
May 14	.14	.23	.37	.43	.65	.71	80	89	99	1.11	1.12	1.12
May 25	20	.32	.45	.61	.80	.82	.84	.86	.86	.88	1.02	1.13
July 29	62	.76	.86	.94	.97	.99	1.00	1.00	1.00	1.00	1.00	1.00
July 11	.15	.30	.40	.42	.43	.45	.47	.49	.49	.49	.49	.49
Sept. 19	.24	.34	.37	.41	44	.46	.50	.52	.53	.60	.67	.67
La Crosse Airport												
June 22	.15	.24	.38	.48	53	.63	.71	.95	.96	1.00	1.04	1.07
July 3	.15	.29	.39	.47	.54	.58	.65	.71	.78	.83	.85	.85
July 16	.12	.24	.33	.42	.50	.54	.60	.70	.72	75	.92	.95
Aug. 14	.18	.35	.41	.51	.64	.76	.96	1.11	1.22	1.34	1.40	1.48
Madison Airport												
May 14	.31	.44	.49	.53	.60	61	.63	.75	.83	.86	.86	.89
June 13	33	.60	.76	.85	.94	1.00	1.01	1.05	1.07	1.08	1.12	1.12
July 29	.32	.63	.86	1.07	1.24	1.44	1.57	1.69	1.72	1.76	1.81	1.85
Aug. 9	.28	.44	.55	.58	.62	.87	90	.98	1.08	1.11	1.13	1.17
Aug. 14	.22	.36	.38	.39	.44	.45	.45	.45	.45	.45	.45	.45
Aug. 29	.18	.28	.36	.42	.46	.58	.80	1.11	1.23	1.24	1.26	1.26
Milwaukee Airport												
June 28	.16	.27	.32	39	.64	.72	.77	.77	.78	.86	.87	88
WYOMING												
Casper Airport												
May 29	.35	.45	.53	.55	.60	.65	.67	.67	.68	.69	.69	.69
June 20	.15	.30	.35	.36	.36	.36	.36	.36	.36	.39	.40	.40
June 29	.30	.30	.35	.35	.35	.35	.35	.35	.35	.35	.35	.35
Cheyenne Airport												
May 11	.26	.32	.33	.33	.33	.33	.33	.33	.33	.40	.45	.45
May 29	38	.44	.48	48	.49	.49	.50	.50	.50	.50	.50	.50
July 8	.15	.30	.37	.41	.51	.55	.57	.59	.62	.64	.64	.64
July 18	.36	.50	.58	.62	.64	.79	.80	.80	.80	.80	.80	.80
Aug. 2	.20	.30	.34	.38	.48	.52	.52	.52	.52	.52	.52	.52
Lander Airport												
Aug. 27	.17	.27	.37	.39	.39	.39	.39	.39	.39	.39	.39	.39
Sheridan Airport												
June 6	.34	.36	.39	.40	.42	.44	.45	.45	.45	.45	.45	.45
Aug. 26	.21	.32	.35	.36	.38	.38	.39	.39	.39	.39	.39	.39
ALASKA												
Anchorage Airport						None						
Annette Airport						None						
Cordova Airport						None						
Fairbanks Airport						None						
Juneau Airport						None						
Yakutat Airport												
Oct. 29	.13	.26	.34	.40	.50	.64	.64	.66	.69	.69	.70	.70
PUERTO RICO												
San Juan												
June 17	.25	.45	.56	.58	.58	.58	.58	.58	.58	.58	.63	.68
June 23	.27	.29	.38	.44	.45	.67	.67	.67	.67	.67	.67	.67
July 26	.30	.60	.61	.62	.77	.77	.98	.99	.99	.99	.99	1.04
July 27	.25	.31	.32	.32	.66	.66	.70	1.26	1.26	1.26	1.26	1.26
Aug. 5	.39	.63	.77	.78	.78	.80	.80	.80	.97	1.48	1.48	1.48
Aug. 11	.30	.39	.40	.40	.40	.40	.40	.40	.40	.40	.40	.40
Aug. 25	.25	.31	.43	51	.59	.64	.65	.65	.65	.65	.65	.65
Sept. 15	.20	.35	.51	.56	.61	.62	.69	.70	.70	.70	.70	.70
Sept. 25	.25	.50	.59	.60	.60	.60	.60	.60	.60	.60	.60	.60
Oct. 20	.22	.38	.54	.62	.72	.72	.72	.72	.72	.72	.72	.72
Oct. 21	.23	.45	.63	.78	1.03	1.07	1.09	1.45	1.50	1.51	1.51	1.51
Oct. 22	.21	.40	.51	.55	.61	.64	.64	.64	.64	.64	.64	.64
Nov 4	.20	.34	.50	.70	.96	1.11	1.28	1.37	1.38	1.39	1.39	1.39
Dec. 14	.22	.35	.50	.60	.71	.76	.77	.82	.88	.88	.88	1.08
San Juan Airport												
Jan. 20	23	.34	.43	44	.50	.62	.62	.62	.66	.66	.66	.66
May 9	.18	.32	.40	.46	.49	.51	.51	.57	.71	.77	.78	.84
June 4	.16	.23	.31	.45	.65	.78	.85	.88	.90	.96	.99	1.00
July 16	.27	.35	.42	.46	.54	.61	.62	.63	.64	.71	.81	.87
July 26	.27	.31	.36	.53	.58	.82	.92	.97	1.08	1.08	1.08	1.10
July 27	.21	.33	.34	.37	.39	.40	.52	.52	.52	.52	.52	.53
July 31	.23	.35	.40	.49	.52	.55	.74	.91	.94	.96	1.09	1.12
Aug. 5	.22	32	.46	.48	.55	.55	.56	.56	.56	.56	.65	.65
Aug. 5	.20	.28	.42	.42	.42	.42	.44	.45	.66	.72	.72	.72
PUERTO RICO (Cont'd.)												
San Juan AP (Cont'd.)												
Aug. 30	0.24	0.35	0 57	0.60	0.62	0.64	0.64	0.67	0.67	0.67	0.67	0.67
Sept. 10	.22	.38	.50	.70	.75	.75	.75	.87	87	.87	.87	.87
Sept. 15	.22	.40	.53	.62	.83	1.10	1.25	1.33	1.36	1 36	1.36	1.36
Oct. 5	.25	.50	.65	.70	.74	.74	.74	.74	.74	.74	.74	.74
Oct. 21	.40	.70	1.00	1.20	1.60	1.86	1.94	2.00	2.00	2.00	2.00	2.01
Dec. 13	.38	.67	.90	1.15	1.60	1.90	2.01	2.15	2.16	2.16	2.16	2.16
PACIFIC AREA												
Honolulu, T.H. AP												
Jan. 20	.23	.34	.53	.63	.78	.84	1.01	1.17	1.27	1.34	1.43	1.47
Jan. 21	.24	.33	.36	.41	53	.64	.68	.82	.99	1.22	1.51	1 63
Jan. 22	.29	.40	.46	.50	.78	.92	1.09	1.18	1.26	1.30	1.35	1.43
May 14	.19	.31	.40	.51	.56	.56	.56	.56	.56	.56	.56	.56
Nov. 21	.40	.78	.97	1.06	1.23	1.46	1.71	1.87	1.96	2.02	2.07	2.14
Dec. 6	.49	.61	.75	.82	.88	.94	1.01	1.18	1.25	1.27	1.31	1.36
Hilo, T.H. AP												
Jan. 29	.21	.23	.23	.36	.56	.58	.62	.75	.87	.93	.96	.99
Feb. 4	.17	.29	.35	.40	.44	.44	.45	.48	.58	.78	83	.87
Apr. 17	.26	.36	.53	.60	.77	.96	1.20	1.32	1.44	1.60	1.68	1.94
Apr. 23	.32	.48	.54	.60	.81	.91	1.00	1.17	1.35	1.59	1.85	1.97
July 5	.14	.21	.29	.35	.50	.65	.74	.84	.95	.97	1.08	1.18
Aug. 23	.09	.18	.26	.33	.47	.67	84	1.02	1.14	1.22	1.32	1.44
Aug. 24	.27	.45	.56	.61	.67	.70	.76	.95	1.21	1.35	1.39	1 44
Aug. 29	.29	.55	.68	.77	1.03	1.45	1 76	2.14	2.45	2.57	2.63	2.64
Aug. 29	.28	.50	66	.86	1 10	1.73	2.15	2.80	3 28	3.57	3.75	3.97
Aug. 29	.20	.32	.40	.43	.50	.63	.76	.90	1.03	1.10	1.15	1.26
Oct. 22	.17	.30	.42	.49	.75	.97	1.11	1.25	1.35	1.42	1.62	2.20
Nov. 19	.15	.30	.37	.42	.43	.44	.54	.58	.60	.72	.75	.78
Nov. 23	.16	.24	.35	.42	.57	.72	.79	.83	.87	.87	.87	.87
Dec. 3	.15	.28	.34	.39	.50	.73	.87	1.17	1.30	1.37	1.41	1.41
Dec. 5	.19	.33	.41	.49	.70	1 00	1.20	1.54	1.80	2.21	2.43	2.49
Lihue, T.H. AP												
Jan. 17	.20	.35	.41	.41	.45	54	.60	.65	.72	.72	.72	.72
Jan. 17	.23	.33	.35	.36	.39	.45	.55	.65	.72	.76	.78	.79
Jan. 18	.27	.42	.62	.73	.95	1.20	1.54	1.76	1.86	2.21	2.46	2.73
Jan. 21	.24	.46	.57	.61	.63	.67	.68	.69	.70	.70	.71	.72
Jan. 29	.34	.58	.61	.95	1.05	1.10	1.12	1.24	1.27	1.27	1.29	1.31
Feb. 14	.26	.44	.55	.66	.89	1.18	1.31	1.80	1.96	2.08	2.26	2 37
Nov. 20	.48	.73	.85	.94	1.01	1.35	1.45	1.46	1.64	1.65	1.66	1.66
Nov. 20	.26	.36	.38	.39	.42	.64	.64	.65	.65	.69	.69	.69
Nov. 20	.39	.72	1.04	1.22	1.36	1.55	1.74	1.92	1.93	1.94	1.94	1.94
Dec. 6	.22	.41	.64	.72	1.04	1.22	1.27	1.35	1.37	1.38	1.42	1.53
Canton Island AP												
Apr. 27	.22	.32	.40	.48	.49	.52	.52	.52	.53	.53	.53	.53
May 19	.18	.30	.35	.46	.62	.67	.68	.68	.68	.68	.68	.68
June 10	.41	.79	.98	1.10	1.25	1.38	1.40	1.40	1.40	1.70	1.70	1.70
July 23	.24	.33	.39	.40	.40	.40	.40	.40	.40	.40	.40	.40
Aug. 8	.30	.55	.65	.73	.88	1.10	1.68	1.70	1.93	1.95	1.98	2.03
Sept. 4	.14	.24	.32	.40	.51	.62	.65	.79	.80	.90	.91	.91
Sept. 11	.18	.30	.38	.42	.48	.51	.52	.52	.52	.53	.54	.54
Sept. 22	.29	.44	.73	.79	.84	.85	.85	.85	.85	.85	.85	.85
Oct. 2	.28	.40	.55	.69	.79	.91	.94	1.03	1.07	1.08	1.09	1.12
Oct. 5	.16	.25	.31	.43	.43	.43	.52	.58	.60	.61	.62	.64
Oct. 5	.28	.44	.53	.54	.54	.54	.56	.73	.78	.82	.82	.82
Oct. 7	.25	.37	.39	.39	.39	.39	.39	.39	.39	.39	.41	.42
Oct. 12	.15	.20	.38	.40	.52	.64	.67	.69	.69	.70	.70	.70
Nov. 6	.20	.36	.55	.69	1.01	1.37	1.57	1.58	1.58	1.58	1.58	1.79
Nov. 7	.18	.32	.47	.54	.72	1.01	1.10	1.18	1.45	1.72	1.86	1.97
Nov. 8	.26	.48	.68	.82	1 17	1.48	1.68	1.94	2.03	2.05	2.10	2.13
Nov. 18	.17	.26	.35	.42	47	.47	.48	.50	.53	.58	.63	.71
Nov. 19	.19	.33	.38	.42	.47	.60	.63	.65	.67	.74	.76	.77
Nov. 21	.23	.30	.44	.50	.52	.53	.53	.57	.58	.58	.58	.58
Dec. 1	.25	.28	.30	.32	.43	.51	.53	.55	.57	.86	.89	.91
Dec. 12	.31	.35	.38	.40	.42	.43	.45	.50	.60	.62	.62	.64
Dec. 14	.26	.35	.37	.38	.38	.38	.45	.45	.48	.51	.51	.51
Dec. 19	.28	.40	.46	.48	.48	.58	.65	.67	.67	.67	.67	.67
Dec. 31	.15	.23	.28	.34	.53	.61	.68	.75	.75	.75	.77	.77
Wake Island AP												
Aug. 9	.28	.31	.41	.42	.42	.42	.44	.44	.52	.52	.52	.52
Aug. 10	.43	.49	.50	.50	.51	.61	.66	.67	.70	.84	.85	.85
Aug. 19	.35	.60	.77	.93	1.15	1.32	1.47	1.52	1.52	1.52	1.52	1.52
Aug. 30	.38	.73	.97	1.11	1.37	1.50	1.76	1.82	1.83	1.87	1.88	1.88
Sept. 17	.18	.30	.41	.42	.44	.66	.86	.88	.89	.89	.90	.91
DELAYED DATA												
FLORIDA												
West Palm Beach AP												
Jan. 21	.35	.69	1.01	1.29	1.80	2.46	2.85	3.11	3.59	3.80	4.17	4.20
Feb. 7	.21	.32	.40	.41	.42	.45	.46	.47	.48	.48	.51	.66
Feb. 19	.25	.39	.44	.45	.46	.48	.52	.60	.62	.64	.64	.64
Feb. 26	.30	.55	.80	95	1.22	1.58	1.78	1.85	2.04	2.11	2.12	2.12
Mar. 15	.40	.55	.58	.60	.63	.65	.66	.67	.68	.69	.69	.69
Mar. 22	.26	.41	.51	.65	.68	.69	.69	.70	.95	1.00	1.08	1.09
Apr. 1	.26	.43	.58	.66	.73	.77	.94	1.12	1.25	1.25	1.25	1.25
Apr. 29	.25	.36	.54	.69	.94	1.19	1.24	1.27	1.38	1.39	1.41	1.48
June 7	.37	.59	.80	1.00	1.14	1.23	1.23	1.23	1.23	1.23	1.23	1.23
June 10	.24	.36	.42	.47	.50	.56	.60	.61	.65	.70	.90	1.26
June 29	.35	.64	.80	1.09	1.31	1.40	1.45	1.45	1.54	1.55	1.55	1.55
July 4	.29	.37	.41	.42	.42	.43	.44	.45	.46	.47	.47	.47
July 20	.34	.59	.83	1.05	1.20	1.24	1.27	1.27	1.28	1.30	1.30	1.30
July 23	.20	.35	.42	.46	.57	.63	.65	.65	.65	.65	.65	.65
July 29	.50	.88	1.08	1.23	1.29	1.35	1.36	1.36	1.37	1.37	1.38	1.40
Aug. 6	.30	.55	.65	.90	1.26	1.41	1.45	1.53	1.55	1.56	1.57	1.57
Aug. 20	.24	.32	.37	.40	.40	.42	.45	.53	.55	.55	.55	.62
Aug. 28	.30	.45	.59	.67	.79	.99	.99	1.00	1.00	1.00	1.04	1.04
Sept. 14	.35	.56	.61	.65	.68	.85	.86	.90	.90	.90	.90	.90
Sept. 15	.27	.46	.53	.55	.62	.65	.67	.68	.70	.71	.71	.72
IOWA												
Davenport												
May 30	.25	.34	.42	.54	.60	.80	1.15	1.45	1.46	1.48	1 48	1.48
June 10	.26	.40	41	.56	.60	.66	.74	.84	.88	.88	.88	.88

SUNSHINE, AMOUNT AND PERCENT

YEAR 1957

Station	January		February		March		April		May		June		July		August		September		October		November		December		Annual	
	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible
ALABAMA																										
Birmingham	92	29	138	45	162	44	248	64	286	66	234	54	302	69	339	82	183	49	179	51	120	38	158	51	2441	55
Montgomery	126	40	153	50	203	55	238	61	275	64	256	60	278	64	317	77	162	44	193	55	141	45	183	59	2525	57
ARIZONA																										
Phoenix	228	72	238	77	329	88	359	91	369	86	395	[illegible]	387	89	351	85	360	97	291	83	268	85	269	86	3844	86
Prescott	155	49	194	63	278	75	312	80	347	80	400	[illegible]	328	74	262	63	340	91	204	58	226	73	243	79	3289	74
Tucson	205	64	233	75	317	85	358	92	366	85	408	[illegible]	318	73	286	69	365	98	280	79	287	91	269	86	3692	83
Yuma	205	64	244	79	327	88	378	97	427	100	425	[illegible]	429	98	384	[illegible]	369	99	315	89	310	98	300	96	4115	93
ARKANSAS																										
Ft. Smith	75	24	120	39	142	38	100	25	207	47	236	54	313	71	321	77	271	73	235	67	138	45	174	57	2332	51
Little Rock	86	27	121	40	165	45	167	43	252	58	232	53	313	71	334	80	219	59	223	64	125	40	162	53	2399	54
CALIFORNIA																										
Eureka (U)	145	48	96	32	85	23	211	53	219	49	310	69	260	57	254	60	179	48	159	46	158	53	111	38	2187	49
Fresno	168	54	108	35	255	69	297	75	276	63	418	95	436	98	415	99	360	97	270	77	222	72	122	40	3347	75
Los Angeles (U)	148	47	151	49	259	70	235	60	271	63	290	67	384	87	361	87	312	84	216	62	248	79	232	75	3107	70
Red Bluff	221	73	151	51	214	58	332	83	328	73	432	96	441	97	422	99	313	84	218	63	217	73	128	44	3417	77
Sacramento	210	69	122	40	271	73	344	87	344	78	433	97	445	99	423	100	343	92	267	77	250	82	108	36	3560	80
San Diego	157	49	139	45	224	60	243	62	232	54	249	58	320	73	302	73	280	75	192	55	233	74	249	80	2820	63
San Francisco (U)	193	63	100	33	209	56	306	77	211	48	389	88	356	79	339	80	249	67	216	62	197	65	•182	61	2947	66
COLORADO																										
Denver	202	67	226	75	244	66	188	47	236	53	298	67	302	66	309	73	300	80	169	49	167	56	220	75	2861	64
Grand Junction	166	55	167	55	231	62	242	58	280	63	349	78	349	77	295	70	350	94	178	51	155	51	185	63	2947	66
Pueblo	242	79	233	77	258	70	250	63	264	60	339	76	341	76	338	80	320	86	221	64	185	61	241	82	3232	73
CONNECTICUT																										
Hartford	143	48	132	45	225	61	[illegible]	59	270	60	283	62	290	63	252	59	192	51	185	54	111	38	107	38	2429	54
New Haven	170	57	170	57	216	58	231	58	297	66	323	71	337	73	281	66	236	63	223	65	156	53	138	48	2778	61
FLORIDA																										
Apalachicola (U)	186	56	181	58	214	57	285	74	358	84	299	71	278	65	268	66	222	60	279	79	185	58	251	79	3006	67
Jacksonville	173	53	191	61	227	61	276	71	257	61	254	60	235	55	236	58	207	56	129	36	129	40	219	69	2533	57
Key West (U)	286	85	252	79	304	82	298	78	294	71	308	75	293	70	257	64	251	68	214	60	257	78	206	63	3220	73
Lakeland (U)	170	52	183	58	147	40	272	71	284	68	278	67	208	49	188	46	180	49	210	59	199	62	199	62	2518	57
Miami (U)	278	84	256	[illegible]	245	66	258	67	269	65	255	62	266	63	264	65	230	62	225	63	213	65	192	59	2951	66
Pensacola (U)	111	34	169	[illegible]	206	55	219	57	259	61	234	55	200	46	290	71	134	36	216	61	113	35	198	62	2349	52
Tampa	221	67	218	[illegible]	236	64	262	68	295	70	322	77	303	71	213	52	212	57	215	60	186	58	221	68	2904	65
GEORGIA																										
Atlanta	110	36	[illegible]	45	179	48	257	66	238	55	215	50	390	66	322	78	163	44	192	55	143	46	160	52	2507	54
Macon	183	58	[illegible]	64	208	56	299	77	254	59	227	53	273	63	323	78	183	49	197	56	141	45	183	59	2668	60
Savannah	145	45	163	53	231	62	306	79	271	63	281	66	270	62	317	77	211	57	190	54	155	49	208	67	2748	62
IDAHO																										
Boise	154	53	128	44	198	54	284	70	236	52	428	93	436	93	409	95	352	94	227	67	198	68	88	32	3138	70
Pocatello	160	55	110	37	183	49	226	56	224	49	307	67	389	84	359	83	329	88	203	59	157	54	118	42	2765	62
ILLINOIS																										
Cairo (U)	103	33	132	43	192	52	235	60	285	65	254	58	337	75	327	78	205	55	237	68	161	53	155	52	2623	59
Chicago	150	51	121	41	205	55	181	45	230	51	308	68	341	74	295	69	231	62	150	44	93	32	132	46	2437	55
Moline	133	45	127	43	214	58	165	41	211	47	266	59	299	65	272	63	240	64	205	59	103	35	130	45	2365	53
Peoria	109	36	106	36	190	51	155	39	228	51	286	63	322	70	293	69	244	65	204	59	135	45	112	39	2384	53
Springfield	112	37	124	42	185	50	165	41	277	62	267	60	342	75	352	83	270	72	219	63	129	43	111	38	2553	57
INDIANA																										
Evansville	94	31	111	37	157	42	205	52	225	51	202	46	288	64	329	78	179	48	192	55	158	52	144	49	2284	51
Ft. Wayne	115	39	100	34	200	54	144	36	264	59	276	61	351	76	339	79	251	67	174	51	92	31	121	42	2427	53
Indianapolis	112	37	110	37	185	50	137	34	298	67	330	74	---	-	376	89	271	73	161	47	118	39	125	43		--
IOWA																										
Burlington	154	52	157	53	227	61	200	50	258	57	328	73	364	80	339	79	284	76	246	72	142	48	160	55	2859	64
Des Moines	151	51	139	47	208	56	213	53	235	52	295	65	323	70	276	64	242	64	208	61	142	48	160	56	2592	58
Sioux City	209	71	196	66	239	65	249	62	230	51	300	65	342	74	310	72	252	67	160	47	94	32	160	56	2741	61
KANSAS																										
Concordia (U)	195	64	185	62	169	46	207	52	269	60	316	71	375	83	355	84	290	77	192	55	158	53	191	65	2902	64
Dodge City	137	45	•145	48	190	51	184	47	243	55	363	82	385	86	352	84	280	75	164	47	149	49	207	69	2799	62
Topeka	•128	42	•120	40	•162	43	•113	28	•215	49	•257	58	325	72	•308	73	•259	70	•164	47	132	44	150	51	2333	52
Wichita	121	39	118	39	198	53	145	37	261	59	318	72	387	86	343	81	284	76	154	44	145	48	192	65	2666	60
KENTUCKY																										
Louisville	113	37	105	35	209	56	204	52	307	70	252	57	319	71	342	81	229	62	163	47	141	46	118	40	2502	56
LOUISIANA																										
New Orleans (U)	130	40	136	44	205	55	233	60	272	64	234	56	283	66	248	61	133	36	216	61	126	39	187	59	2403	53
Shreveport	88	28	138	45	208	56	166	43	278	65	256	60	345	79	331	80	233	63	263	74	154	49	208	67	2668	59
MAINE																										
Portland	160	55	186	63	213	57	250	62	298	65	313	68	325	70	307	71	223	59	196	57	124	43	125	45	2720	61
MARYLAND																										
Baltimore	143	47	123	41	173	47	229	58	303	68	291	65	317	70	252	59	178	47	190	55	153	51	157	54	2509	56
MASSACHUSETTS																										
Blue Hill Observatory	144	50	131	46	184	51	206	53	259	59	273	62	291	65	246	60	197	55	172	52	137	48	131	48	2371	[illegible]
Boston	183	62	196	66	221	60	272	68	310	68	344	75	384	83	301	70	259	69	212	62	167	57	163	57	3012	68
Nantucket	122	41	131	44	205	55	237	59	296	66	324	72	346	75	298	70	252	67	199	58	151	51	161	56	2722	61
MICHIGAN																										
Alpena (U)	103	36	128	44	268	72	208	51	249	54	266	57	326	69	272	62	214	57	158	46	79	28	78	29	2349	53
Detroit	120	41	125	42	189	51	152	38	206	45	251	55	330	71	270	63	223	60	199	58	86	29	88	31	2239	50
East Lansing	112	38	114	38	248	67	199	19	240	53	310	68	349	75	299	70	244	65	172	50	57	19	58	21	2402	54
Escanaba (U)	158	56	152	52	277	75	250	62	308	66	274	58	353	74	280	64	233	62	158	47	[illegible]	29	81	30	2606	58
Grand Rapids	131	[illegible]	126	43	208	56	147	37	213	47	281	61	359	77	311	72	239	64	160	47	67	23	74	26	2316	52
Marquette (U)	140	50	165	57	248	67	280	69	322	69	308	65	354	74	267	61	216	57	163	48	67	24	83	31	2613	59
Saulte Ste. Marie	109	39	138	48	242	66	196	48	268	58	234	49	312	65	291	66	184	49	166	49	41	15	43	16	2224	47
MINNESOTA																										
Duluth	174	62	130	45	272	74	243	60	289	62	252	53	327	68	298	68	209	55	176	52	80	28	128	48	2578	58
Minneapolis	177	62	153	52	229	62	268	66	244	53	266	57	305	65	291	67	238	63	142	41	77	27	120	44	[illegible]	55
MISSISSIPPI																										
Jackson	80	25	124	40	190	51	250	64	280	[illegible]	[illegible]	53	293	67	315	76	127	34	185	52	109	35	159	51	[illegible]	52
Vickburg (U)	67	21	108	35	161	43	180	46	223	52	175	41	257	59	245	59	98	26	169	48	112	36	176	56	1971	44
MISSOURI																										
Columbia	94	31	123	41	197	53	160	40	250	56	266	60	324	72	319	75	248	66	182	52	123	41	131	44	2417	51
Kansas City	90	30	151	50	152	41	155	39	255	57	254	57	318	70	328	77	277	74	203	59	131	43	139	47	[illegible]	55

SUNSHINE, AMOUNT AND PERCENT

YEAR 1957

Station	January		February		March		April		May		June		July		August		September		October		November		December		Annual	
	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible
MISSOURI, (Cont'd)																										
St. Louis (U)	93	30	121	40	161	43	174	44	238	54	222	50	326	72	298	70	213	57	225	65	161	53	155	53	2387	53
Springfield	121	39	138	46	205	55	221	56	298	68	323	73	392	87	336	80	272	73	214	61	135	44	141	47	2796	61
MONTANA																										
Billings	199	70	207	71	279	76	199	49	265	58	311	66	376	79	355	81	275	73	125	37	126	44	160	59	2877	64
Great Falls	188	68	242	84	310	84	277	68	370	79	382	81	428	89	380	86	324	86	196	58	118	42	95	36	3310	74
Havre (U)	110	40	137	48	196	53	233	57	255	51	229	48	346	71	283	64	275	73	125	37	110	40	123	47	2422	54
Helena	137	49	178	62	198	54	200	49	244	52	267	57	354	74	316	72	248	66	101	30	111	39	133	50	2487	56
Missoula	111	40	129	45	148	40	198	48	265	57	292	61	383	80	336	77	294	78	60	18	109	39	92	35	2417	54
NEBRASKA																										
Lincoln (U)	177	59	200	67	171	46	244	61	243	54	285	63	349	76	314	74	276	74	168	49	130	44	165	57	2722	60
North Platte	177	59	183	61	150	40	213	53	215	48	268	59	340	74	291	68	252	67	140	41	158	53	197	68	2584	58
Omaha	153	52	184	62	194	52	223	56	213	47	267	59	367	80	288	67	243	65	157	46	137	46	189	66	2615	59
Valentine	196	67	217	74	228	62	205	51	204	45	311	68	367	79	300	70	288	77	128	37	164	56	205	73	2813	63
NEVADA																										
Ely	185	61	189	63	215	55	256	65	250	56	366	82	373	82	325	77	315	84	211	61	209	69	190	65	3084	69
Las Vegas	173	56	203	68	274	74	298	76	334	77	409	93	374	84	342	82	359	96	249	71	242	78	232	77	3489	78
Reno	233	77	150	50	250	67	325	82	361	81	439	98	441	97	416	98	351	94	256	74	199	66	202	69	3623	81
Winnemucca	141	17	130	44	114	31	229	57	174	38	336	74	382	83	367	86	319	85	145	42	162	55	134	41	2633	59
NEW HAMPSHIRE																										
Concord	181	62	182	62	210	57	242	60	274	60	297	65	295	63	276	64	215	57	186	54	123	42	126	45	2607	58
Mt. Washington Obs.	90	31	136	45	171	45	142	35	189	41	184	39	156	33	182	48	144	38	167	48	66	22	69	24	1696	37
NEW JERSEY																										
Atlantic City (U)	129	43	116	39	212	57	233	59	325	73	326	73	370	82	291	69	218	58	222	64	151	50	148	51	2741	59
Trenton (U)	145	48	119	40	184	50	193	49	269	60	264	59	325	71	248	58	196	53	199	58	153	51	142	49	2437	55
NEW MEXICO																										
Albuquerque	155	49	193	63	237	64	287	73	322	74	363	84	304	69	278	67	334	90	193	55	190	61	241	79	3097	69
NEW YORK																										
Albany	147	50	155	52	207	56	226	56	273	60	280	61	255	55	249	58	168	45	*143	42	115	39	105	37	2323	52
Binghamton	88	30	95	32	166	45	185	46	257	57	303	67	322	70	278	65	226	60	168	49	85	29	71	25	2244	50
Buffalo	128	44	122	41	196	53	215	53	273	60	328	71	361	78	301	70	234	62	176	51	66	22	72	25	2472	55
New York (U)	187	62	136	46	220	59	231	58	307	69	343	76	380	87	297	70	244	65	224	65	184	62	132	46	2885	64
Rochester	130	44	126	43	186	50	259	64	274	60	329	71	342	73	305	71	224	60	151	44	113	39	81	29	2520	54
Syracuse	87	30	85	29	179	48	207	51	265	58	307	67	328	71	288	67	220	59	141	41	61	21	55	20	2223	50
NORTH CAROLINA																										
Asheville (U)	85	27	151	50	179	48	217	55	237	55	146	34	296	67	295	71	172	46	155	44	146	47	130	43	2209	50
Cape Hatteras (R)	116	37	108	35	# --	--	307	78	---	--	321	74	---	--	---	--	240	64	186	53	135	44	144	47	----	—
Charlotte	121	39	143	47	177	48	286	73	287	66	285	66	343	78	313	75	172	46	201	57	147	47	173	57	2648	60
Greensboro	153	49	161	53	218	59	301	76	304	70	284	65	379	85	324	77	*192	52	228	65	164	53	188	62	2896	65
Raleigh	123	40	136	45	203	55	244	62	170	39	291	66	379	85	287	69	212	57	169	48	150	49	177	59	2541	57
Wilmington	150	48	143	47	206	55	312	80	251	58	277	64	358	81	294	71	224	60	213	61	178	57	218	71	2824	63
NORTH DAKOTA																										
Bismarck	190	68	155	54	232	63	242	59	269	58	266	56	342	71	247	56	235	62	125	37	101	36	158	59	2562	57
Devils Lake (U)	157	57	196	68	256	69	248	60	327	69	276	58	357	74	258	58	202	54	158	47	80	29	147	56	2662	60
Fargo	159	57	185	64	270	73	293	72	331	71	276	58	338	70	244	55	188	50	130	38	59	21	133	50	2606	57
Williston (U)	125	45	160	56	237	64	218	53	322	69	297															
OHIO																										
Cincinnatti Obs.	132	43	108	36	214	58	231	58	300	68	286	64	347	77	266	63	205	55	175	50	153	51	154	53	2571	62
Cleveland	38	13	78	26	197	53	129	32	218	48	221	49	292	64	242	57	215	58	164	48	92	31	77	27	1963	42
Columbus	83	28	114	38	185	50	197	50	314	70	313	70	349	77	328	77	233	62	173	50	157	52	127	44	2573	56
Dayton	119	39	113	38	198	53	191	48	287	64	272	61	340	75	315	74	219	59	184	53	154	51	139	48	2531	57
Sandusky (U)	111	37	127	43	200	54	176	44	256	57	292	64	355	77	315	74	251	67	185	54	81	27	113	40	2462	53
Toledo	89	30	124	42	220	59	151	38	235	52	271	60	353	77	281	66	223	60	183	53	88	30	132	46	2350	53
OKLAHOMA																										
Oklahoma City	90	29	110	36	188	51	148	38	253	58	291	67	389	88	332	80	259	70	178	51	147	48	208	68	2593	58
Tulsa	131	42	95	31	161	43	150	38	229	52	275	63	390	88	316	75	217	58	136	39	107	35	176	58	2383	53
OREGON																										
Portland	92	32	105	36	75	20	150	37	158	36	247	53	336	71	250	57	278	74	142	42	112	39	57	21	2012	45
Roseburg	22	8	80	27	82	22	197	49	257	56	331	72	367	79	303	70	274	73	115	34	96	33	40	14	2164	49
PENNSYLVANIA																										
Harrisburg	173	58	125	42	211	57	215	54	282	63	244	54	344	75	305	72	196	52	192	55	113	38	130	45	2530	57
Philadelphia	170	57	102	34	196	53	231	58	283	63	279	62	316	69	257	61	224	60	239	69	146	49	140	48	2583	57
Pittsburgh (U)	59	20	72	24	193	52	180	45	257	57	196	43	190	42	228	54	188	50	134	39	92	31	91	32	1880	42
Pittsburgh	138	46	130	44	224	61	201	50	267	60	317	70	334	73	297	70	264	71	202	59	150	50	116	40	2640	59
Reading (U)	157	52	116	39	201	54	215	54	255	57	217	48	320	70	235	55	155	42	206	60	119	40	117	40	2313	52
Scranton	131	44	111	37	196	53	220	55	300	67	327	72	284	62	213	50	209	56	180	52	103	35	88	31	2362	51
RHODE ISLAND																										
Providence	170	57	179	60	224	60	248	62	314	70	343	75	305	66	254	59	234	62	202	59	166	56	166	58	2805	63
SOUTH CAROLINA																										
Charleston (U)	153	48	153	50	301	81	310	79	206	48	231	54	255	58	203	49	270	73	209	59	175	56	196	63	2662	60
Columbia	194	62	194	63	213	57	265	68	226	52	278	64	257	59	281	68	182	49	219	62	162	52	172	56	2643	59
Greenville	115	37	140	46	190	51	261	67	248	57	232	53	319	72	301	72	165	44	188	54	168	54	175	57	2502	56
SOUTH DAKOTA																										
Huron	217	76	229	78	292	79	304	75	263	57	327	71	391	83	305	70	287	77	140	41	109	38	140	51	3004	66
Rapid City	146	51	159	54	237	64	170	42	181	40	261	56	329	70	228	53	274	73	133	39	191	66	162	58	2471	55
TENNESSEE																										
Chattanooga	94	30	128	42	172	46	238	61	311	72	240	55	256	58	316	76	176	47	137	39	132	43	136	45	2336	51
Knoxville	78	25	115	36	140	38	290	74	307	70	253	58	316	71	323	77	153	41	151	43	122	39	117	38	2365	53
Memphis	100	32	138	45	162	44	183	47	217	50	235	54	325	74	317	76	165	45	197	56	134	43	167	55	2340	53
Nashville	84	27	116	38	171	46	256	65	281	63	246	56	305	69	325	78	161	43	169	48	134	43	116	38	2364	51
TEXAS																										
Abilene	--	--	--	--	---	--	154	40	---	—	---	--	---	--	---	--	---	—	215	61	165	52	245	78	----	--
Amarillo	196	63	207	68	238	64	215	55	281	65	328	75	408	92	295	71	289	78	207	59	180	58	260	85	3104	70
Austin	93	29	122	39	161	43	160	41	*276	65	236	56	368	85	347	85	293	79	197	56	119	37	172	54	2544	57
Brownsville	148	44	175	55	186	50	133	35	228	55	243	59	362	86	333	82	225	61	229	64	143	44	183	56	2588	58
Corpus Christi	140	42	158	50	283	76	219	57	277	66	328	79	418	98	389	96	298	81	272	76	168	52	183	57	3133	71
Dallas	105	33	123	40	202	54	127	33	190	44	291	68	364	84	328	79	253	68	240	68	143	46	202	65	2568	58
Del Rio	102	31	141	45	252	68	181	47	212	50	257	61	354	83	362	89	+--	--	---	--	---	--	---	--	----	--
El Paso	210	65	242	78	308	83	340	87	378	88	397	93	354	81	337	82	339	91	229	65	258	82	256	82	3648	81
Galveston (U)	107	33	152	49	220	57	183	47	285	67	263	63	325	76	334	82	243	66	273	77	175	55	202	64	2762	61
Houston (U)	116	36	137	44	237	64	181	47	237	56	220	52	362	84	319	78	258	70	261	73	175	55	209	66	2712	61
Port Arthur	75	23	135	43	215	58	128	33	240	57	228	54	269	63	262	64	140	38	228	64	128	40	199	63	2247	51
San Antonio	87	27	152	49	236	64	170	44	207	49	274	65	381	89	352	86	283	77	214	60	139	43	180	56	2675	60

SUNSHINE, AMOUNT AND PERCENT

YEAR 1957

Station	January		February		March		April		May		June		July		August		September		October		November		December		Annual	
	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible
UTAH																										
Salt Lake City	130	44	168	56	158	43	210	53	296	66	384	85	388	85	298	70	323	86	232	67	141	47	124	43	2852	64
VERMONT																										
Burlington	129	45	158	54	247	67	218	54	231	50	256	55	255	54	271	62	226	60	163	48	94	33	111	40	2359	52
VIRGINIA																										
Lynchburg	103	34	127	42	176	47	231	58	280	64	245	56	318	71	279	66	139	37	161	46	156	51	146	49	2361	53
Norfolk	163	53	128	42	237	64	309	78	330	75	328	75	362	81	309	74	201	54	190	54	153	50	213	71	2923	66
Richmond	110	36	107	35	201	54	257	65	276	63	240	54	328	73	276	66	180	48	178	51	131	43	141	47	2425	55
Washington Nat'l. Airport	136	45	115	38	180	49	222	56	294	66	287	64	321	71	266	63	176	47	202	58	129	43	149	51	2477	56
WASHINGTON																										
Seattle (U)	113	41	124	43	147	40	207	51	250	53	205	43	245	51	277	63	256	68	117	35	108	39	49	19	2098	47
Spokane	98	35	99	35	137	37	265	65	309	66	331	69	398	83	350	79	299	79	112	33	116	42	66	25	2580	58
Tatoosh Island (R)	155	57	114	40	116	31	167	41	253	54	222	46	246	51	265	60	284	75	169	50	117	42	52	20	2160	48
Walla Walla (U)	86	31	99	34	191	52	318	78	281	61	383	81	437	92	390	89	334	89	184	51	194	68	95	35	2992	67
WEST VIRGINIA																										
Parkersburg (U)	93	31	125	41	210	57	234	59	300	67	274	61	•303	67	•272	64	•194	52	155	45	110	36	95	33	2365	51
WISCONSIN																										
Green Bay	160	55	145	49	232	63	225	56	207	45	273	59	312	66	262	60	241	64	189	56	94	33	128	47	2468	55
Madison	174	59	155	53	233	63	217	54	210	46	264	57	261	56	251	58	255	68	212	62	105	36	142	51	2479	55
Milwaukee	153	52	125	42	215	58	172	43	217	48	294	64	323	69	291	68	273	73	202	59	109	37	137	49	2511	56
WYOMING																										
Cheyenne	•139	47	•228	77	241	65	176	44	140	31	•259	57	299	65	297	70	•285	76	•188	55	162	55	197	69	2611	59
Lander	204	70	212	72	260	70	232	58	186	41	336	73	350	75	310	72	290	77	195	57	140	48	237	84	2952	66
Sheridan	157	55	176	60	215	58	169	42	191	41	251	54	341	73	326	75	273	73	154	45	129	45	168	61	2550	57
ALASKA																										
Anchorage	71	35	150	59	162	44	278	63	374	69	394	68	292	51	264	54	127	33	159	51	34	16	55	31	2360	52
Juneau	124	55	91	35	174	47	162	37	181	35	181	33	165	31	176	37	114	30	126	40	25	11	14	7	1533	34
Nome	33	20	142	59	114	31	163	36	268	46	260	41	191	31	101	20	152	39	69	23	17	9	36	28	1546	32
PUERTO RICO																										
San Juan	261	75	256	79	294	79	288	76	339	84	215	54	224	55	219	55	207	56	195	54	184	54	166	49	2848	64
PACIFIC AREA																										
Hilo, T. H.	135	39	147	46	202	54	93	25	138	34	141	35	123	30	• 67	17	188	51	185	51	93	28	72	21	1584	36
Honolulu, T. H.	242	71	218	68	338	91	301	79	299	73	•308	76	•315	77	265	67	278	76	276	76	200	60	166	49	3206	72
Lihue, T. H.	132	39	149	46	249	67	217	57	331	81	302	75	265	64	248	62	277	75	269	75	169	51	131	39	2739	62
Guam (Taguac) (R)	•291	82	255	78	288	77	287	77	261	66	•231	60	237	60	•208	53	•219	60	•248	68	•294	85	320	91	3139	—

Data from airport unless otherwise specified.
"U" indicates Urban, "R" indicates Rural, sites.
• Estimated.
‡ Station moved on March 1.
+ Station closed.

ANNUAL CLIMATOLOGICAL DATA

State and Station	Temperature							Degree days	Precipitation						Relative humidity				Wind					Percent of possible sunshine	Average sky cover sunrise to sunset	Number of days										
	Averages			Extremes								Snow, Sleet									Fastest mile					Sunrise to sunset							Max temp		Min temp	
	Daily maximum	Daily minimum	Monthly	Highest	Date	Lowest	Date		Total	Greatest in 24 hrs	Date	Total	Greatest in 24 hrs	Date	1:00a E.S.T.	7:00a E.S.T.	1:00p E.S.T.	7:00p E.S.T.	Average hourly speed	Prevailing direction	Speed	Direction	Date			Clear	Partly cloudy	Cloudy	Precipitation .01 inch or more	Snow, Sleet, Hail 1.0 or more	Thunderstorms	Heavy fog	90° and above	32° and below	32° and below	Zero and below
ALABAMA																																				
Birmingham	73.8	53.6	63.7	99	Aug. 15	14	Dec. 12	2468	59.77	3.92	Sep 15-16	0.7	0.7	Mar. 8	80	83	57	64	8.4	N	56	SW	Jun. 28	55	6.8	64	117	184	133	0	42	7	56	0	37	0
Mobile	76.9	58.5	67.7	97	Jul 7+	19	Dec. 12	1438	72.68	5.13	Apr 4	T	T	Mar. 8+	85	88	60	73	10.1	N	--	---	--	--	6.3	84	122	159	126	0	73	53	60	0	11	0
Montgomery	76.7	55.9	66.3	99	Aug. 11+	17	Dec. 12	1868	56.66	4.59	Apr. 4-5	T	T	Dec. 11+	82	87	56	65	7.0	E	52	E	Apr. 1	57	6.5	83	100	182	125	0	49	20	87	0	23	0
ARIZONA																																				
Flagstaff	59.7	31.9	45.8	89	Jun. 26+	-9	Jan. 31	7009	24.59	2.30	Nov. 2-3	54.5	10.4	Jan. 27	--	78	46	--	---	---	--	---	---	--	5.4	122	109	134	94	18	54	7	0	8	202	2
Phoenix	83.1	58.2	70.7	112	Jul 31+	31	Dec. 3	1181	7.60	1.06	Oct. 30-31	0	0	---	52	64	41	31	4.8	E	#59	WSW	Aug. 29	86	4.7	155	92	118	44	0	25	4	137	0	1	0
Prescott	68.8	42.0	55.4	100	Jul. 4	7	Jan. 29	4347	14.90	1.40	Aug. 20	11.6	6.1	Jan 27-28	--	--	42	--	8.7	SSW	65	SW	Apr. 6	74	5.1	124	119	122	87	3	47	10	45	2	96	0
Tucson	82.2	55.7	69.0	111	Jun 24	27	Dec. 3	1364	13.56	1.66	Aug 31	.0	.0	----	47	56	32	28	7.4	SE	42	SE	Jul. 4	83	4.4	166	94	105	68	0	47	1	137	0	4	0
Winslow	70.5	42.7	56.6	102	Jun. 28	13	Dec. 1+	4170	10.88	1.38	Aug. 25-26	3.1	1.9	Jan. 27	49	60	36	29	7.8	WSW	*56	WSW	Apr. 6	--	5.2	136	96	133	72	1	40	7	65	0	93	0
Yuma	88.7	60.7	74.7	120	Jun. 24	35	Jan. 28	663	4.84	2.09	Oct. 27-28	.0	.0	----	40	50	29	21	7.8	SSE	47	N	Nov. 21	93	3.6	201	90	74	19	0	7	1	167	0	0	0
ARKANSAS																																				
Fort Smith	71.9	51.4	61.7	104	Jul. 29	14	Jan. 17	3135	60.78	3.85	Nov. 17-18	T	T	Dec. 8+	82	88	61	64	8.0	ENE	42	W	May 17+	51	6.3	95	93	177	122	0	80	16	73	3	52	0
Little Rock	71.8	53.6	62.7	100	Jul. 15	12	Jan. 17	2800	70.61	5.07	Nov. 12-13	.8	.8	Nov 22	78	83	59	63	9.1	S	47	NE	Jul. 29+	54	6.4	89	103	173	140	0	76	18	66	1	33	0
Texarkana	74.0	55.0	64.5	99	Jul. 29	15	Jan. 17	2334	69.67	5.79	Jan. 31-1	1.5	1.5	Nov. 22	--	88	--	--	7.9	NE	--	---	---	--	---	---	---	---	121	1	74	28	75	0	23	0
CALIFORNIA																																				
Bakersfield	77.2	52.4	34.8	112	Jun. 25	27	Jan. 28	2121	5.56	.68	Apr. 20-21	T	T	Jan 27	60	72	52	40	5.0	NW	*32	SSE	Feb. 22	--	4.7	164	77	124	38	0	3	29	108	0	14	0
Bishop	73.8	37.6	55.7	104	Jun. 27+	4	Jan. 28	4255	6.69	1.39	Jan. 12-13	1.2	.5	Nov. 15+	--	--	31	23	---	---	--	---	---	--	4.2	185	72	108	46	0	8	0	93	1	130	0
Blue Canyon	56.9	41.2	49.1	89	Sep. 7+	9	Jan. 27	6011	73.30	5.15	May 17-18	167.4	14.9	Jan. 19-20	--	--	54	--	---	---	--	---	---	--	5.1	158	58	149	110	35	18	99	0	11	98	0
Burbank	75.5	53.0	64.3	105	Jul. 3	28	Jan. 28	1474	17.00	2.39	Jan. 12-13	T	T	Jan. 27	72	77	53	48	4.1	S	*44	ENE	Nov. 21	--	4.6	161	94	110	52	0	3	12	49	0	2	0
Eureka (U)	58.4	47.6	53.0	73	Oct. 8+	28	Jan. 29+	4277	40.89	2.24	Nov 12-13	T	T	Jan. 25	--	--	--	--	6.6	†N	35	SW	Feb. 24	49	6.8	73	93	199	132	0	6	24	0	0	6	0
Fresno	74.5	49.4	62.0	108	Jun 24	24	Jan. 9	2610	10.43	.96	May 18-19	.1	1	Jan. 26	67	81	58	42	5.6	NW	30	NW	Mar. 21	75	4.6	167	81	117	53	0	4	37	95	0	22	0
Los Angeles	71.6	56.1	63.9	100	Jun. 18	36	Jan. 28	1156	12.29	1.77	Jan. 12-13	.0	.0	----	78	80	58	64	7.3	WSW	‡59	N	Apr. 1	--	5.1	130	126	109	54	0	2	36	3	0	0	0
Los Angeles (U)	74.8	56.6	65.7	104	Jun. 18	35	Jan. 28	1011	13.24	2.05	Jan. 12-13	T	T	Jan. 27	73	76	47	54	6.1	†W	38	NW	Apr. 1	70	4.6	165	89	111	50	0	3	5	28	0	0	0
Mount Shasta (R)	60.8	36.0	48.4	91	Sep. 6	2	Jan. 29	6105	48.57	5.90	Sep. 26-27	90.6	14.4	Jan. 19-20	64	76	58	50	---	---	--	---	---	--	5.0	149	81	135	102	18	13	6	6	7	135	0
Oakland	66.3	49.8	58.1	99	Jun. 24	29	Feb. 3	2684	19.57	1.51	Jan. 12-13	T	T	Jan. 28	79	84	69	60	8.3	WNW	*46	WSW	Dec. 18	--	5.0	150	105	110	79	0	2	9	6	0	7	0
Red Bluff	73.5	50.3	61.9	109	Sep. 7+	25	Jan. 31+	2825	21.94	2.34	Jan. 11-12	T	T	Jan. 25	58	66	50	40	8.9	SSE	43	SE	Mar. 11+	77	4.7	172	58	135	86	0	12	14	95	0	31	0
Sacramento (U)	73.0	49.8	61.4	108	Jun. 24	26	Jan. 9	2513	18.42	1.45	Jan. 12-13	AP T	AP T	AP Jan. 26+	AP 73	AP 83	AP 62	AP 48	AP 10.0	AP SW	AP 42	AP SW	AP Jan. 13	AP 80	AP 4.5	AP 174	AP 61	AP 130	70	AP 0	AP 4	AP 34	73	0	11	0
Sandberg (R)	62.6	46.0	54.3	96	Jun. 24	14	Jan. 28	4666	16.16	2.98	Dec. 15-16	31.6	16.8	Jan. 28-29	--	--	48	--	14.4	N	*64	N	Apr. 2	--	4.5	170	79	116	53	5	1	86	17	4	42	0
San Diego	71.2	57.2	64.2	97	Jun. 18	42	Jan. 31+	996	12.13	1.29	Jan. 7-8	.0	.0	----	79	81	62	63	6.6	SSW	34	SW	Apr. 20	63	5.2	132	115	118	59	0	8	20	3	0	0	0
San Francisco	65.4	49.4	57.4	94	Jun. 24	32	Jan. 10	2811	23.97	1.69	Jan. 12-13	T	T	Jan. 28	82	87	70	64	8.8	WNW	47	WNW	Apr. 6	--	4.9	153	91	121	84	0	3	17	4	0	1	0
San Francisco (U)	62.9	51.6	57.3	88	Sep. 7	36	Jan. 28	2807	22.81	1.47	Oct. 9-10	T	T	Jan. 28	--	--	e 80	--	8.6	†W	34	SW	Dec. 18	66	---	---	---	---	96	0	2	3	0	0	0	0
Santa Maria	68.2	46.1	57.2	98	Jul. 6	26	Feb. 4+	2835	10.52	.98	Dec. 4-5	T	T	Jan. 28+	86	88	60	63	6.4	WNW	*31	ESE	Feb. 22	--	4.6	168	95	102	58	0	4	90	3	0	16	0
COLORADO																																				
Alamosa	57.5	25.8	41.7	90	Jul. 3+	-24	Nov. 22	8468	8.66	.85	Jul. 26-27	39.7	10.0	Apr. 1-2	--	77	47	45	---	---	--	---	---	--	5.6	103	139	123	83	13	53	24	2	26	227	37
Colorado Springs	61.5	35.1	48.3	98	Jul. 3	-3	Jan. 16	6436	25.07	2.45	Apr. 1-2	96.4	18.0	Apr. 1-2	67	70	44	45	9.1	SSE	*52	NNW	Mar. 23	--	5.7	102	132	131	117	18	72	46	14	17	163	9
Denver	62.7	37.6	50.2	97	Jul. 2	-5	Jan. 29	5964	21.58	3.29	May 8-9	57.8	17.3	Apr. 2	61	67	40	40	11.7	SSW	52	SE	Apr. 21	64	5.7	103	131	131	101	11	49	12	24	19	155	2
Grand Junction	61.7	40.1	50.9	98	Aug. 2+	-5	Feb. 6	5921	15.69	1.24	Oct. 12-13	47.0	9.1	Jan. 25-26	60	68	49	43	8.4	ESE	56	W	Aug. 8	66	5.8	107	108	150	116	13	45	14	39	22	123	6

See reference notes at end of table.

ANNUAL CLIMATOLOGICAL DATA

State and Station	Temperature – Averages – Daily maximum	Temperature – Averages – Daily minimum	Temperature – Averages – Monthly	Temperature – Extremes – Highest	Temperature – Extremes – Date	Temperature – Extremes – Lowest	Temperature – Extremes – Date	Degree days	Precipitation – Total	Precipitation – Greatest in 24 hrs	Precipitation – Date	Snow, Sleet – Total	Snow, Sleet – Greatest in 24 hrs	Snow, Sleet – Date	Relative humidity – 1:00a E.S.T.	Relative humidity – 7:00a E.S.T.	Relative humidity – 1:00p E.S.T.	Relative humidity – 7:00p E.S.T.	Wind – Average hourly speed	Wind – Prevailing direction	Wind – Fastest mile – Speed	Wind – Fastest mile – Direction	Wind – Fastest mile – Date	Percent of possible sunshine	Average sky cover sunrise to sunset	Number of days – Sunrise to sunset – Clear	Number of days – Sunrise to sunset – Partly cloudy	Number of days – Sunrise to sunset – Cloudy	Number of days – Precipitation .01 inch or more	Number of days – Snow, Sleet, Hail 1.0 or more	Number of days – Thunderstorms	Number of days – Heavy fog	Number of days – Max temp – 90° and above	Number of days – Max temp – 32° and below	Number of days – Min temp – 32° and below	Number of days – Min temp – Zero and below
COLORADO (Cont'd.)																																				
Pueblo	66.4	37.9	52.2	100	Jul. 3+	-3	Jan 25	5401	23.09	3.77	Oct. 7-8	36.9	16.8	Apr. 1-2	65	76	44	40	7.9	W	68	N	Mar. 23	73	5.6	109	125	131	95	7	44	8	44	11	141	2
CONNECTICUT																																				
Bridgeport	61.2	44.0	52.6	103	Jul. 22	-5	Jan. 15	5277	29.57	1.61	Oct. 7-8	28.0	5.6	Dec. 3-4	--	74	55	67	---	--	--	--	---	--	6.0	107	107	151	114	10	25	19	13	16	[illegible]	2
Hartford	61.5	39.3	50.4	96	Jul. 22+	-17	Jan 18	5910	32.26	1.70	Dec. 20-21	41.1	5.3	Dec. 11-12	77	77	50	62	11.4	NW	45	W	Jun. 29	54	6.3	88	118	159	121	11	21	24	18	22	138	7
New Haven	60.0	42.5	51.3	100	Jul 22	-6	Jan. 15	5566	38.12	2.10	Oct. 7-8	30.9	4.6	Dec. 3-4+	--	79	59	--	7.2	--	39	SE	Dec 26	61	6.1	103	107	155	129	12	27	21	5	16	107	2
DELAWARE																																				
Wilmington	64.0	45.1	54.6	102	Jul. 21	-4	Jan. 18	4880	39.09	2.36	Aug. 25-26	20.2	10.3	Dec. 3-4	79	79	56	69	9.8	NW	46	WNW	Jan. 23	--	6.4	83	115	167	123	5	22	42	26	13	99	2
DIST. OF COLUMBIA																																				
Washington (U)	66.5	49.5	58.0	101	Jul 22	9	Jan. 18	4065	35.90	2.79	May 13-14	20.0	8.0	Dec. 4	AP 74	AP 76	AP 54	AP 61	6.9	AP S	41	NW	Jan. 10	56	6.3	AP 92	AP 107	AP 166	112	7	22	AP 15	42	8	57	0
Washington	66.6	49.4	58.0	101	Jul 22+	8	Jan. 18	4057	32.78	2.14	Sep. 16-17	26.3	11.4	Dec. 3-4	74	76	54	61	9.8	S	63	N	Oct. 6	56	6.3	92	107	166	107	9	25	15	46	8	59	0
FLORIDA																																				
Apalachicola (U)	76.3	63.3	69.8	94	Jul 2	26	Dec. 12	941	63.63	3.65	Jun. 7-8	0	0	----	85	88	70	78	8.0	--	45	E	Mar. 21	67	5.1	129	118	118	107	0	63	28	19	0	4	0
Daytona Beach	80.6	61.5	71.1	95	Aug. 16+	24	Dec 12	662	46.48	3.49	Sep. 4	.0	0	----	89	90	63	77	9.9	SSW	*44	SW	Mar. 25	--	6.1	91	123	151	116	0	73	49	50	0	9	0
Fort Myers	84.1	63.9	74.0	95	Aug 16	28	Dec. 13+	269	63.64	4.19	Aug. 23-24	0	.0	----	91	91	60	79	8.2	E	*40	S	Mar. 4	--	5.9	74	172	119	133	0	128	34	99	0	2	0
Jacksonville	80.6	61.1	70.9	99	Aug 13+	17	Dec. 13	972	54.29	3.96	Jun 8-9	T	T	Dec. 10+	85	87	57	72	9.5	SW	46	S	Sep. 9	57	6.4	71	125	169	115	0	55	41	101	0	8	0
Key West (U)	85.4	72.3	78.9	95	Aug. 16+	47	Dec 12	36	36.88	2.38	May 3-4	0	.0	----	--	AP 82	AP 68	AP 76	7.6	E	28	NE	Dec. 1+	73	5.[illegible]	74	205	86	118	0	71	1	116	0	0	0
Lakeland (U)	81.6	64.1	72.9	96	Jul. 23	25	Dec. 12	407	62.38	2.92	May 14	0	0	----	--	--	--	--	6.7	†NE	--	--	---	57	5.9	83	158	124	138	0	111	31	76	0	3	0
Miami (U)	81.1	69.8	75.5	94	Jul. 3	34	Dec. 12	128	72.69	6.30	Nov. 21	0	.0	----	AP 86	AP 87	AP 64	AP 77	11.7	--	62	SW	Aug. 3	66	5.1	104	183	78	151	0	92	10	14	0	0	0
Miami Beach	82.1	71.9	77.0	97	Jun. 10	35	Dec. 12	59	60.35	4.02	Nov. 21	0	.0	----	--	--	--	--	---	--	--	--	---	--	---	106	155	104	142	0	---	---	23	0	0	0
Orlando	82.7	62.8	72.8	97	Jul 10	24	Dec. 12	442	50.93	3.69	Aug. 22-23	.0	.0	----	90	91	58	74	8.8	NNE	*50	NW	Aug. 24	--	5.8	89	142	134	125	0	78	29	93	0	4	0
Pensacola (U)	75.9	61.9	68.9	98	Jul 10	22	Dec. 12	1189	57.21	3.87	Mar. 31-1	0	0	----	AP 83	AP 85	AP 62	AP 74	AP 10.0	AP SSE	40	SE	Apr. 1	52	---	---	---	---	119	0	14	---	43	0	7	0
Tallahassee	78.6	58.8	68.7	97	Aug. 17	20	Dec. 13	1142	74.39	4.09	Sep. 7-8	T	T	Jan 17	86	88	58	73	6.1	ESE	--	--	---	--	6.4	56	165	144	121	0	87	43	66	0	11	0
Tampa	81.5	63.7	72.6	93	Jun. 15+	26	Dec. 13	416	70.43	6.14	Jul 25-26	.0	.0	----	88	89	60	75	9.3	ENE	*37	WNW	Mar. 8	65	6.0	78	151	136	130	0	103	35	52	0	2	0
West Palm Beach	83.9	67.9	75.9	95	Jul. 2	31	Dec. 12	140	62.93	6.36	21-22	.0	0	----	85	85	62	76	10.6	E	*71	E	Jun. 29	--	6.5	58	152	155	154	0	97	11	94	0	1	0
GEORGIA																																				
Athens	72.7	51.9	62.3	99	Sep. 2+	10	Dec 12	2711	51.50	3.27	Nov. 18-19	T	T	Dec. 12+	83	87	58	69	9.0	NE	*47	SW	Apr. 8	--	6.2	97	98	170	136	0	46	35	57	2	40	0
Atlanta	72.0	53.9	63.0	99	Aug 3+	12	Dec. 12	2569	48.87	4.05	Apr. 4-5	T	T	Dec. 11+	80	85	58	65	10.6	NW	55	SW	Jun. 28	54	6.4	83	115	167	123	0	25	28	48	2	24	0
Augusta	75.8	52.7	64.3	102	Aug 12	14	Dec 13	2232	41.32	2.00	May 3-4	T	T	Jan. 11	87	89	58	72	6.4	NE	*30	WNW	Nov. 30+	--	6.4	93	97	175	117	0	54	23	74	0	35	0
Columbus	76.1	54.8	65.5	99	Sep 2+	16	Dec. 13+	2010	47.18	4.61	May 3-4	T	T	Dec. 11+	--	87	57	68	---	--	--	--	---	--	6.4	86	102	177	129	0	50	16	77	0	29	0
Macon	77.0	55.4	66.2	102	Sep 2	17	Dec. 12	1893	46.86	4.01	May 23-24	T	T	Dec. 11+	[illegible]	86	54	64	9.4	NNE	57	SE	Apr. 1	60	6.1	91	118	156	113	0	54	23	92	0	22	0
Rome	73.1	49.8	61.5	101	Sep. 1+	9	Dec 12	2998	57.04	4.08	Apr. 4-5	T	T	Dec. 11+	--	87	55	69	---	--	--	--	---	--	6.5	81	111	173	138	0	57	23	69	1	62	0
Savannah	76.4	56.2	66.3	98	Aug 13	17	Dec. 13+	1684	63.96	6.36	Jul. 27-28	.0	.0	----	87	89	60	75	8.6	NE	44	N	Aug. 2	62	6.4	84	107	174	131	0	62	50	60	0	18	0
Thomasville (U)	79.1	58.9	69.0	99	Aug. 3+	20	Dec 12	1183	53.34	3.34	Jun 9	T	T	Jan. 17	--	--	--	--	---	--	--	--	---	--	---	---	---	---	127	0	62	26	85	0	9	0
IDAHO																																				
Boise	61.3	38.7	50.0	100	Jul 25	-9	Jan. 30+	6025	12.59	75	May 18	24.9	4.9	Feb 20+	65	72	56	48	8.8	SE	52	W	Mar. 9	70	5.8	118	87	160	93	9	11	29	34	23	127	5
Idaho Falls 46 W (R)	56.8	27.2	42.0	93	Aug 16+	-29	Jan 28	8494	12.30	97	May 11-12	35.8	8.5	Jan. 19-20	--	--	--	--	7.3	WSW	d 39	WSW	Mar. 10	--	---	---	---	---	87	12	23	-	23	[illegible]	[illegible]	[illegible]
Idaho Falls 42 NW (R)	56.5	24.9	40.7	96	Jul 28+	-30	Jan. 28+	8967	8.93	88	May 11-12	--	--	----	--	-	--	-	8.3	SSW	d 50	NW	Apr. 1	--	---	---	---	---	81	--	---	--	35	67	209	[illegible]
Lewiston	61.6	40.1	50.9	98	Jul 5	-20	Jan 27	5605	13.41	1.15	May 8-9	34.2	7.4	Jan. 22-23	-	76	61	50	---	--	--	--	---	--	6.6	90	75	200	106	9	15	20	26	23	93	9

See reference notes at end of table

ANNUAL CLIMATOLOGICAL DATA

State and Station	Temperature								Precipitation						Relative humidity				Wind							Number of days										
	Averages			Extremes								Snow, Sleet									Fastest mile					Sunrise to sunset							Max temp		Min temp.	
	Daily maximum	Daily minimum	Monthly	Highest	Date	Lowest	Date	Degree days	Total	Greatest in 24 hrs	Date	Total	Greatest in 24 hrs	Date	1:00a E.S.T.	7:00a E.S.T.	1:00p E.S.T.	7:00p E.S.T.	Average hourly speed	Prevailing direction	Speed	Direction	Date	Percent of possible sunshine	Average sky cover sunrise to sunset	Clear	Partly cloudy	Cloudy	Precipitation .01 inch or more	Snow, Sleet, Hail 1.0 or more	Thunderstorms	Heavy fog	90° and above	32° and below	32° and below	Zero and below
IDAHO (Cont'd)																																				
Pocatello	59.1	34.1	46.6	96	Aug 9	-17	Jan. 30	7098	10.94	0.94	Apr. 5-6	28.1	4.9	Apr. 6	66	76	57	49	10.5	SW	47	SW	Mar. 10	62	6.2	96	106	163	104	9	36	13	35	30	162	10
ILLINOIS																																				
Cairo (U)	68.1	51.4	59.8	97	Jul. 17	9	Jan. 16	3619	72.98	4.33	Nov. 13-14	T	T	Dec. 10+	--	84	63	--	8.4	S	59	SW	Apr. 3	59	6.3	88	116	161	134	0	62	4	40	10	52	0
Chicago	58.9	42.8	50.9	96	Jun. 17	-7	Jan. 16+	6031	44.29	6.24	Jul. 12-13	29.7	6.6	Jan. 9-10	76	79	60	65	9.2	SW	43	W	Mar. 15	55	6.4	94	88	183	130	11	29	15	19	33	122	9
Moline	59.4	40.4	49.9	96	Jul. 12+	-19	Jan. 14	6311	32.92	2.13	Jul. 21-22	32.6	7.1	Jan. 9-10	80	84	61	63	10.1	E	54	SW	Mar. 15	53	6.2	104	89	172	113	6	37	33	21	33	137	10
Peoria	60.7	42.3	51.5	96	Aug. 15+	-14	Jan. 14	5888	36.99	3.10	May 13	26.1	8.2	Mar. 24-25	77	83	61	63	11.0	S	52	SW	Mar. 14	53	6.4	94	91	180	115	6	49	24	26	31	126	6
Springfield	62.4	43.6	53.0	96	Jul. 7	-14	Jan. 14	5460	41.97	2.28	Jun. 10-11	17.4	4.7	Dec. 3	80	85	60	63	11.4	SSW	75	SW	Jun. 14	57	6.4	94	92	179	132	7	58	19	28	23	120	3
INDIANA																																				
Evansville	66.5	46.6	56.6	95	Aug. 30+	3	Jan. 14	4401	53.66	4.29	May 21-22	2.4	1.0	Jan. 30	81	83	58	64	8.9	SSW	57	NW	Jun. 12	51	6.5	90	93	182	119	1	43	19	37	14	93	0
Ft. Wayne	59.1	40.5	49.8	93	Jul. 20+	-9	Jan. 16	6202	43.20	4.05	Aug. 9-10	32.6	6.4	Apr. 7-8	82	85	62	69	11.3	SW	57	SW	Nov. 19+	53	6.5	86	91	188	133	8	39	24	11	32	139	4
Indianapolis	61.6	43.3	52.5	93	Jun. 17	-7	Jan. 14	5467	55.70	3.71	Jun. 27-28	15.8	3.0	Dec. 3	81	84	62	68	11.5	SW	57	W	Jul. 8	--	6.8	78	84	203	146	4	55	22	10	19	113	3
South Bend	58.6	40.0	49.3	93	Jul. 19+	-8	Jan. 16	6338	40.86	2.48	Aug. 28-29	60.5	8.3	Jan. 22-23	83	85	64	70	10.9	SSW	40	SW	Nov. 19	--	6.8	75	89	201	145	18	36	24	13	38	140	5
IOWA																																				
Burlington	60.8	41.2	51.0	99	Aug. 15+	-24	Jan. 14	6046	37.08	2.40	Jul. 21-22	30.5	6.8	Mar. 25	78	83	61	63	10.4	SSW	49	W	Mar. 15	64	6.1	96	103	166	107	8	40	17	27	32	137	8
Des Moines	59.2	40.3	49.8	102	Jul. 12	-18	Jan. 14	6445	28.28	2.30	May 9-10	42.2	8.5	Mar. 24-25	78	84	62	63	11.7	S	68	NW	Nov. 8	58	6.5	88	90	187	122	11	48	23	28	41	142	9
Dubuque	55.8	37.4	46.6	94	Jul. 7	-15	Jan. 26	7198	38.82	3.06	Aug. 29-30	34.8	5.8	Jan. 9	--	82	61	67	---	---	47	SSW	Mar. 14	--	6.5	88	98	179	116	11	39	37	7	55	155	16
Sioux City	59.3	38.9	49.1	104	Jul. 12	-20	Jan. 14	6679	32.03	3.89	Jun. 13-14	32.8	6.8	Apr. 4	72	78	57	55	13.3	SSE	66	S	Sep. 17	61	6.2	106	82	177	101	9	47	18	33	36	143	15
Waterloo	56.8	37.4	47.1	101	Jul. 12	-19	Jan. 26	7183	27.82	2.03	Oct. 22-23	26.6	7.5	Nov. 17-18	76	82	61	63	11.9	---	--	---	---	--	---	---	---	---	99	7	34	22	14	59	156	16
KANSAS																																				
Concordia (U)	63.2	44.0	53.6	103	Aug. 13	-4	Jan. 25	5417	25.35	1.87	Apr. 2-3	35.1	10.2	Nov. 17-18	72	79	58	56	7.7	S	40	NW	Dec. 10	64	5.7	124	82	159	106	13	53	14	46	25	117	2
Dodge City	64.9	43.2	54.1	101	Jul. 3	-6	Jan. 25	5166	25.46	1.96	Sep. 13-14	32.0	9.3	Mar. 23	73	80	54	53	15.3	SSE	72	NW	Jun. 21	62	5.8	113	101	151	91	7	42	31	51	22	123	3
Goodland	63.0	35.4	49.2	100	Jul. 16	-11	Jan. 25	6479	18.69	1.47	May 15-16	36.7	5.5	Apr. 7	63	53	53	77	11.2	SSE	62	WNW	Apr. 19	--	5.6	117	109	139	91	13	56	29	46	28	169	9
Topeka	64.1	43.3	53.7	101	Aug. 15	-6	Jan. 23	5254	38.14	2.83	Jul. 10	15.8	5.8	Mar. 24-25	78	84	59	60	11.0	S	63	SE	Apr. 19	52	6.4	88	93	184	116	5	60	22	39	20	119	2
Wichita	65.3	45.6	55.5	103	Aug. 13	3	Jan. 25	4814	37.15	2.83	May 15-16	6.5	1.9	Feb. 22	78	85	60	61	12.4	SSE	64	NW	Jun. 11	60	6.3	101	88	176	112	1	63	28	51	18	109	0
KENTUCKY																																				
Lexington	65.6	46.0	55.8	96	Sep. 1	0	Jan. 17	4573	48.62	2.88	3-4	8.0	4.6	Mar. 7-8	82	85	60	68	10.4	S	--	---	---	--	6.4	100	82	183	138	2	47	12	31	12	99	1
Louisville	66.5	47.4	57.0	96	Aug. 30	3	Jan. 17	4255	50.11	3.07	Nov. 18	4.4	1.4	Jan. 17	79	83	59	62	9.4	SE	58	W	Jun. 11	58	6.5	86	100	179	129	1	40	5	31	9	86	0
LOUISIANA																																				
Baton Rouge	79.0	59.2	69.1	99	Jul. 10+	19	Dec. 12	1232	55.35	3.60	Sep. 26	.0	.0	----	86	90	59	67	9.1	E	--	--	---	--	6.7	66	117	182	118	0	80	40	94	0	10	0
Lake Charles	78.0	61.3	69.7	97	Jul. 15+	24	Dec. 12	1159	68.16	6.84	Jun. 26-27	.0	.0	----	87	91	65	72	8.0	SE	69	SE	Jun. 27	--	6.5	71	127	167	101	0	64	39	86	0	5	0
New Orleans (U)	78.0	63.8	70.9	97	Jul. 10	30	Dec. 12+	892	64.81	6.63	Sep. 17-18	T	T	Jan. 17	85	64	69	82	6.6	---	27	S	Jun. 27	53	5.9	92	139	134	133	0	72	21	70	0	2	0
Shreveport	75.4	56.3	65.9	98	Aug. 26+	16	Jan. 17	2020	67.23	3.88	Oct. 21-22	T	T	Jan. 2	80	87	60	63	8.9	S	--	---	---	59	6.3	94	93	178	123	0	72	19	83	0	15	0
MAINE																																				
Caribou	48.3	29.5	38.9	89	Jun. 23	-31	Jan. 14	9483	38.66	1.90	Jul. 14-15	84.9	8.3	Feb. 9-10	82	80	63	73	10.9	NW	*50	S	Dec. 11	--	7.1	56	96	213	156	30	20	35	0	89	181	45
Portland	57.0	34.8	45.9	93	Jul. 20	-20	Jan. 18	7125	26.35	1.92	Nov. 3	46.3	9.0	Jan. 29	81	77	55	70	10.4	S	62	SE	Dec. 26	61	6.0	105	110	150	97	7	15	46	3	38	152	15
MARYLAND																																				
Baltimore (U)	66.9	51.1	59.0	103	Jul. 21	7	Jan. 18	3907	37.70	4.55	Sep. 9-10	----	---	----	--	--	--	--	---	---	--	---	---	--	---	---	---	---	110	---	---	---	48	9	51	0
Baltimore	65.1	46.1	55.6	102	Jul. 21	-4	Jan. 18	4599	33.95	2.42	Sep. 9-10	24.7	8.4	Dec. 3-4	80	81	58	68	10.5	WNW	65	NE	Oct. 6	58	6.4	81	121	163	111	8	24	37	36	10	86	2
Frederick	64.2	43.2	53.7	100	Jul. 22+	-10	Jan. 18	5084	34.41	1.81	Dec. 25-26	19.6	4.0	Dec. 5	--	--	62	--	---	---	--	---	---	--	---	---	---	---	117	12	1	6	36	11	107	3

See reference notes at end of table.

ANNUAL CLIMATOLOGICAL DATA

YEAR 1957

State and Station	Temperature							Degree days	Precipitation						Relative humidity				Wind					Percent of possible sunshine	Average sky cover sunrise to sunset	Number of days										
	Averages			Extremes								Snow, Sleet									Fastest mile					Sunrise to sunset							Max temp		Min temp	
	Daily maximum	Daily minimum	Monthly	Highest	Date	Lowest	Date		Total	Greatest in 24 hrs.	Date	Total	Greatest in 24 hrs	Date	1:00a E.S.T.	7:00a E.S.T.	1:00p E.S.T.	7:00p E.S.T.	Average hourly speed	Prevailing direction	Speed	Direction	Date			Clear	Partly cloudy	Cloudy	Precipitation .01 inch or more	Snow, Sleet, Hail 1.0 or more	Thunderstorms	Heavy fog	90° and above	32° and below	32° and below	Zero and below
MASSACHUSETTS																																				
Blue Hill Obs. (R)	59.2	40.7	49.2	96	Jul. 20	-16	Jan. 15	6251	35.48	1.80	Nov. 1-2	57.9	12.9	Mar. 20	77	74	53	67	14.9	NW	60	SSE	Dec. 26	55	6.1	88	130	147	116	14	20	107	10	33	128	5
Boston	60.6	44.4	52.5	98	Jul. 20	-12	Jan. 15	5288	33.92	1.95	Apr. 5-6	36.1	9.8	Jan. 6-7	71	70	53	62	14.9	SW	*53	S	Dec. 26	68	6.0	107	106	152	111	9	15	15	11	20	91	2
Nantucket	56.9	43.4	50.2	86	Jun. 16	6	Jan. 15	5619	37.75	2.40	Mar. 19-20	31.3	11.7	Mar. 20-21	83	79	67	81	12.9	SW	56	N	Dec. 5	61	6.4	99	86	180	119	6	20	93	0	12	95	0
Pittsfield	56.3	35.3	45.8	91	Jul. 20	-22	Jan. 15	7214	34.59	2.33	Dec. 20-21	47.0	6.8	Jan. 10	--	--	--	--	---	---	--	---	---	--	---	---	---	---	130	16	24	---	3	43	161	11
Worcester	57.0	38.5	47.8	91	Jul. 22+	-19	Jan. 15	6597	34.62	2.35	Dec. 10	49.4	5.8	Jan. 7	72	70	50	62	13.3	WNW	51	WNW	Dec. 1	--	6.1	90	122	153	116	17	19	49	5	42	139	10
MICHIGAN																																				
Alpena (U)	51.2	36.0	43.6	88	Aug. 2+	-5	Jan. 30	7915	28.66	1.64	Jun. 28-29	42.3	5.7	Dec. 31-1	--	81	66	72	10.1	SE	40	SE	Dec. 25+	53	6.5	81	104	180	144	14	25	30	0	69	149	6
Detroit	57.8	41.2	49.5	95	Jul. 20	-3	Jan. 17	6244	39.83	2.80	Jul. 8	40.3	8.9	Jan. 9-10	74	76	58	63	10.9	N	45	WSW	Sep. 23	50	6.6	87	98	180	138	14	25	14	8	42	131	2
Ypsilanti	58.6	40.2	49.4	96	Jul. 20	-6	Jan. 16+	6317	32.68	2.40	Oct. 23-24	35.3	7.0	Jan. 9-10	80	82	58	66	11.1	SW	49	WSW	Jun. 13	--	6.6	80	104	181	122	16	24	33	15	39	137	5
East Lansing (U)	58.4	39.2	48.8	95	Jun. 17	-5	Jan. 17	6487	36.41	3.19	Jul. 11	40.7	4.9	Dec. 31	--	81	58	--	5.2	W	23	SW	Nov. 14	54	---	---	---	---	138	14	23	21	10	41	143	2
Escanaba (U)	49.7	34.4	42.1	84	Jun. 15	-11	Jan. 14	8422	30.42	1.80	Aug. 23	42.4	4.3	Apr. 4-5	80	82	66	72	9.8	---	57	NW	May 15	58	6.1	100	104	161	124	17	31	22	0	78	158	16
Flint	56.3	36.6	46.5	92	Jun. 17	-5	Jan. 16	7106	35.54	3.72	Jul. 8	30.8	3.8	Jan. 9-10	84	85	62	70	9.1	SW	32	SSW	Nov. 19+	--	6.8	82	95	188	124	11	26	29	5	49	160	7
Grand Rapids	56.9	38.3	47.6	94	Jun. 22	-3	Jan. 17	6791	41.26	2.54	Jul. 21-22	74.9	9.7	Dec. 31	83	84	61	68	10.7	S	45	W	Mar. 15	52	7.1	68	83	214	153	23	29	21	7	45	152	3
Marquette (U)	49.8	34.6	42.2	96	Aug. 2	-9	Jan. 16	8457	23.99	1.60	Sep. 1-2	91.7	9.9	Apr. 5-6	--	75	62	68	8.2	W	40	SW	Apr. 20	59	6.8	67	109	189	142	23	21	18	4	87	157	11
Muskegon	55.5	38.9	47.2	91	Jul. 20	4	Jan. 16	6820	34.15	1.86	Nov. 13-14	62.4	7.5	Dec. 31-1	--	82	63	70	---	---	--	---	---	--	6.7	86	82	197	139	24	25	25	3	41	147	0
Sault Ste. Marie	49.1	30.9	40.0	88	Aug. 2	-22	Jan. 14+	9112	33.54	2.11	May 8	100.3	8.6	Dec. 27-28	88	88	69	76	10.1	WNW	35	WNW	Dec. 23	47	6.6	87	95	183	155	35	16	64	0	95	164	29
MINNESOTA																																				
Duluth	47.6	27.8	37.7	90	Aug. 1	-25	Jan. 13	10001	28.82	3.43	Jun. 20-21	61.5	7.4	Feb. 20-21	80	84	63	65	12.7	NW	65	NW	Dec. 10	58	6.4	87	109	169	131	16	32	54	1	115	186	57
International Falls	47.6	24.0	35.8	90	Jul. 18+	-37	Jan. 29+	10716	26.77	2.48	Jun. 22-23	44.8	10.0	Mar. 14-15	77	78	59	62	11.3	W	35	SSE	Apr. 24	--	6.5	86	93	186	138	11	27	22	2	117	203	76
Minneapolis	54.4	36.6	45.5	97	Jul 19+	-13	Jan. 30	7731	27.85	2.62	Jul. 19-20	42.7	9.1	Nov. 18-19	75	80	59	61	11.8	SE	49	NW	Jul. 14	55	6.2	99	100	166	111	11	33	8	17	76	159	30
Rochester	54.1	35.4	44.8	95	Jul. 7	-19	Jan. 30	7858	28.00	2.97	Jul. 15-16	31.1	9.7	Nov. 18	77	79	59	63	10.3	WNW	--	---	---	--	6.4	89	107	169	115	8	42	11	10	70	164	29
St. Cloud	52.1	31.2	41.7	95	Jul. 18	-20	Jan. 30+	8794	32.45	3.33	Jun. 16-17	40.7	11.0	Mar. 14-15	80	82	60	64	---	---	--	---	---	--	6.2	101	96	168	107	12	32	14	6	87	173	46
MISSISSIPPI																																				
Jackson	75.3	54.9	65.1	96	Aug. 28	16	Jan. 17	2103	58.00	4.01	Nov. 13-14	T	T	Nov. 22+	84	88	60	67	7.2	SSE	54	N	Jul. 2	52	6.5	76	105	184	133	0	64	13	77	1	30	0
Meridian	76.8	53.9	65.4	99	Jul. 8+	14	Dec. 12	2091	49.65	4.50	Nov. 13-14	.0	.0	----	88	91	90	68	---	---	--	---	---	--	6.0	91	126	148	126	0	56	26	97	0	39	0
Vicksburg (U)	74.3	57.4	65.9	96	Aug. 28+	19	Jan 17	1890	53.49	2.28	Nov. 7-8	T	T	Nov. 22+	--	--	--	--	8.3	†N	38	N	Jul. 2+	44	6.6	73	114	178	135	0	56	20	60	1	12	0
MISSOURI																																				
Columbia	64.9	44.9	54.9	101	Aug. 15	-1	Jan 14	4921	32.45	3.86	Jul. 27	11.6	2.3	Apr. 8	77	84	58	60	9.7	SSE	56	NW	Dec. 10	54	6.4	95	87	183	111	6	47	19	43	14	108	1
Kansas City	64.7	47.6	56.2	103	Jul. 28	3	Jan. 14+	4759	36.71	3.73	Sep. 20	15.3	3.9	Dec. 30-31	70	77	57	56	10.6	S	56	NW	Jun. 22	55	6.4	86	100	179	113	6	37	10	45	20	95	0
St. Joseph	63.4	43.5	53.5	103	Aug. 15	-6	Jan 30	5439	30.43	3.05	Aug. 15-16	19.1	4.0	Dec. 30-31	--	--	--	--	11.5	S	46	NNW	Dec. 10+	--	6.1	101	94	170	100	5	48	16	45	23	130	3
St. Louis (U)	65.1	49.1	57.1	96	Aug. 15+	2	Jan 14	4420	52.72	8.74	Jun. 14-15	3.6	1.1	Jan. 30-31	--	--	--	--	10.3	SW	59	SW	Jun. 12	53	6.2	103	88	174	128	0	45	6	35	13	74	0
Springfield	65.6	46.3	56.0	98	Jul. 28	2	Jan. 16	4447	47.90	2.62	May 22-23	10.7	4.4	Apr. 12	81	86	62	65	12.2	S	56	NW	May 22	61	6.5	84	99	182	134	4	70	30	37	16	91	0
MONTANA																																				
Billings	57.0	35.3	46.2	101	Aug. 5	-28	Jan. 25	7312	21.22	1.66	May 20-21	62.3	7.4	Oct. 4	64	72	57	51	11.7	SW	57	NW	Nov. 26	64	6.1	89	118	158	113	17	41	20	28	42	167	23
Butte	52.1	24.9	38.5	91	Aug. 4	-41	Jan. 26	9597	9.82	1.06	May 19-20	55.5	5.0	Sep. 18	--	--	--	--	7.1	SSE	*48	W	Mar. 10	--	6.9	66	109	190	109	28	40	5	1	61	222	37
Glasgow	53.9	30.9	42.4	100	Aug 5+	-34	Jan 24	8666	10.39	1.22	Aug. 30	20.0	3.4	Feb. 6-7	70	78	57	52	---	---	--	---	---	--	6.5	85	111	169	87	8	39	9	22	68	190	39
Great Falls	54.7	34.2	44.5	96	Jul 10	-31	Jan. 25	7759	16.16	1.94	May 20-21	65.3	8.3	Oct. 3-4	60	67	50	46	14.5	SW	68	SW	Jul. 22	74	6.5	80	105	180	135	28	34	17	15	55	158	25

See reference notes at end of table.

ANNUAL CLIMATOLOGICAL DATA

State and Station	Temperature							Degree days	Precipitation						Relative humidity				Wind					Percent of possible sunshine	Average sky cover sunrise to sunset	Number of days										
	Averages			Extremes								Snow, Sleet									Fastest mile					Sunrise to sunset							Max temp		Min temp	
	Daily maximum	Daily minimum	Monthly	Highest	Date	Lowest	Date		Total	Greatest in 24 hrs	Date	Total	Greatest in 24 hrs	Date	1 00a E.S.T.	7.00a E.S.T.	1·00p E.S.T.	7.00p E.S.T.	Average hourly speed	Prevailing direction	Speed	Direction	Date			Clear	Partly cloudy	Cloudy	Precipitation .01 inch or more	Snow, Sleet, Hail 1.0 or more	Thunderstorms	Heavy fog	90° and above	32° and below	32° and below	Zero and below
MONTANA (Cont'd.)																																				
Havre (U)	55.4	32.2	43.8	99	Jul. 11	-37	Jan. 25	8063	11.65	1.14	May 20-21	41.3	6.0	Oct. 22	--	76	57	--	8.3	†W	45	SW	Feb. 11	54	6.3	81	122	162	99	14	33	6	25	61	183	32
Helena	54.4	30.7	42.6	97	Aug. 4	-42	Jan. 25	8343	14.65	1.99	May 19-20	78.4	13.3	Sep. 18-19	65	73	56	49	8.0	NW	57	W	Jul. 22	56	6.7	74	100	191	108	21	40	8	15	47	176	31
Kalispell	53.7	31.0	42.4	92	Jul 13	-28	Jan. 26	8253	12.44	.90	Jun 8-9	64.0	6.8	Jan. 30-31	--	--	59	--	---	---	--	--	---	--	6.8	74	102	189	119	23	28	---	3	52	182	20
Miles City	57.5	33.8	45.7	103	Aug 5	-37	Jan 25	7720	12.62	1.23	Jun. 16-17	25.0	5.0	Mar. 12-13	--	--	--	--	10.7	SE	*46	WSW	Aug. 12	--	6.2	84	126	155	84	12	18	9	35	54	177	31
Missoula	56.0	32.7	44.4	95	Jul 12	-33	Jan. 26	7628	12.21	1.82	May 19-20	45.7	4.9	Jan. 19-20	68	79	59	49	6.2	WNW	72	SE	Jul. 12	54	7.0	78	75	212	126	13	27	21	12	44	169	13
NEBRASKA																																				
Grand Island	60.9	39.2	50.1	101	Jul. 7+	-14	Jan 10	6337	27.43	2.45	Jun 15-16	24.3	4.0	Apr. 3-4	76	81	56	57	12.7	S	--	--	---	--	5.8	118	86	161	84	9	49	26	34	30	153	11
Lincoln (U)	61.8	42.7	52.3	104	Jul. 12	-5	Jan. 10	5794	34.63	4.86	Jul 1	44.8	10.4	Nov. 17-18	--	--	--	--	10.5	S	58	S	Apr. 19+	60	5.8	118	88	159	93	13	40	5	37	26	131	5
Norfolk	59.5	37.7	48.6	105	Jul. 12	-17	Jan. 14	6809	25.40	2.47	Sep. 13-14	23.6	4.4	Nov. 17-18	--	83	58	59	---	---	--	--	---	--	6.2	100	92	173	86	7	47	15	36	38	156	14
North Platte	60.3	35.9	48.1	101	Jul. 7	-14	Jan. 25+	6819	29.72	2.93	Aug. 29	35.4	7.6	Apr. 3	80	87	59	58	10.1	SSE	66	NW	May 25	58	6.1	103	105	157	102	10	56	23	26	31	165	10
Omaha	61.0	41.8	51.4	103	Jul. 12	-10	Jan. 14	6027	34.45	2.41	Aug. 28	40.5	10.8	Mar. 24-25	76	81	60	59	11.2	SSE	58	E	May 16	59	6.0	111	90	164	99	10	47	18	34	33	138	9
Scottsbluff	61.4	34.5	48.0	100	Jul. 6	-19	Jan. 16	6765	21.91	2.17	Jul. 18-19	42.0	9.2	Apr. 2-3	82	52	50	74	10.9	ESE	44	WNW	Dec. 22+	--	5.9	106	109	150	92	14	44	8	30	25	171	11
Valentine	59.1	34.1	46.6	105	Jul. 17	-24	Jan. 25	7384	16.65	1.74	Jul. 20-21	22.4	6.7	Apr. 3-4	--	--	--	--	10.8	---	47	N	Nov. 29	63	5.9	107	104	154	83	5	49	4	33	41	170	25
NEVADA																																				
Elko	61.0	28.3	44.7	97	Jul. 5	-23	Jan. 30	7525	10.10	.83	May 18-19	22.6	5.1	Nov. 3-4	61	72	49	39	5.4	SW	*40	W	Nov. 14	--	5.7	120	98	147	86	8	31	6	40	20	208	16
Ely	59.9	28.5	44.2	93	Aug. 18+	-25	Jan. 29	7691	9.14	.69	Aug. 21	55.0	6.1	Jan. 25-26	60	68	41	37	10.9	S	54	S	Sep. 5	69	5.7	119	100	146	85	21	28	0	14	18	223	16
Las Vegas	78.6	52.9	65.8	113	Jun. 25	24	Jan. 29	2421	4.98	2.59	Aug. 20-21	1.0	1.0	Jan. 29	35	43	26	21	10.1	SW	*53	NNW	Apr. 6	78	4.0	190	89	86	26	1	10	2	118	0	44	0
Reno	65.1	32.3	48.7	97	Jun. 27+	-3	Jan. 9	6105	7.37	.86	Oct. 19-20	13.1	3.5	Jan. 20	59	76	45	33	6.7	WNW	56	SW	Nov. 13+	81	4.9	160	84	121	58	4	16	7	47	7	179	3
Winnemucca	63.7	31.1	47.4	98	Jul 5	-19	Jan. 30+	6643	10.02	.97	May 11-12	18.8	6.1	Jan. 25	59	69	45	36	7.5	W	56	W	Jul. 28	59	5.8	124	74	167	74	7	23	5	50	9	172	10
NEW HAMPSHIRE																																				
Concord	59.3	34.4	46.9	95	Jun. 17+	-30	Jan. 18	6900	32.01	1.86	Dec. 10-11	33.4	5.8	Jan. 6-7	80	78	50	64	7.5	NW	38	SW	Jun. 29	58	6.0	98	123	144	108	10	25	43	11	35	163	17
Mt. Washington Obs.	33.9	20.5	27.2	68	Jun. 18	-37	Jan. 14	13698	73.15	2.90	Dec. 26-27	179.9	22.7	Dec. 26-27	88	88	85	88	33.5	W	‡120	WNW	Dec. 1	37	7.8	42	77	246	178	49	21	311	0	158	237	65
NEW JERSEY																																				
Atlantic City (U)	60.7	48.9	54.8	92	Jul. 5	7	Jan. 15	4462	34.52	1.62	Mar. 19	14.7	4.3	Jan. 15-16	--	80	68	76	15.4	S	65	NE	Oct. 6	59	6.1	104	98	163	121	6	19	29	1	9	54	0
Newark	63.8	46.0	54.9	101	Jul. 22	0	Jan. 15	4790	35.08	1.61	Apr. 4-5	39.0	13.3	Dec. 3-4	72	74	53	62	9.7	SSW	*39	SSW	Jun. 29	--	6.1	94	117	154	125	8	31	19	28	14	86	1
Trenton (U)	63.2	46.5	54.9	100	Jul. 22+	2	Jan. 15	4785	28.79	1.29	Apr. 4-5	28.7	8.0	Dec. 3-4	--	--	--	--	8.9	†N	43	†N	Apr. 9	55	6.2	83	130	152	116	8	29	---	27	14	77	0
NEW MEXICO																																				
Albuquerque	69.4	45.1	57.3	104	Jul. 3	16	Nov. 22	4053	10.61	1.27	Oct. 11-12	4.4	2.9	Dec. 24	50	61	40	32	7.6	N	50	W	Apr. 7	69	5.2	128	116	121	71	2	48	5	57	1	79	0
Clayton	66.0	38.7	52.4	102	Jul. 3	1	Nov. 23+	5298	16.10	3.19	May 31-Jun. 1	26.0	5.8	Mar. 4	--	71	44	43	---	---	--	---	---	--	5.5	138	80	147	73	7	48	12	34	11	135	0
Raton	63.5	33.6	48.6	98	Jul. 3	-5	Nov. 22	6237	22.77	2.39	Oct. 19	24.5	6.2	Nov. 16	--	74	42	43	---	---	--	---	---	--	5.9	98	118	149	96	8	82	12	12	7	172	5
Roswell	75.3	45.6	60.5	108	Jul. 1+	6	Jan. 18	3248	9.32	1.15	Sep. 22	3.3	3.3	Nov. 21-22	55	68	40	35	10.4	---	72	W	Dec. 7+	--	4.9	151	101	113	56	2	37	10	93	1	82	0
NEW YORK																																				
Albany	59.1	38.0	48.6	97	Jun. 18	-24	Jan. 14	6523	27.64	1.76	Dec. 20-21	41.8	6.2	Apr. 8-9	79	80	54	65	8.4	S	49	W	Jan. 23	52	6.6	70	110	185	122	11	21	18	10	38	143	11
Binghamton (U)	58.7	39.6	49.2	97	Jun. 18	-17	Jan. 15	6230	30.41	1.47	Oct. 8	34.4	5.7	Apr. 4	AP 79	AP 82	AP 60	AP 67	AP 10.7	AP NW	AP 60	AP NW	Jun. 13	AP 50	AP 7.3	AP 41	AP 110	AP 214	160	9	AP 33	AP 49	8	33	131	5
Buffalo	57.1	40.3	48.7	95	Jun. 18	-12	Jan. 15	6364	38.6[illegible]	2.40	Jan. 22-23	[illegible]5.[illegible]	9.4	Jan. 17-18	80	79	61	69	11.8	WSW	67	W	Apr. 25	55	7.1	57	107	201	152	25	22	22	4	40	133	4
New York	63.1	48.5	55.8	101	Jul. 22	0	Jan. 15	4514	38.05	2.41	Sep. 16-17	31.7	7.5	Dec. 3-4	68	71	54	61	13.0	---	56	NW	Jan. 23	--	6.0	96	120	149	126	8	21	8	19	13	62	1
New York (U)	62.1	48.0	55.1	97	Jul. 22+	3	Jan. 15	4637	33.29	1.99	Aug. 25-26	27.1	6.8	Dec. 4	a 68	73	b 59	61	13.4	NW	71	NW	Jan. 23	64	5.7	123	98	144	116	7	24	13	10	12	69	0
New York (Central Pk.)	63.1	47.8	55.5	101	Jul. 22	0	Jan. 15	4641	36.49	2.55	May 14	29.7	8.0	Dec. 3-4	--	73	57	64	9.2	SW	39	N	Dec. 4	63	5.6	93	173	99	122	7	--	---	21	13	66	1

See reference notes at end of table.

ANNUAL CLIMATOLOGICAL DATA

State and Station	Temperature								Precipitation						Relative humidity				Wind							Number of days										
	Averages			Extremes								Snow, Sleet									Fastest mile					Sunrise to sunset							Max temp		Min temp	
	Daily maximum	Daily minimum	Monthly	Highest	Date	Lowest	Date	Degree days	Total	Greatest in 24 hrs	Date	Total	Greatest in 24 hrs	Date	1 00a E.S.T.	7 00a E.S.T.	1 00p E.S.T.	7 00p E.S.T.	Average hourly speed	Prevailing direction	Speed	Direction	Date	Percent of possible sunshine	Average sky cover sunrise to sunset	Clear	Partly cloudy	Cloudy	Precipitation 01 inch or more	Snow, Sleet, Hail 1 0 or more	Thunderstorms	Heavy fog	90° and above	32° and below	32° and below	Zero and below
NEW YORK (Cont'd.)																																				
Rochester	57.3	39.2	48.3	97	Jun. 18	-16	Jan. 15	6580	25.67	1 66	May 19-20	69.7	6.5	Jan. 10	84	83	62	71	12.2	WSW	54	SW	Jun. 29	54	7.0	57	110	198	146	25	27	7	6	40	135	4
Syracuse	58 0	39 5	48.8	96	Jun 18	-24	Jan. 15	6425	33.17	2.56	Aug. 3-4	70.1	7 0	Mar 8-9+	78	78	59	67	9.4	WNW	52	NW	Apr 7	50	7.1	57	111	197	161	24	23	6	8	43	136	5
NORTH CAROLINA																																				
Asheville (U)	67.0	47.2	57.1	94	Aug. 3	1	Dec. 12	3876	42 29	4 05	Apr 4-5	5 4	2 5	Mar. 7-8	--	--	--	--	8.0	NW	38	NW	Nov. 30	50	6.4	87	104	174	144	2	43	65	15	5	69	0
Cape Hatteras (R)	69.8	56.4	63.1	91	Jun. 15	19	Dec. 12	2355	58.48	4.54	Oct. 5 6	T	T	Dec. 12+	83	80	66	79	11.8	NNE		-	-		6 3	96	94	175	136	0	41	10	2	0	10	0
Charlotte	72.5	51.3	61.9	99	Sep. 1	10	Dec. 12	2904	46.23	1.90	Aug. 17-18	T	T	Dec. 11+	82	85	55	66	8.3	NNE	57	NW	Jun 19	60	6 2	100	91	174	123	0	42	28	61	1	46	0
Greensboro	69.3	48.2	58.8	96	Jul. 14	9	Dec. 12	3638	43.17	2.38	Jan. 30-31	.4	.4	Jan. 17	82	84	55	67	7.7	SW	42	NE	Aug. 1	65	6.4	87	100	178	127	0	41	42	36	3	69	0
Raleigh	70.8	49.4	60 1	98	Aug. 16+	10	Dec. 12	3319	46.26	4 40	May 11-12	1.0	1.0	Dec. 11	84	86	56	70	7.7	S	*35	WNW	Jul. 15	57	6.4	86	102	177	121	1	42	31	42	3	57	0
Wilmington	73.6	53.7	63.7	98	Jul. 9	14	Dec. 12	2363	50.10	6.15	Sep. 29-30	1.0	1.0	Dec. 11	--	86	60	77	10.9	SE	44	SW	Apr. 5	63	5 9	114	108	143	115	1	34	18	44	1	28	0
Winston Salem	69.2	49.6	59.4	96	Aug. 12+	8	Dec. 12	3496	55.36	4.41	Jun. 22	1.0	1 0	Jan. 17	77	80	55	64	8.6	NE	*42	NW	Nov 30	--	6.2	102	90	173	125	1	36	33	38	3	55	0
NORTH DAKOTA																																				
Bismarck	53.7	30 4	42.1	104	Aug. 1	-35	Jan. 29	8809	14.14	1.03	Jun. 16-17	25.0	3 7	Feb. 19-20	77	82	58	58	11.5	WNW	59	SW	Jul. 6	57	6.4	86	110	169	106	8	35	6	25	69	178	40
Devils Lake (U)	49.1	29.2	39.2	100	Jul 10	-27	Jan. 29	9670	18.24	1.45	Aug. 12	23 7	2 9	Nov. 7	--	85	64	64	8.5	NW	34	NW	Dec. 25	60	6.6	80	108	177	113	7	32	9	10	105	189	48
Fargo	51 8	31 8	41 8	98	Jul. 11	-27	Jan. 29	8895	25.03	3.97	Sep. 1-2	14.0	2.7	Feb 20	79	83	62	63	15.0	N	60	N	Jun. 22	57	6.4	92	94	179	95	5	33	8	13	92	177	41
Williston (U)	52.6	32.0	42 3	101	Aug. 6+	-32	Jan. 24	8720	11.38	1.02	Jun. 16-17	25.8	2.4	Nov 14-15	--	78	56	53	7.4	SE	40	NW	Jul. 4	60	6.7	72	104	189	106	8	23	5	23	72	178	35
OHIO																																				
Akron	58.9	39.9	49 4	94	Jun. 17	-8	Jan. 17	6221	32.14	2.71	Jun. 28	31.8	3.9	Apr. 3	84	86	63	72	10.8	S	--	--	---	--	7.0	69	99	197	151	9	30	32	8	39	141	3
Cincinnati (Abbe Obs.)	64.6	45.9	55.3	96	Jun. 16	2	Jan. 17	4735	53.94	3.18	Aug. 11	11.4	3.5	Dec. 3-4	75	80	57	60	6.1	†S	32	SW	Apr. 5	62	7 0	69	88	208	132	3	48	23	27	12	88	0
Cleveland	59.3	42.6	51 0	94	Jul. 21	-7	Jan. 17	5785	37.62	2.34	Jun. 28	50.0	7.6	Apr. 7-8	79	80	62	69	13 7	S	68	SW	May 14	42	7.1	70	92	203	152	15	28	9	9	30	114	4
Columbus	63.6	42.8	53.2	98	Jul. 20	-7	Jan. 17	5267	37.77	2 37	Apr. 3-4	25.9	8.1	Dec. 3-4	80	82	57	65	8.5	NNW	48	W	May 18	56	6.8	68	109	188	140	5	43	16	27	16	117	2
Dayton	61 4	43 4	52.4	94	Jun. 17	-6	Jan. 17+	5495	40.11	2.61	Apr. 3-4	15.1	3 1	Jan. 6-7	75	78	57	63	11.0	S	49	SW	Nov. 8	57	6.9	62	112	191	128	5	41	22	17	18	116	2
Sandusky (U)	58.8	43.3	51 1	95	Jul 21	-8	Jan. 17	5870	40.60	3.32	Jun. 27-28	41.8	8.0	Jan. 9-10	--	--	--	--	8.1	---	47	SW	Apr. 5	53	5 9	105	109	151	147	17	34	26	14	36	119	2
Toledo	59.0	39.9	49.5	97	Jun. 17	-8	Jan. 16	6287	31.03	1.71	Oct. 22-23	34.2	9.8	Apr. 7-8	--	86	62	69	10.6	WSW	66	W	Apr. 5	53	6 7	81	95	189	131	8	31	22	18	37	142	6
Youngstown	58 9	39 4	49 2	91	Aug 3+	-12	Jan 17	6246	35.68	2.96	Jun. 28	62.5	6.1	Mar. 8	83	84	60	71	11 1	SW	*52	WSW	Nov. 8	--	7 1	59	104	202	158	21	27	33	8	35	140	5
OKLAHOMA																																				
Oklahoma City	68 3	48.7	58 5	102	Jul. 29	9	Jan. 10	3930	42.04	3.61	Sep. 14	.8	.7	Apr. 12	83	88	64	64	12.9	SSE	72	SW	Jun. 12	58	6.1	111	89	165	101	0	58	33	60	10	69	0
Tulsa	69 8	50.5	60 2	107	Jul 29	11	Jan. 16+	3576	46.59	2.49	May 24-25	3 1	1.7	Apr. 12	77	84	59	60	9.3	SSE	51	N	Nov 29	53	6.4	98	75	192	121	2	58	9	70	8	63	0
OREGON																																				
Astoria	58 6	43 0	50 8	91	Sep 13	15	Jan. 27	5086	60.33	2.53	Mar. 6-7	4.4	1 9	Jan. 19	87	90	77	71	6 6	SE	*44	S	Feb 23	--	7 4	58	76	231	188	2	5	36	1	2	43	0
Burns (U)	59.1	32 8	46 0	93	Sep 6	-25	Jan 27	7033	13.45	86	Feb. 13-14	40 6	6.0	Jan. 19-20	64	73	56	43	---	---	--	---	---	--	5 4	129	86	150	94	12	16	18	7	28	170	7
Eugene	62 6	41 3	52 0	95	Sep. 13	-4	Jan 27	4754	44 15	3.74	Dec. 19-20	7.9	5 7	Jan. 24-25	--	--	72	59	7.7	---	*46	SW	Nov. 13	-	6 7	74	94	197	141	2	6	61	6	7	60	1
Meacham	52.4	34.2	43.3	88	Jul 5	-13	Jan. 26	7898	31.85	1.78	Nov. 12-13	146.9	15.0	Dec. 19	--	--	68	--	---	---	--	---	---	--	6 9	83	69	213	137	45	13	29	0	49	167	6
Medford	65.4	41 1	53 3	99	Jul. 4	11	Jan. 27	4706	20.52	1.41	Mar. 24-25	3 7	1 4	Jan. 24	74	86	68	49	4 6	WNW	*40	SSE	Oct 9	--	6.1	113	78	174	106	1	12	61	42	3	90	0
Pendleton	61 9	41 1	51 5	97	Jul. 5	-22	Jan. 27	5400	14.35	1 09	Oct. 1-2	30.4	10.3	Jan. 22-23	66	73	58	51	9.6	SE	*55	W	Apr. 24	--	6.2	104	79	182	106	9	14	32	20	23	89	11
Portland (U)	62 0	46.5	54.3	94	Sep. 14	11	Jan. 28+	4147	38.46	1 73	Dec. 18-19	5 3	1.5	Jan. 19	AP 77	AP 86	AP 73	AP 60	AP 8.5	AP ESE	AP 60	AP S	AP Apr.14	AP 45	AP 7.0	AP 70	AP 80	AP 215	148	2	AP 6	AP 43	5	11	26	0
Roseburg	64 4	41 7	53 1	98	Sep. 22	9	Jan. 29+	4426	35.91	2 35	Dec. 19-20	5.6	3.3	Jan. 24-25	--	--	71	55	4.6	--	31	N	Oct. 19	49	6.7	76	92	197	139	3	7	55	12	4	55	0
Salem	63.1	41 4	52 3	95	Sep. 13	9	Jan. 27	4676	39.25	1.68	Dec. 18-19	2.4	1.5	Jan. 20	83	91	72	59	7.5	S	*35	S	Dec. 24	--	6.9	77	70	218	152	1	7	35	6	6	62	0

See reference notes at end of table.

ANNUAL CLIMATOLOGICAL DATA

State and Station	Temperature Averages Daily maximum	Temperature Averages Daily minimum	Temperature Averages Monthly	Temperature Extremes Highest	Temperature Extremes Date	Temperature Extremes Lowest	Temperature Extremes Date	Degree days	Precipitation Total	Precipitation Greatest in 24 hrs	Precipitation Date	Snow, Sleet Total	Snow, Sleet Greatest in 24 hrs.	Snow, Sleet Date	Relative humidity 1 00a E.S.T.	Relative humidity 7 00a E.S.T.	Relative humidity 1 00p E.S.T.	Relative humidity 7 00p E.S.T.	Wind Average hourly speed	Wind Prevailing direction	Wind Fastest mile Speed	Wind Fastest mile Direction	Wind Fastest mile Date	Percent of possible sunshine	Average sky cover sunrise to sunset	Number of days Sunrise to sunset Clear	Number of days Sunrise to sunset Partly cloudy	Number of days Sunrise to sunset Cloudy	Number of days Precipitation .01 inch or more	Number of days Snow, Sleet, Hail 1.0 or more	Number of days Thunderstorms	Number of days Heavy fog	Number of days Max temp 90° and above	Number of days Max temp 32° and below	Number of days Min temp 32° and below	Number of days Min temp Zero and below
OREGON (Cont'd)																																				
Sexton Summit (R)	55 7	39.5	47.6	86	Sep. 14+	13	Jan. 28+	6397	36.22	2.07	Sep. 26-27	107.5	10.6	Dec. 16-17	--	--	71	63	---	--	--	--	---	--	6.0	123	66	176	128	30	8	168	0	22	95	0
PENNSYLVANIA																																				
Allentown	62 1	41 3	51 7	100	Jul. 22+	-6	Jan. 18	5592	35.21	2.25	Jun. 24	27.0	7.2	Feb. 1	80	82	56	66	10.1	ENE	*50	W	Jan. 23	--	6.2	86	120	159	120	9	33	21	16	16	132	3
Erie	56.7	40 8	48 8	92	Jun 18	-5	Jan. 17	6314	3[illegible].24	2.80	Jun 28-29	76.8	10.0	Apr. 7-8	--	--	--	--	11.6	---	--	---	---	--	7.1	66	95	204	146	31	24	12	2	36	128	2
Harrisburg	62 8	44.7	53 8	97	Jul. 22+	-2	Jan. 18	5087	28.98	1.98	Dec. 20	37.3	7.3	Feb. 14-15	71	74	52	58	7.2	WNW	41	NW	Feb. 10	57	6.6	78	104	183	109	13	24	12	21	14	95	2
Philadelphia	64.2	46.0	55.1	101	Jul 21	5	Jan. 18+	4745	32.20	3.36	Aug. 25-26	15.5	5.8	Dec. 3-4	76	77	54	64	9.3	SW	56	SW	Nov. 8+	57	6.6	72	121	172	116	5	20	30	31	12	83	0
Pittsburgh	60 6	42.3	51 5	93	Aug. 3	-6	Jan. 17	5617	33.67	2.73	Jul. 8-9	30.5	5.5	Mar. 7-8	77	80	58	65	9.6	WSW	*42	WSW	May 14	59	7.2	52	114	199	154	10	29	18	10	27	121	2
Reading (U)	63.7	45.9	54.8	99	Jul. 21	2	Jan. 15	4840	31.93	2.13	Dec. 20	21.1	5.6	Feb. 1	--	73	--	--	10.0	†W	53	NW	May 26	52	6.5	73	116	176	117	8	32	7	29	13	84	0
Scranton	59.0	38 9	49.0	94	Jul. 21	-10	Jan. 15	6276	29.91	1.56	Oct. 7-8	35.4	6.9	Apr. 4	76	77	55	64	9.1	WSW	47	SW	Dec. 20+	51	6.6	72	119	174	121	12	32	23	8	36	142	4
Shippingport (Pressure Water Reactor)	61.3	40 9	51.3	92	Jul. 21+	-3	Jan. 17	5633	33.66	2.29	Apr. 3-4	10.8	2.1	Feb. 14	--	8a. 75	2p. 50	--	2.7	W	63	NW	Jun. 28	--	---	---	---	---	130	5	35	15	13	22	125	1
Williamsport	61.6	40.9	51.3	97	Jul. 22+	-10	Jan. 18	5699	37.00	2.42	Dec. 20-21	42.4	10.5	Mar. 8	--	81	54	63	---	---	--	---	---	--	6.7	68	125	172	144	10	---	---	20	18	130	4
RHODE ISLAND																																				
Block Island	57.7	44.8	51.3	88	Jul. 21+	-1	Jan. 15	5316	32.26	2.79	Aug. 15	11.8	2.8	Feb. 1-2	--	79	68	--	---	---	--	---	---	--	5.9	111	110	144	99	4	15	80	0	12	80	1
Providence	60.8	41.8	51.3	97	Jul. 22+	-9	Jan. 15	5517	30.08	1.93	Apr. 5-6	31.4	6.0	Mar. 20	77	75	52	65	11.9	SW	*52	S	Nov. 9	63	5.8	111	117	137	113	9	20	16	10	19	112	4
SOUTH CAROLINA																																				
Charleston (U)	73.2	59.7	66.5	96	Sep. 1+	20	Dec. 12	1666	51.79	3.74	Sep. 28-29	.0	.0	----	AP 90	AP 90	AP 60	AP 79	9.7	AP NNE	45	SE	Apr. 1	60	6.5	AP 85	AP 101	AP 179	112	0	48	39	25	0	8	0
Columbia	75.7	53.2	64.5	102	Aug. 12	15	Dec. 13+	2290	42.64	2.34	Sep. 6	T	T	Dec. 11+	84	88	54	67	7.1	NE	*40	SW	Jun. 28	59	6.1	105	98	162	118	0	44	29	85	1	34	0
Florence	75.1	53.7	64.4	100	Aug. 1+	15	Dec. 12	2241	43.76	4.70	Sep. 4-5	T	T	Dec. 11+	--	85	55	69	---	---	--	---	---	--	5.9	118	88	161	118	0	40	28	71	0	31	0
Greenville	71.1	52.0	61.6	100	Aug. 12	10	Dec. 12	2941	49.47	2.46	Apr. 4-5	T	T	Dec. 11+	77	81	54	63	9.4	NE	50	SW	Dec. 20	56	6.6	85	94	186	134	0	49	35	52	1	31	0
Spartanburg	71.2	51.8	61.5	98	Aug. 12	9	Dec. 12	2938	48.92	2.91	Nov. 18-19	T	T	Dec. 11+	--	--	--	--	8.4	---	39	NW	Feb. 10	--	---	---	---	---	131	0	48	30	44	1	39	0
SOUTH DAKOTA																																				
Huron	56.0	34.7	45.4	101	Aug. 1	-22	Jan. 29	7784	22.57	1.76	May 20	32.6	8.9	Apr. 3-4	82	87	63	62	11.6	SSE	77	NW	Jul. 3	66	6.2	99	102	164	103	10	39	8	26	59	164	29
Rapid City	57 7	34.5	46.1	100	Aug. 11+	-23	Jan. 26	7406	19.34	2.46	May 24-25	33.5	5.3	Apr. 3-4	72	55	56	70	10.6	NNW	54	N	May 25	55	6.3	83	117	165	123	11	49	20	33	43	170	23
Sioux Falls	56.5	35.4	46.0	100	Aug. 1+	-17	Jan. 26+	7598	28.19	4.32	Jun. 16-17	38.1	11.4	Mar. 17-18	71	76	55	56	10.9	SSE	48	NW	Mar. 14	--	6.3	94	96	175	89	9	37	15	23	56	164	23
TENNESSEE																																				
Bristol	68.8	47.0	57.9	94	Jul. 22	2	Dec. 12	3834	51.18	2.55	Nov. 16-17	4.8	2.7	Mar. 8	--	86	57	64	---	---	--	---	---	--	6.6	75	109	181	138	1	39	31	36	5	82	0
Chattanooga	71.4	50.6	61.0	100	Sep. 1	9	Dec. 12	3115	60.27	4.35	Sep. 14-15	T	T	Dec. 12+	84	88	57	65	7.3	S	57	SW	Sep. 14+	51	6.7	82	93	190	139	0	49	34	54	2	51	0
Knoxville	70.8	50.9	60.9	98	Aug. 31+	5	Dec. 12	3215	61.49	3.09	Jan. 27-28	3.7	3.1	Mar. 8	79	84	58	64	7.8	NE	50	SW	Apr. 8	53	6.6	87	92	186	159	2	47	23	48	2	48	0
Memphis	71.1	52.9	62.0	97	Jul. 15	11	Jan. 17	2949	76.85	4.63	Sep. 21-22	T	T	Dec. 11+	79	83	60	64	9.5	SSW	44	S	Apr. 3+	53	6.7	75	91	199	144	0	66	14	49	3	42	0
Nashville	70.0	50.4	60.2	96	Aug. 11+	8	Jan. 17	3450	60.07	3.82	Jan. 28-29	4.6	3.1	Mar. 7	83	88	62	68	7.6	S	42	N	Jul. 9	51	6.7	78	99	186	142	2	60	13	48	6	63	0
Oak Ridge (R)	70.7	50.7	60.7	98	Sep. 1+	6	Dec. 12	3239	67.88	3.20	Dec. 6-7	.6	.6	Mar. 8	--	--	--	--	4.7	WSW	--	---	---	--	6.4	99	82	184	146	0	59	38	60	2	48	0
Oak Ridge Area Sta.	70.2	49.1	59.7	101	Sep. 1	4	Dec. 12	3419	64.32	3.09	Sep. 13-14	----	---	----	--	--	--	--	---	NE	--	---	---	--	---	---	---	---	144	---	---	---	50	2	60	0
TEXAS																																				
Abilene	74.7	52.7	63.7	105	Jul. 30	14	Jan. 17	2605	36.57	3.75	Apr. 25-26	3.5	3.5	Nov. 22	71	79	54	51	11.8	SSE	54	W	May 8	--	5.7	117	90	158	88	1	51	12	93	3	38	0
Amarillo	68.6	44.2	56.4	106	Jun. 29	3	Nov. 23	4301	21.24	2.09	Aug. 14	17.2	9.8	Mar. 23-24	67	77	50	48	12.3	S	59	NW	Mar. 24	70	5.5	127	92	146	72	3	44	31	60	8	96	0
Austin	78.0	58.3	68.2	104	Jul. 30	21	Dec. 12	1573	51.30	4.69	Oct. 13-14	T	T	Dec. 31+	80	88	62	60	9.1	S	44	NE	Apr. 26+	57	6.1	91	123	151	94	0	37	25	103	0	8	0
Brownsville	83.2	66.3	74.8	97	Aug. 18+	33	Dec. 12+	380	32.40	4.96	Feb. 16-17	.0	.0	----	87	91	61	70	14.0	SE	35	S	Dec. 6+	58	5.4	113	142	110	68	0	22	21	112	0	0	0
Corpus Christi	81.3	63.7	72.5	100	Aug. 10	28	Jan. 18	704	28.00	2.88	Nov. 10-11	T	T	Nov. 23	85	89	62	71	11.4	SSE	45	W	Mar. 24	71	6.0	92	130	143	70	0	30	29	100	0	5	0

See reference notes at end of table.

ANNUAL CLIMATOLOGICAL DATA

State and Station	Temperature							Degree days	Precipitation						Relative humidity				Wind					Percent of possible sunshine	Average sky cover sunrise to sunset	Number of days										
	Averages			Extremes								Snow, Sleet									Fastest mile					Sunrise to sunset							Max temp		Min temp	
	Daily maximum	Daily minimum	Monthly	Highest	Date	Lowest	Date		Total	Greatest in 24 hrs	Date	Total	Greatest in 24 hrs	Date	1 00a E S T	7 00a E S T	1 00p E S T	7 00p E S T	Average hourly speed	Prevailing direction	Speed	Direction	Date			Clear	Partly cloudy	Cloudy	Precipitation .01 inch or more	Snow, Sleet, Hail 1.0 or more	Thunderstorms	Heavy fog	90° and above	32° and below	32° and below	Zero and below
TEXAS (Cont'd.)																																				
Dallas	75.2	56.4	65.8	110	Jul 30	16	Jan 17	2284	35.14	5.10	Apr 26	T	T	Nov 24+	75	83	60	58	10.7	SSE	50	W	May 23	58	6.0	110	91	164	[illegible]	[illegible]	46	17	[illegible]	2	23	0
El Paso	76.5	52.5	64.5	107	Jan. 28	18	Nov. 23	2223	11.20	2.00	Aug. 31	4.1	4.1	Nov. 21-22	53	35	27	42	12.2	N	61	S	Jul. 23	81	4.2	174	106	85	[illegible]	2	[illegible]	5	[illegible]	0	32	0
Fort Worth	74.3	55.2	64.8	106	Jul 30	16	Jan 17	2467	30.49	4.55	Apr 26	T	T	Nov. 24+	77	85	60	60	12.1	S	52	W	May 23	—	5.8	120	88	157	101	0	57	17	90	1	27	0
Galveston	76.0	65.6	70.8	94	Jul 29+	28	Jan 17	849	41.92	2.51	Apr 28-29	0	0	- -	81	84	72	75	13.0	ESE	--	---	--	--	6.2	78	143	144	103	0	56	32	36	0	1	0
Houston (U)	78.6	63.0	70.8	101	Jul 6	26	Jan 17	983	57.27	5.88	Oct 14-15	0	0	-	AP 86	AP 90	AP 62	AP 70	10.0	SE	42	SE	Apr 25	61	6.3	78	140	147	120	0	61	25	81	0	4	0
Laredo	85.6	63.9	74.8	108	Jun. 28	31	Dec. 12+	721	20.06	4.18	May 26-27	T	T	Nov 23	71	82	53	46	11.7	SSE	36	NE	May 15+		5.2	135	114	116	68	0	32	16	161	0	3	0
Lubbock	71.8	46.4	59.1	107	Jun 29	-1	Nov. 23	3586	24.56	4.30	May 31-1	6.0	3.5	Nov 21-22	71	81	53	49	13.8	S	69	NNW	Mar 24		5.5	133	99	133	80	3	43	23	73	1	[illegible]	1
Midland	75.3	51.3	63.3	104	Jun. 29	14	Jan 17	2612	15.58	1.25	May 30-31	1.1	1.1	Nov. 22	63	74	46	41	10.2	SSE	58	NNE	Jun 23		5.2	138	108	119	65	1	42	22	94	4	46	0
Port Arthur	77.9	61.0	69.5	96	Jul 10+	25	Dec 12+	1125	66.27	7.53	Jun 26-27	0	0	----	87	90	65	73	11.7	S	72	NW	Jun 27	51	6.4	75	134	156	120	0	64	11	76	0	5	0
San Angelo	75.8	53.6	64.7	105	Jul 30	15	Jan 17	2301	22.16	2.35	Apr. 26	5.4	4.1	Nov. 23-24	69	80	54	48	11.0	S	69	WNW	Apr. 26	--	5.3	139	90	136	78	2	43	13	91	3	32	0
San Antonio	79.1	58.8	69.0	102	Jul 30+	18	Dec 12	1339	48.83	5.21	Sep 22-23	3	3	Nov. 23	78	84	58	55	8.9	SSE	47	NE	Sep. 12	60	6.0	96	110	159	97	0	45	35	98	0	9	0
Victoria	80.0	61.0	70.5	100	Aug. 18+	22	Dec. 12	1024	47.56	3.40	Sep 22-23	0	0	----	--	90	63	68	10.5	SSE	72	NW	Aug. 18		6.2	87	120	158	95	[illegible]	42	24	98	[illegible]	6	0
Waco	76.7	57.1	66.9	108	Jul 30	19	Jan 17	1979	18.91	5.09	Apr 19-20	T	T	Nov 24+	77	85	61	59	12.3	S	58	NNW	Mar 27	--	6.2	104	93	168	97	0	53	27	98	[illegible]	19	0
Wichita Falls	73.0	51.9	62.5	106	Jul 29	14	Dec. 11+	3132	41.60	4.07	May 17-18	5.1	3.9	Nov. 22	73	81	57	57	9.6	SE	37	W	Oct. 22	--	5.7	118	87	160	91	2	52	20	93	6	50	0
UTAH																																				
Milford	64.4	34.4	49.4	100	Jul 31+	13	Jan. 31+	6273	8.41	.82	Apr 22	40.5	11.8	Jan. 26	--	72	46	40	---	---	--	---	---	--	5.6	116	103	146	71	12	39	8	60	16	166	8
Salt Lake City	63.7	39.6	51.7	99	Jul. 31+	-2	Jan 30	5735	18.44	2.41	Apr 22-23	45.4	5.9	Jan. 23-24	66	70	45	43	8.5	SSE	45	W	Jul 21	64	6.0	103	99	163	109	16	38	17	63	[illegible]	126	1
VERMONT																																				
Burlington	55.3	35.8	45.6	93	Jun 18	30	Jan. 15	7426	33.34	2.27	Jun. 25	35.9	7.2	Mar. 9	75	73	54	64	8.4	SSW	42	SW	Jun. 29+	52	7.1	54	104	207	118	12	27	18	3	52	145	22
VIRGINIA																																				
Lynchburg	66.6	47.6	57.1	97	Jul 22	8	Dec. 12+	4057	41.15	3.10	Sep 16-17	9.6	3.1	Jan. 15-16	--	80	56	66	7.6	SW	40	S	Nov. 8	53	6.5	78	118	169	137	4	37	[illegible]	36	6	66	0
Norfolk	69.2	52.2	60.7	99	Jul 22	6	Dec. 12+	3193	48.37	3.07	Aug 18-19	5.2	2.3	Jan 15	81	80	60	73	10.6	NNE	59	S	Sep. 4	66	6.1	94	116	155	120	3	31	18	47	5	33	0
Richmond	68.9	48.4	58.7	100	Jul 22	0	Jan 18	3805	50.61	4.12	Aug 18-19	10.6	3.2	Jan 15-16	82	84	56	69	7.7	S	50	S	Jun 28	55	6.5	78	120	167	127	5	39	32	53	6	69	1
Roanoke	67.3	47.1	57.2	98	Jul 21	7	Dec 12	4060	40.27	2.02	Sep 29-30	6.8	2.2	Nov. 23	76	79	53	62	7.9	SE	--	---	--	-	6.6	69	116	180	137	4	32	38	43	7	69	0
WASHINGTON																																				
Olympia	60.3	40.6	50.5	91	Sep 23	0	Jan 26	5245	41.45	1.70	Nov 12-13	17.9	7.4	Jan. 19-20	80	87	71	58	6.8	SW	*40	S	Nov 10	--	7.4	46	94	225	157	5	3	87	1	4	70	[illegible]
Seattle-Tacoma	58.2	43.2	50.7	84	Sep 13	9	Jan 26	5111	34.63	1.38	Feb 22-23	14.7	4.2	Jan 19-20	80	89	77	64	11.9	SSW	*44	SSW	Feb 26		7.3	59	82	224	159	6	7	55	0	4	43	0
Seattle (U)	59.9	46.7	53.3	85	Sep 15	16	Jan 27	4266	32.11	1.43	Feb 22-23	16.9	5.5	Jan 19-20	AP 74	AP 82	AP 69	AP 56	8.9	*S	60	SW	Dec. 25	47	7.2	56	93	216	154	5	4	-	0	2	23	0
Spokane	56.2	37.5	46.9	92	Jul 21+	18	Jan 27	6805	18.09	1.52	Jun 8	58.0	6.1	Oct 22-23	70	80	65	54	8.0	NE	49	W	May 1	58	6.7	84	89	192	125	21	18	50	4	41	151	[illegible]
Stampede Pass (R)	45.6	33.2	39.4	80	Sep 14	-7	Jan. 26+	9258	71.63	2.81	Dec. 5-6	415.0	24.8	Dec. 20-21		92	82	79	- -	---	-	--	---	-	7.4	67	54	244	197	78	[illegible]	236	0	89	175	5
Tatoosh Island (R)	53.6	45.5	49.6	72	Sep 13	24	Jan 25	5535	71.60	2.21	Sep 5-6	4.0	1.7	Feb 24	85	86	83	80	14.7	E	71	W	Dec. 22	48	7.4	57	79	229	182	3	2	36	0	3	[illegible]	[illegible]
Walla Walla (U)	61.9	44.0	53.0	97	Jun 1	16	Jan 27	5067	18.36	1.86	May 8-9	26.8	4.5	Jan. 19-20	--	--	60	--	5.5	*S	62	W	Mar 10	67	6.5	98	76	191	[illegible]	[illegible]	16	19	23	24	67	8
Yakima	61.9	35.4	48.7	96	Jul 5	19	Jan 26	6144	10.96	.93	Jun 5-6	21.2	6.5	Jan 19	70	80	56	45	5.3	WNW	*35	SSW	Apr. 30	--	6.1	107	91	167	77	7	[illegible]	[illegible]	17	28	147	11
WEST VIRGINIA																																				
Charleston	66.9	45.4	56.2	97	Sep 2	5	Jan 17	4382	37.48	1.90	Jul 9	14.9	2.9	Feb. 19	75	78	51	58	6.2	SW	*46	WNW	Jul 27	-	7.0	59	114	192	152	6	39	81	35	9	[illegible]	[illegible]
Elkins	62.5	39.6	51.1	90	Jul 2.+	15	Jan 17	5494	41.06	1.94	Oct 6-7	33.9	6.0	Dec 4-5	--	--	--	--	5.2	NW	*34	SSE	Apr 4	--	7.4	45	99	221	144	[illegible]	31	[illegible]	2	16	[illegible]	[illegible]
Huntington (U)	68.2	46.3	57.3	99	Jun 17	0	Jan 17	4224	36.55	2.25	Nov. 18-19	8.0	2.8	Jan 13-14	--	--	-	-	--	---	--	---			-	--	-	--	137	4	.	.	52	7	[illegible]	1

See reference notes at end of table

ANNUAL CLIMATOLOGICAL DATA

State and Station	Temperature Averages Daily maximum	Temperature Averages Daily minimum	Temperature Averages Monthly	Temperature Extremes Highest	Date	Lowest	Date	Degree days	Precipitation Total	Greatest in 24 hrs	Date	Snow, Sleet Total	Greatest in 24 hrs	Date	Relative humidity 1:00a E.S.T.	7:00a E.S.T.	1:00p E.S.T.	7:00p E.S.T.	Wind Average hourly speed	Prevailing direction	Fastest mile Speed	Direction	Date	Percent of possible sunshine	Average sky cover sunrise to sunset	Number of days Sunrise to sunset Clear	Partly cloudy	Cloudy	Precipitation .01 inch or more	Snow, Sleet, Hail 1.0 or more	Thunderstorms	Heavy fog	Max temp 90° and above	Max temp 32° and below	Min temp 32° and below	Min temp Zero and below
WEST VIRGINIA (Cont'd)																																				
Parkersburg (U)	65.3	45.1	55.2	97	Sep. 2+	-9	Jan 17	4695	36.28	2.31	May 18-19	17.1	3.0	Jan. 13-14	--	--	--	--	5.6	SW	34	W	May 14	51	6.3	95	99	171	151	11	43	11	28	8	91	1
WISCONSIN																																				
Green Bay	53.1	33.5	43.3	93	Jul 20	-15	Jan 30	8173	27.18	2.32	May 13-14	26.3	2.6	Apr. 5-6	84	84	65	70	10.9	SW	70	NE	Jul. 29	55	6.2	93	115	157	118	8	29	31	4	70	171	24
La Crosse	55.4	37.6	46.5	93	Jul. 19+	-14	Jan 30	7342	27.78	1.90	Jul 15-16	30.5	11.0	Nov. 18	--	80	59	62	9.1	S	43	NNW	Dec. 10	--	6.4	84	107	174	113	7	36	22	13	63	152	19
Madison	56.7	36.1	46.4	95	Jul 20	12	Jan 14	7265	32.86	1.89	Aug. 29-30	28.4	7.0	Mar 18-19	80	82	59	66	10.4	WNW	56	W	Jul. 8	56	6.5	92	94	179	116	9	28	27	15	50	164	19
Milwaukee	54.5	37.5	46.0	93	Jul. 20+	-10	Jan 26	7300	24.95	1.28	Jun. 12-13	32.3	6.6	Jan. 24-25	81	82	65	71	13.4	WNW	54	W	Mar 15	56	6.3	103	87	175	122	10	31	29	7	48	151	15
WYOMING																																				
Casper	57.1	33.1	45.1	95	Aug. 10+	-22	Jan 16	7621	16.12	.86	Oct. 14-15	64.9	6.3	Apr 6	69	74	49	48	14.3	SW	*58	SW	Feb. 23	--	6.2	92	107	166	120	22	39	17	24	49	177	15
Cheyenne	56.4	33.1	44.8	92	Jul. 2	-15	Jan. 16	7532	19.34	1.26	Jun. 15	58.2	10.8	Apr 1-2	69	72	48	51	13.7	WNW	56	NW	Dec. 7+	59	5.9	98	127	140	127	14	59	54	6	34	167	10
Lander	56.3	31.6	44.0	94	Aug. 10+	-17	Jan 16	7944	21.89	1.97	Apr. 22-23	90.2	16.1	Apr. 1-2	61	68	51	48	6.5	---	77	SW	Feb. 11	66	5.7	100	131	134	80	19	42	2	15	39	181	14
Sheridan	57.6	31.8	44.7	100	Aug. 10	-26	Jan 25	7783	19.17	1.38	Jun 16-17	72.7	8.7	Feb. 20-21	66	77	54	53	9.0	NW	70	W	Feb. 11	57	5.9	108	99	158	123	19	40	6	25	42	184	28
PACIFIC AREA																																				
Canton Island	89.1	78.5	83.9	94	Dec. 11	73	Dec. 4+	0	49.95	5.07	Nov. 7-8	.0	.0	----	78	81	81	69	13.4	E	*46	W	Nov. 21	--	8.4	21	81	263	129	0	16	0	148	0	0	0
Guam (R)	85.8	71.5	78.7	95	Sep. 19	61	Mar. 15	0	95.69	7.26	Nov. 15-16	.0	0	----	--	--	--	--	---	---	--	---	---	71	---	---	---	---	263	0	---	0	24	0	0	0
Hilo	80.2	65.8	73.0	88	Sep 7	57	Mar 26+	0	139.34	9.27	Aug. 28-29	.0	0	----	84	88	82	69	9.3	WSW	*31	NNW	Dec. 7	36	7.3	35	125	205	296	0	0	0	0	0	0	0
Honolulu (U)	79.6	70.6	75.1	87	Oct. 27+	61	Mar. 25	0	28.71	6.35	Jan 20-21	.0	0	----	AP 71	AP 76	AP 72	AP 58	AP 12.3	AP ENE	AP 65	AP NE	AP Nov.30	AP 72	AP 5.3	AP 117	AP 169	AP 79	139	0	AP 3	AP 0	0	0	0	0
Koror (R)	87.5	75.7	81.6	91	Nov. 13+	72	Nov. 21+	0	138.50	6.62	Aug. 12-13	0	.0	----	78	88	91	81	---	---	--	---	---	--	9.1	1	54	310	272	0	41	0	36	0	0	0
Lihue	81.7	68.3	75.0	90	Oct. 26+	53	Mar. 24+	0	47.19	7.51	Jan. 17-18	0	.0	----	78	82	78	66	10.6	NE	58	NE	Dec. 1	62	6.3	70	157	138	206	0	6	0	2	0	0	0
Majuro	85.8	77.1	81.5	89	Oct. 22+	71	Oct. 13	0	125.18	10.01	Nov. 16-17	.0	.0	----	81	84	85	77	---	---	--	---	---	--	8.7	8	71	286	218	0	15	0	0	0	0	0
Ponape (R)	87.4	74.8	81.1	94	Oct. 5	67	Nov. 12	0	170.97	22.48	Nov. 12-13	.0	.0	----	81	89	91	77	---	---	--	---	---	--	8.9	4	60	301	290	0	20	0	60	0	0	0
Truk	86.0	77.2	81.6	93	Jun. 29	72	Oct. 19+	0	119.57	4.90	Nov. 13-14	.0	0	----	80	85	87	79	---	---	--	---	---	--	9.6	2	24	339	273	0	24	0	3	0	0	0
Wake Island	84.8	75.2	80.0	92	Aug. 17	65	Jan. 11	0	30.87	2.60	Mar. 8-9	.0	.0	----	74	79	80	70	13.2	ENE	*35	ENE	Nov. 12	--	5.2	124	154	87	199	0	7	0	26	0	0	0
Yap (R)	87.4	76.0	81.7	93	Oct. 24+	70	Aug. 23+	0	109.40	4.99	Jan. 23-24	.0	.0	----	77	86	89	79	---	---	--	---	---	--	9.5	3	23	339	259	0	8	0	85	0	0	0
CARIBBEAN																																				
San Juan, P. R. (U)	83.3	73.7	78.5	93	May 4	66	Mar. 3	0	47.52	2.37	Aug. 5-6	.0	.0	----	AP 87	AP 82	AP 66	AP 79	AP 8.7	AP ENE	AP 31	AP E	AP Jan.30	AP 64	AP 5.8	AP 63	AP 210	AP 92	162	0	36	0	13	0	0	0
ALASKA																																				
Anchorage	45.0	29.6	37.3	77	Aug. 9+	-20	Dec. 26+	9974	12.49	.80	Nov. 3-4	28.9	2.9	Feb. 14-15	73	79	75	65	6.7	S	*31	NNE	Feb. 24+	52	7.3	62	79	224	109	13	2	35	#31	86	191	36
Annette	51.2	40.0	45.6	81	Aug. 16+	7	Feb. 24+	6971	114.40	5.19	Nov. 21-22	54.6	8.0	Dec. 24-25	82	85	79	72	10.3	SE	*46	SSE	Feb. 9	--	7.5	57	62	246	196	15	0	33	#16	13	80	0
Barrow	15.2	4.5	9.9	64	Aug. 8	-50	Feb. 28+	20036	7.30	.46	Jun. 25-26	34.0	2.6	Jan. 25-26	80	80	80	79	13.3	NE	47	NE	Sep. 12+	--	---	c 45	c 40	c 212	120	9	1	38	#0	253	314	161
Barter Island	16.8	4.1	10.5	72	Aug. 16	-51	Feb. 17	19799	9.07	1.20	Sep. 19-20	58.2	12.0	Sep. 19-20	86	77	75	74	13.0	E	*78	W	Sep. 19	--	---	k 40	k 61	k 212	101	19	0	55	#2	243	299	161
Bethel	40.3	25.1	32.7	79	Jul. 10+	-41	Dec. 28	11671	15.09	.92	Aug. 16-17	43.0	4.8	Nov. 12-13	79	88	85	72	10.1	N	*35	SE	Mar. 2	--	7.5	59	65	241	131	12	3	36	#24	101	211	58
Cold Bay	44.5	35.3	39.9	65	Jun. 24	5	Feb. 25	9051	37.42	1.59	Feb. 17-18	47.1	4.1	Jan. 6-7	86	89	87	80	18.2	SE	*60	WSW	Mar. 17	--	8.7	14	46	305	210	13	0	36	#0	36	139	0
Cordova	48.1	31.3	39.7	80	Aug. 7	-8	Feb. 11	9113	70.77	4.68	Oct. 15-16	127.8	18.1	Dec. 26-27	81	85	77	73	5.2	E	*35	ESE	Sep. 12+	--	7.8	53	57	255	197	33	7	18	#19	43	177	13
Fairbanks	40.0	18.9	29.5	89	Jun. 10	-47	Feb. 11+	12914	5.55	.39	Jan. 27-28	64.9	5.0	Jan. 19	69	77	73	61	4.3	N	*29	E	Jul. 13+	--	7.4	54	81	230	92	26	8	27	#73	139	233	86
Juneau	48.8	33.6	41.2	83	Aug. 9	0	Jan. 25	8566	40.11	1.62	Nov. 1-2	107.5	22.3	Feb. 24-25	82	87	80	70	7.6	N	35	SE	Feb. 10	34	7.9	62	39	264	200	24	0	23	#32	46	161	1
King Salmon	45.4	27.5	36.5	82	Aug. 15+	-32	Dec. 21	10314	20.11	.75	Nov. 15-16	35.5	6.6	Feb. 14-15+	79	86	81	67	10.7	E	*52	ESE	Mar. 1	--	7.5	52	74	239	142	10	0	40	#33	71	190	46
Kotzebue	30.4	17.3	23.9	81	Jun. 8	-47	Dec. 26	14913	7.85	.56	Aug. 14-15	77.2	7.5	Dec. 12-13	79	83	82	77	[illegible]	ESE	*56	ESE	Jan. 13	--	7.0	82	62	221	100	27	0	15	#5	183	243	90

See reference notes at end of table

ANNUAL CLIMATOLOGICAL DATA

YEAR 1957

State and Station	Temperature							Degree days	Precipitation						Relative humidity				Wind					Percent of possible sunshine	Average sky cover sunrise to sunset	Number of days										
	Averages			Extremes								Snow, Sleet									Fastest mile					Sunrise to sunset							Max temp		Min temp	
	Daily maximum	Daily minimum	Monthly	Highest	Date	Lowest	Date		Total	Greatest in 24 hrs	Date	Total	Greatest in 24 hrs	Date	1 00a E.S.T	7 00a E.S.T.	1 00p E S.T	7 00p E S T	Average hourly speed	Prevailing direction	Speed	Direction	Date			Clear	Partly cloudy	Cloudy	Precipitation 01 inch or more	Snow, Sleet, Hail 1 0 or more	Thunderstorms	Heavy fog	90° and above	32° and below	32° and below	Zero and below
ALASKA (Cont'd)																																				
McGrath	38.8	19 6	29 2	88	Jun 6	-53	Dec 20	12997	14.59	1 03	Jan 10-11	93.3	11.7	Jan. 10-11	69	80	75	61	4.4	N	*23	SSW	Sep. 13+	--	7.1	73	74	218	135	32	8	13	#54	138	223	91
Nome	34 1	21.8	28 0	81	Jun 11	-37	Feb 15	13435	14 30	2 28	Oct. 4-5	45 7	4.2	Jan 13-14	81	83	81	78	10 1	NE	65	N	Feb 16	32	6 9	87	55	223	128	14	0	15	#4	152	230	61
St Paul Island	39 6	32 0	35 8	57	Aug 17	-10	Feb. 28	10532	20 23	1 35	Oct 30-31	49 5	6 4	Mar 1-2	88	90	90	86	—	---	--	---	---	--	8.6	16	61	288	173	21	0	55	#0	66	177	11
Yakutat	48.2	33 6	40 9	86	Aug. 8	1	Jan 24	8680	95 27	3 73	Sep 9-10	168.1	17 1	Dec 21-22	89	91	84	77	7.3	E	*63	ESE	Nov 3	--	8 1	44	48	273	194	42	0	38	#11	39	168	0

Data from airport unless otherwise indicated

U indicates Urban, R indicates Rural sites. Where certain elements are from the airport, these are indicated by AP above each value.

- * Data entered in column headed "Fastest Mile" is the fastest observed one minute wind speed and its direction. This station is not equipped with automatic recording wind instruments
- + Also on earlier dates.
- • Wind direction to 8 compass points only.
- ‡ Peak gust

- # Number of days maximum 70 F or above for Alaskan stations.
- a Computed as of midnight local time.
- b Computed as of noon local time.
- c Sun below horizon November 18 - January 24.
- d Maximum hourly average.
- e Computed as of 8 00 am local time.
- k Sun below horizon November 26 - January 16.

NORMALS, MEANS AND EXTREMES

State and Station	Elevation ground (feet)	Temperature (°F) Normal (1921-1950) January Daily maximum	Temperature Normal January Daily minimum	Temperature Normal July Daily maximum	Temperature Normal July Daily minimum	Temperature Normal Annual	Temperature Extremes Length, yrs.	Temperature Extremes Record highest	Temperature Extremes Record lowest	Normal degree days (1921-1950) January	Normal degree days Seasonal	Precipitation (inches) Normal (1921-1950) Wettest month	Precipitation Normal Driest month	Precipitation Normal Annual	Precipitation Extremes Wettest month	Precipitation Extremes Driest month	Precipitation Extremes Maximum in 24 hours	Snow, Sleet Mean total January	Snow, Sleet Mean total Seasonal	Snow, Sleet Extreme Maximum in 24 hours	Relative humidity (percent) January 7:00 a.m. EST	Relative humidity January 1:00 p.m. EST	Relative humidity January 7:00 p.m. EST	Relative humidity July 7:00 a.m. EST	Relative humidity July 1:00 p.m. EST	Relative humidity July 7:00 p.m. EST	Wind Speed (m.p.h.) Mean hourly January	Wind Speed Mean hourly July	Wind Speed Fastest mile	Sunshine (percent of possible) January	Sunshine July	Annual mean number of days Sunrise to sunset Clear	Sunrise to sunset Partly cloudy	Sunrise to sunset Cloudy	Precipitation .01 inch or more	Snow, sleet, hail 1.0 inch or more	Thunderstorms	Heavy fog	Temperature Max. 90° and above	Temperature Max. 32° and below	Temperature Min. Zero and below
ALABAMA							74	112	-18							0.00	20.33																								
Anniston (1952)	599	56.6	34.9	91.2	68.2	62.5	47	105	-3	614	2820	6.09	2.58	52.20	16.25	0.02	6.98	0.9	1.8	11.0	82	65	78	83	57	67	6.8	3.9	54	50	69	143	114	108	120	*	61	6	54	51	*
Birmingham	610	55.5	34.9	90.2	69.0	62.5	62	107	-10	623	2780	6.31	2.71	53.52	20.12	.00	8.84	.9	1.7	11.0	81	61	67	84	56	68	8.3	5.4	65	45	62	130	116	119	118	*	65	5	60	38	*
Mobile (U)(1952)	10	61.4	44.8	89.8	74.0	68.1	81	103	-1	412	1529	7.94	3.07	62.23	26.67	.00	12.98	.1	.2	6.0	--	--	--	--	--	--	10.1	8.0	98	51	59	110	138	117	119	*	64	15	47	12	*
Mobile	211	62.2	43.2	89.4	72.0	67.3	16	104	11	416	1612	8.97	3.75	67.57	19.29	.05	13.36	.2	.3	3.5	87	63	78	90	63	78	11.5	7.8	--	--	--	110	122	133	123	*	87	31	72	15	0
Montgomery (U)	201	59.1	41.5	90.6	72.4	66.3	c	c	c	483	1954	6.40	2.15	50.93	c	c	c	c	c	c	c	c	c	c	c	c	---	---	c	c	c	c	c	c	c	c	c	c	c	c	c
Montgomery	198	59.7	38.7	91.3	71.0	65.4	85	107	-5	517	2137	6.50	2.36	53.66	20.10	T	9.98	.2	.6	11.0	84	61	67	85	58	68	7.7	5.8	60	50	65	132	117	116	113	*	54	8	71	20	*
ARIZONA							63	127	-33							0.00	5.95																								
Flagstaff	6993	38.9	11.7	79.2	51.1	44.6	8	94	-16	1231	7525	2.60	.53	18.47	6.46	T	3.11	22.7	70.9	22.0	83	62	--	78	36	--	---	---	--	--	--	178	89	98	68	17	46	5	2	214	12
Phoenix (U)	1083	64.3	38.2	103.5	77.5	70.5	--	---	--	425	1492	.96	.06	7.12	----	----	----	---	---	---	--	--	--	--	--	--	---	---	--	--	--	---	---	---	---	--	--	--	--	---	--
Phoenix	1114	64.8	34.5	105.1	75.1	69.4	20	118	17	474	1698	1.00	.06	7.16	5.56	.00	3.07	T	T	.6	75	48	40	53	31	23	4.2	5.9	75	c76	c83	209	85	71	36	0	22	2	162	20	0
Prescott	5014	50.2	20.4	90.9	61.0	55.2	15	102	-5	921	4533	3.70	.23	15.98	9.61	.00	3.08	7.5	18.4	12.4	71	50	46	60	32	33	7.2	8.0	72	67	72	182	98	85	62	5	45	4	45	131	*
Tucson	2558	63.1	36.3	99.4	73.0	67.6	17	111	16	474	1776	2.15	.21	10.66	7.93	.00	2.73	.4	1.1	3.5	64	41	36	56	33	30	6.8	7.0	59	77	74	192	92	81	49	*	36	*	146	21	0
Winslow	4880	46.2	19.2	92.6	61.8	55.0	26	104	-18	1001	4702	1.62	.29	7.83	2.72	.00	2.12	2.5	7.8	6.5	71	49	43	61	30	29	7.8	8.9	--	--	--	181	94	90	51	3	36	3	70	133	2
Yuma	199	67.2	43.3	107.7	81.5	74.7	7	120	28	318	951	.64	.01	3.39	2.68	.00	2.09	.0	.0	.0	57	37	28	49	30	22	7.0	9.8	54	81	91	255	68	42	13	0	6	2	185	3	0
ARKANSAS							67	120	-29							0.00	12.00																								
Fort Smith	458	50.6	29.4	94.2	70.4	62.0	12	111	-9	775	3188	5.06	2.56	41.56	14.01	.06	5.90	1.9	3.8	5.5	82	64	68	87	52	53	8.6	6.4	58	41	73	137	94	134	92	2	63	11	87	69	*
Little Rock	257	51.1	32.4	92.7	71.1	62.4	16	107	-5	719	2982	5.16	2.81	47.38	12.53	T	7.71	2.1	3.2	4.0	80	67	68	85	55	59	9.1	7.2	61	41	69	120	103	142	103	1	59	16	75	46	*
Texarkana	361	56.3	35.5	94.6	71.1	65.1	15	106	-3	600	2362	5.30	2.79	50.59	15.33	.04	6.55	1.4	1.6	4.5	85	67	71	89	56	58	---	---	--	--	--	---	---	---	99	1	66	18	85	37	*
CALIFORNIA							73	134	-45							0.00	26.12																								
Bakersfield	489	57.3	36.5	101.1	67.3	65.0	20	115	21	561	2115	1.12	.01	6.36	4.61	.00	1.68	T	T	T	86	71	59	48	29	19	4.9	7.1	--	--	--	199	83	83	38	0	3	20	111	16	0
Beaumont (U)(1952)	2589	57.4	35.6	94.7	57.4	60.1	13	110	11	574	2840	3.67	.09	17.86	8.63	.00	4.16	1.9	2.4	7.1	63	44	44	63	26	25	8.7	6.8	--	--	--	184	95	86	49	*	9	51	83	32	0
Bishop	4108	53.6	22.2	96.9	54.1	56.0	10	109	-6	840	4222	1.12	.10	5.38	5.03	.00	3.32	5.3	9.2	9.0	48	39	--	19	15	--	---	---	--	--	--	205	85	75	29	3	13	*	101	148	1
Blue Canyon	5280	43.8	28.5	77.7	57.9	50.1	14	93	5	893	5719	9.47	.03	53.51	45.12	.00	9.31	54.0	249.7	38.5	67	74	--	31	30	--	---	---	--	--	--	173	67	125	87	42	10	71	1	106	0
Burbank	699	65.2	39.9	87.3	59.0	62.8	26	111	21	396	1808	3.06	.02	13.88	13.84	.00	7.76	.3	.3	4.7	73	56	49	83	50	42	4.2	5.4	--	--	--	186	103	76	39	*	4	32	47	5	0
Eureka (U)	43	53.6	40.8	60.6	52.2	52.3	47	85	22	552	4632	6.20	.09	36.15	13.97	.00	5.83	.2	.2	3.0	87	--	77	92	--	80	7.0	6.9	56	39	52	81	103	181	118	*	4	49	0	4	0
Fresno	331	53.5	35.9	100.1	64.1	63.0	18	111	18	629	2532	1.66	T	9.31	6.73	.00	2.44	T	T	.1	93	80	66	61	36	20	4.8	6.0	43	50	98	196	74	95	47	0	5	39	101	26	0
Los Angeles (U)	312	64.6	45.4	83.2	61.7	63.9	17	110	28	328	1451	3.37	T	14.54	12.42	.00	6.11	T	T	.3	64	46	52	84	49	53	6.9	5.4	49	70	80	182	107	76	39	0	16	17	16	*	0
Los Angeles	99	63.3	43.0	74.4	60.8	60.9	21	108	23	378	2015	2.75	T	12.37	8.14	.00	6.19	T	T	T	76	57	63	85	65	68	6.0	6.5	62	--	--	137	113	115	37	0	3	53	3	1	0
Mount Shasta (R)	3544	41.4	24.1	84.8	49.5	49.3	15	103	-2	998	5913	5.39	.13	33.71	17.48	.00	5.90	36.2	102.8	37.4	84	77	75	69	38	29	---	---	--	--	--	157	90	118	90	18	13	9	18	137	*
Oakland	3	56.0	38.4	72.0	53.4	56.5	29	102	23	552	3163	3.42	.01	17.63	11.29	.00	3.21	T	T	1.0	86	74	68	88	69	62	5.9	8.5	--	--	--	143	121	101	66	*	2	19	4	7	0
Red Bluff	341	53.3	36.9	98.9	67.4	63.2	79	115	17	617	2546	4.23	.02	21.57	20.71	.00	6.12	1.8	3.0	11.4	85	70	66	50	29	18	6.8	5.7	63	48	96	214	71	80	70	1	5	9	90	17	0
Sacramento (U)	25	52.1	38.3	92.0	58.6	60.9	24	112	22	614	2600	3.31	T	16.32	12.20	.00	3.52	T	T	T	90	81	69	77	46	28	10.3	10.6	70	37	97	201	63	101	59	0	5	34	65	10	0
Sacramento	17	52.4	36.2	92.0	57.2	60.0	16	---	--	642	2822	3.01	T	15.02	----	---	----	.2	.2	4.0	90	81	69	76	46	28	7.3	8.3	70	44	96	225	72	68	---	*	4	21	---	---	--
San Diego	19	64.3	45.5	75.5	63.1	62.4	17	104	29	317	1574	2.57	.01	10.86	7.60	.00	3.07	T	T	T	76	58	61	86	68	64	5.6	6.7	51	66	66	146	123	96	44	0	3	30	2	*	0
San Francisco (U)	52	55.4	44.8	64.4	53.4	56.7	21	97	30	462	3069	4.07	.01	20.51	11.47	.00	3.65	T	T	T	b84	N68	b70	b92	N75	b78	6.8	11.3	47	53	64	134	113	118	69	0	2	7	1	*	0
San Francisco	8	55.8	39.9	69.2	51.5	55.6	30	104	20	530	3421	3.59	.01	17.43	12.30	.00	3.33	T	T	T	87	77	69	90	70	68	6.9	13.8	62	--	--	160	108	97	63	0	2	22	3	7	0
San Jose (1950)	95	58.0	40.5	80.8	54.5	59.3	50	106	20	487	2410	2.53	T	12.69	12.38	.00	4.56	T	T	1.0	--	--	66	--	--	50	6.6	7.1	43	54	87	210	84	71	59	*	*	23	13	14	0
Sandberg (R)	4517	46.0	33.6	85.1	62.7	55.3	25	102	3	781	4243	2.85	.02	12.42	11.12	.00	4.09	10.5	27.0	38.5	59	--	--	25	--	--	17.8	13.2	--	--	--	210	80	75	40	5	5	84	20	56	0
Santa Catalina (1952)	1568	59.0	46.7	77.0	58.3	60.1	8	102	29	375	2249	2.97	T	12.88	7.81	.00	2.68	.4	.5	2.0	72	65	67	65	58	54	---	---	--	--	--	190	81	94	45	*	*	112	10	*	0
Santa Maria	238	62.7	38.0	72.6	51.7	57.1	15	104	22	453	2934	2.71	.03	13.48	5.88	.00	3.07	T	T	T	83	62	63	93	66	64	7.5	6.4	--	--	--	172	114	79	48	0	2	88	4	16	0
COLORADO							70	118	-60							0.00	8.05																								
Alamosa	7536	36.3	-2.5	81.3	46.8	41.4	12	91	-50	1491	8659	1.10	.17	6.23	2.45	T	1.33	4.4	24.4	10.0	75	57	58	83	38	37	---	---	--	--	--	151	139	75	63	12	46	13	2	227	46
Colorado Springs	6173	40.9	16.6	84.8	57.6	49.1	9	100	-27	1122	6254	2.72	.22	14.26	5.90	T	3.09	5.2	34.3	18.0	55	41	47	68	34	39	10.7	10.0	90	--	--	144	121	100	83	12	58	22	15	163	7
Denver (U)	5221	42.5	20.3	85.9	61.5	51.4	85	105	-29	1042	5673	2.06	.50	13.43	8.57	.00	6.53	5.9	54.6	23.0	54	37	41	55	27	30	7.6	6.9	65	67	68	146	151	68	84	15	42	4	23	137	7
Denver	5292	41.7	15.6	87.2	58.3	49.8	23	104	-30	1125	6132	2.20	.50	14.20	7.31	T	3.43	8.4	55.6	19.4	60	45	50	67	32	35	9.6	9.0	53	67	70	112	137	116	86	17	43	9	34	153	7
Grand Junction	4849	33.8	14.1	92.5	63.8	52.1	11	102	-14	1271	5796	1.20	.45	9.06	3.48	.00	1.24	9.9	30.9	9.1	77	65	66	48	28	22	5.4	9.7	66	53	76	141	107	117	74	10	43	8	53	138	4
Pueblo	4369	44.9	13.8	89.8	59.9	51.5	17	105	-31	1104	5709	1.81	.38	11.87	6.17	T	3.77	5.9	32.4	16.8	68	45	48	73	34	35	7.7	7.8	80	72	76	137	126	102	72	10	46	8	55	157	8
CONNECTICUT							70	105	-32							0.00	12.12																								
Bridgeport	7	36.6	21.8	81.6	63.9	50.5	57	103	-20	1110	5896	4.43	2.83	42.01	18.77	.09	5.84	9.0	35.2	13.8	75	64	70	77	57	71	9.9	7.5	62	--	--	103	110	152	119	5	24	26	9	92	0
Hartford	15	35.4	18.5	83.0	62.3	49.7	c	c	c	1178	6139	3.93	2.70	42.43	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c
Hartford Bradley Fld.	169	36.1	17.9	85.6	62.0	50.1	53	101	-24	1178	6068	3.81	2.57	40.48	21.87	.18	12.12	10.7	40.3	19.0	73	61	67	78	55	69	8.9	7.5	70	46	62	106	111	148	128	10	28	43	10	120	3
New Haven	6	37.0	21.2	80.1	62.3	49.7	85	101	-15	1113	6026	4.12	3.00	44.99	17.08	.12	8.73	9.6	37.3	28.0	75	65	69	77	63	74	9.2	7.1	62	52	66	125	117	123	131	11	25	29	4	108	2
DELAWARE							65	110	-17							T	7.83																								
Wilmington	78	41.8	24.7	86.7	65.0	54.2	10	102	-4	983	4910	5.28	2.98	44.50	12.09	.16	6.24	6.0	17.8	11.9	77	62	71	79	51	68	9.0	7.5	--	--	--	96	108	161	127	5	32	47	24	100	*
DIST. OF COLUMBIA																																									
Silver Hill Obs. (1953)	284	43.4	27.4	84.6	66.2	55.3	2	101	8	918	4539	5.94	2.58	43.91	9.99	.66	3.03	2.4	11.9	7.5	--	--	--	--	--	--	---	---	--	--	--	---	---	---	120	5	37	--	27	44	0
Washington (U)	72	44.0	28.9	87.1	68.4	56.8	86	106	-15	884	4258	4.49	2.64	41.44	17.45	.14	7.31	6.0	19.5	25.0	73	56	64	78	52	67	7.8	5.8	62	46	64	124	118	123	124	6	33	12	28	82	*
Washington Nat'l AP	14	43.8	28.5	86.1	68.4	56.5	16	103	1	893	4333	4.75	2.44	40.48	14.31	.22	6.39	4.8	13.3	11.4	74	57	63	77	52	63	10.8	8.6	78	43	66	103	103	159	116	5	32	15	30	72	0
FLORIDA							68	109	-22							0.00	23.22																								
Apalachicola (U)	13	62.2	48.1	87.4	75.1	68.8	35	102	18	352	1307	7.65	2.45	56.03	27.73	.01	11.71	T	T	.2	87	70	80	85	72	76	8.3	6.6	67	58	64	139	113	113	106	0	74	24	20	4	0
Daytona Beach	31	69.3	49.6	89.8	71.7	70.5	23	102	18	245	868	7.11	2.10	51.07	19.89	.04	9.29	.0	T	T	91	59	82	90	67	82	9.4	7.8	--	--	--	90	153	122	116	0	83	36	63	5	0
Fort Myers	15	75.2	53.9	90.5	73.4	73.9	18	101	28	124	405	9.20	1.21	53.27	16.32	.00	10.85	.0	.0	.0	93	56	79	87	63	82	8.0	6.8	--	--	--	106	155	104	118	0	101	23	123	*	0
Jacksonville (U)	18	65.9	48.7	89.6	73.7	69.8	84	104	10	303	1113	7.89	1.57	52.30	23.32	T	9.86	---	---	---	--	--	--	--	--	--	---	---	--	--	--	---	---	---	122	*	---	--	61	5	0

See reference notes at end of table.

NORMALS, MEANS AND EXTREMES

State and Station	Elevation ground (feet)	Temperature (°F) Normal (1921-1950) January Daily maximum	Temperature Normal January Daily minimum	Temperature Normal July Daily maximum	Temperature Normal July Daily minimum	Temperature Normal Annual	Temperature Extremes Length, yrs.	Temperature Extremes Record highest	Temperature Extremes Record lowest	Normal degree days (1921-1950) January	Normal degree days Seasonal	Precipitation (inches) Normal (1921-1950) Wettest month	Precipitation Normal Driest month	Precipitation Normal Annual	Precipitation Extremes Wettest month	Precipitation Extremes Driest month	Precipitation Extremes Maximum in 24 hours	Snow, Sleet Mean total January	Snow, Sleet Mean total Seasonal	Snow, Sleet Extreme Maximum in 24 hours	Relative humidity (percent) January 7:00 a.m. EST	Relative humidity January 1:00 p.m. EST	Relative humidity January 7:00 p.m. EST	Relative humidity July 7:00 a.m. EST	Relative humidity July 1:00 p.m. EST	Relative humidity July 7:00 p.m. EST	Wind Speed (m.p.h.) Mean hourly January	Wind Speed Mean hourly July	Wind Speed Fastest mile	Sunshine (percent of possible) January	Sunshine July	Annual mean number of days Sunrise to sunset Clear	Sunrise to sunset Partly cloudy	Sunrise to sunset Cloudy	Precipitation .01 inch or more	Snow, sleet, hail 1.0 inch or more	Thunderstorms	Heavy fog	Temperature Max. 90° and above	Temperature Min. 32° and below	Temperature Min. Zero and below
FLORIDA (Cont'd.)																																									
Jacksonville	24	66.3	45.4	91.4	72.7	69.3	86	105	10	331	1243	7.64	1.62	52.08	23.32	T	10.17	T	T	1.9	88	55	75	85	57	75	8.8	8.3	76	58	62	122	140	103	122	*	74	36	61	5	0
Key West (U)	9	75.8	65.8	89.1	78.3	77.6	63	97	43	28	77	6.78	1.54	39.52	23.56	T	19.88	.0	.0	.0	84	68	79	77	68	74	10.2	8.2	91	68	69	140	157	68	112	0	59	*	31	0	0
Key West (1952)	6	75.4	65.1	89.2	77.5	77 2	c	c	c	c	c	6.75	1.50	39.16	c	c	c	c	c	c	84	70	79	77	69	74	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c
Lakeland (U)	214	71.5	52.5	90.2	72.2	72.2	17	101	25	185	649	8.16	1.39	51.43	15.57	.07	10.12	.0	T	T	--	--	--	--	--	--	6.6	5.5	--	66	58	103	156	106	122	0	100	19	86	*	0
Melbourne (1953)	26	71.3	53.8	89.1	73.0	72.4	16	100	22	169	537	7.68	2.11	52.40	19.68	.11	8.56	.0	.0	.0	92	62	82	87	67	82	---	---	--	--	--	81	155	129	119	*	88	14	60	*	0
Miami (U)	8	74.4	62.6	86.8	76.4	75.3	47	95	27	57	173	7.88	1.73	47.20	25.34	T	15.10	.0	.0	.0	87	58	75	84	64	77	13.3	10 3	132	66	65	106	154	105	130	0	71	3	7	*	0
Miami	8	77.9	58.6	91.0	74.1	75.7	16	--	--	58	178	8.33	1.65	56.41	23.02	.01	12.58	---	---	---	87	59	75	83	64	77	---	---	--	--	--	---	---	---	---	--	--	--	---	---	--
Miami Beach	9	75.5	64.4	87.6	77.4	76.6	16	98	35	43	123	7.07	1.75	42.90	18.02	.01	6.64	.0	.0	---	--	--	--	--	--	--	---	---	--	--	—	170	99	96	126	0	--	--	12	0	0
Orlando	106	73.0	50.7	91.4	72.7	72.5	15	102	24	188	650	7.85	1.32	51.23	15.87	T	9.67	.0	.0	.0	91	54	74	90	60	79	8.6	7.6	--	--	--	102	150	113	118	0	85	31	108	2	0
Pensacola (U)	13	61.1	46.9	86.9	75.0	68.0	18	103	13	383	1435	7.59	3.84	61.60	18.80	T	9.16	T	.1	2.1	86	64	79	85	64	74	8.1	6.7	91	57	66	---	---	---	109	*	69	--	41	7	0
Pensacola	110	----	----	----	----	----	--	----	--	---	----	----	----	-----	-----	---	----	---	---	---	83	69	77	83	69	76	---	---	--	--	--	---	---	---	---	--	--	--	---	---	--
Tallahassee	64	65.2	42.0	91.0	71.0	67.7	18	103	15	385	1519	7.87	2.38	56.66	20.32	.02	7.07	T	T	.4	88	58	73	91	64	77	6.3	4.7	--	--	--	104	132	129	114	0	80	41	82	20	0
Tampa	19	70.8	52.1	89.5	73.8	72.3	68	98	19	201	674	8.11	1.04	49.94	18.93	T	10.41	T	T	.1	87	60	74	83	62	78	8.4	7.1	84	63	62	120	155	90	114	0	85	22	63	1	0
West Palm Beach	15	75.4	58.6	89.9	74.0	75.0	19	101	31	85	248	9.12	2.20	61.72	18.26	.12	15.23	.0	.0	.0	86	59	75	84	64	79	11.0	7.3	--	--	--	74	162	129	133	0	79	8	90	*	0
GEORGIA							66	112	-17							0.00	18.00																								
Albany (1953)	190	62.4	40.3	93.0	71.9	67.4	65	106	-2	446	1763	5.46	2.09	49.50	20.48	.00	7.60	T	T	1.0	88	57	70	85	55	70	7.0	4.9	60	--	--	116	118	131	111	*	66	25	100	18	0
Athens	798	54.6	34.8	92.4	69.1	62.7	14	105	7	629	2800	5.17	2.94	49.94	14.98	.09	5.34	.4	.7	5.0	79	56	67	87	55	67	10.4	8.1	--	--	--	107	112	146	117	*	52	40	57	45	0
Atlanta (U)	1054	52.5	36.6	87 3	70.0	62.0	c	c	c	632	2811	5.49	2.50	47.96	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c
Atlanta	975	53.3	35.9	89.4	69 6	62 2	79	103	-9	632	2826	5.67	2.60	49.16	15.82	.02	7.36	.8	2.1	8.3	80	64	69	83	57	68	11.6	7.8	70	48	62	126	111	128	122	*	51	21	34	38	*
Augusta	143	59.2	35 6	91.9	70.1	64.0	84	106	3	554	2407	5.21	2.44	43.17	14.00	T	9.82	.2	.8	10.5	84	59	69	83	55	69	5.7	4.8	48	56	67	132	120	113	113	*	46	12	69	28	0
Columbus	385	58.1	36.7	91.0	70.7	64.2	12	104	10	563	2396	5.92	2.04	49.00	12.53	.30	5.32	T	T	T	88	61	74	87	59	70	---	---	--	--	--	114	102	149	111	0	59	20	79	42	0
Macon	356	60.4	38.6	93.3	71.5	66.1	58	106	7	497	2049	5.34	2.27	46.31	20.52	T	8.36	.2	.6	6.9	83	57	64	84	55	68	6.9	5.6	65	54	67	126	109	130	112	1	60	14	66	30	0
Rome	637	53.6	31.8	92 2	67.7	61.3	12	106	3	700	3138	5.83	2.86	52.96	17.37	.36	7.53	.3	.7	2.3	84	61	76	89	55	69	---	---	--	--	--	99	122	144	123	0	73	24	69	75	0
Savannah	48	62.2	40.9	90.8	71.5	66 4	87	105	8	439	1808	7.09	1.51	45.75	22.88	T	11.44	T	T	2.0	83	58	72	85	61	80	9.5	8.1	90	54	60	129	127	109	114	*	53	17	51	11	0
Valdosta (1953)	200	65.4	41.7	92.0	70.5	67.8	6	103	18	386	1525	8.03	2.14	51.62	15.94	.05	4.85	.0	T	T	--	--	--	--	--	--	---	---	--	--	--	113	114	138	115	0	73	39	101	18	0
IDAHO							65	118	-60							0.00	7.17																								
Boise	2842	34.6	19 9	90.5	59.1	50.8	18	109	-17	1169	5890	1.35	.18	11.48	4.00	.00	1.51	7.5	22.3	13.0	82	75	74	54	34	23	9.1	8.9	61	40	88	122	96	147	93	9	16	17	40	127	2
Idaho Falls 46W (R)	4933	27.6	3.8	88.1	50.3	42.3	8	99	-30	1528	8556	1.02	.36	7.69	4.42	.00	1.73	7.8	24.7	8.5	--	--	--	--	--	--	6.9	8.2	51	--	--	---	---	---	67	10	12	--	26	214	35
Idaho Falls 42N (R)	4790	25.3	-.7	87.9	48.3	41.1	7	102	-35	1634	8925	1.08	.31	7.35	3.00	.00	1.33	---	---	---	--	--	--	--	--	--	5.5	8.3	50	--	--	---	---	---	70	--	--	--	30	218	43
Lewiston	1413	37.2	24.4	90.1	60.2	52.1	11	106	-22	1060	5483	1.75	.38	13.12	4.80	T	1.73	8.2	19.3	11.9	79	73	72	64	37	24	6.5	5.7	--	--	--	94	80	191	102	8	18	17	34	103	4
Pocatello	4444	31.0	13.0	89.4	55.9	47.2	19	103	-31	1333	6976	1.32	.72	12 44	3.80	.00	1.65	10.2	37.8	10.1	81	75	74	56	30	21	9.7	9.3	72	36	82	111	105	149	91	14	28	10	31	161	10
Salmon	3949	28.2	4.1	89.6	46.8	44.0	48	---	---	1513	7922	1.28	.42	8.64	3.88	.00	1.50	---	---	---	--	--	--	--	--	--	---	---	--	--	--	---	---	---	---	--	--	--	---	---	---
ILLINOIS							68	117	-35							0.00	10 25																								
Cairo (U)	314	44.9	29.8	90.7	71.7	59.8	15	104	-5	856	3756	4.48	2.60	43.65	14.95	.33	7.56	2.9	7.1	6.6	81	69	--	83	58	--	10.0	6.5	59	41	81	110	101	154	116	2	54	7	56	61	*
Chicago	610	32.7	17.1	85.3	63.9	50.1	15	104	-15	1243	6310	4.15	1.41	32 72	12.06	.30	6.24	6.9	34.6	11.8	80	70	75	78	51	55	10.9	7.6	60	43	72	95	102	168	119	10	36	17	28	123	7
Joliet (1952)	584	32.5	15.0	86.9	60.5	49.1	11	101	-20	1277	6578	4.14	1.51	34 25	9.23	.25	5.32	5.7	25.0	8.0	--	--	--	--	--	--	---	---	--	--	--	83	124	157	110	9	40	24	26	143	12
Moline	589	31.9	14.4	87.2	63.7	50.2	25	106	-23	1296	6364	4.63	1.17	33.10	10.35	.04	4.89	6.0	24.3	9.6	80	69	75	83	54	56	10.6	7.5	77	44	74	104	101	160	110	9	45	21	30	137	10
Peoria	654	33 3	16.7	87.0	64.4	51.0	18	103	-16	1240	6087	3.94	1.91	35.18	10.80	.25	5.06	4.3	21.9	9.0	82	72	76	83	54	57	11.4	8.3	75	42	71	103	104	158	110	8	50	20	27	128	7
Springfield (U)	632	36 4	21 6	89.1	68 3	54.4	--	---	---	1116	5225	4.11	1.67	35.82	----	----	----	---	----	---	--	--	--	--	--	--	---	---	--	--	--	---	---	---	---	--	--	--	---	---	-
Springfield	589	35 3	19 4	87.4	65.2	52 4	10	112	-15	1166	5693	4.19	1.62	36.65	8.86	.15	4.79	2.7	16.5	8.0	81	71	75	86	57	60	13 7	8.8	75	38	75	109	92	164	116	6	53	16	32	121	4
INDIANA							71	116	-35							0.00	10.50																								
Evansville	383	43.4	26 0	89.1	67.3	56 9	17	105	-23	939	4360	3.90	2 82	41.37	13.50	.13	5.16	3.6	10.1	9.6	84	69	75	85	55	60	9.9	6.6	59	37	77	105	102	158	115	3	50	15	45	96	1
Fort Wayne	801	33.4	19 1	84.3	62.6	49.9	11	103	-17	1200	6287	3 56	1.77	34.21	9.72	.42	4 60	7.5	29.4	7 7	84	75	81	84	53	58	10.8	7.9	65	35	71	79	107	179	129	9	46	19	21	135	5
Indianapolis (U)	718	38.7	23.4	88.3	67.7	54 5	--	---	---	1051	5134	4 18	2 08	39 24	----	----	----	---	----	---	--	--	--	--	--	--	---	---	--	--	--	---	---	---	---	-	--	--	---	---	--
Indianapolis	793	37 1	20.5	87 9	64.1	52.5	20	104	-19	1122	5611	4.21	2 08	39.69	12.69	.21	3.75	4.1	18.0	5.6	83	72	78	84	54	60	12.5	8.3	90	36	74	94	101	170	124	7	47	21	24	121	4
South Bend	768	31.9	17 2	84.6	62 1	49.1	18	101	-22	1252	6524	3 84	1.56	35.59	9.75	.02	3.18	11.8	51 4	12.5	83	75	80	84	53	59	11.9	8.5	--	--	--	76	107	182	136	18	45	22	19	139	7
Terre Haute (1953)	578	38.4	20.2	88.9	64.9	53.5	41	110	-20	1107	5366	4.43	2.14	40.91	11.94	.03	5.16	4.7	17.7	10.2	82	70	76	77	50	56	10.4	7.3	66	44	74	98	128	139	121	6	48	11	34	100	4
IOWA							85	118	-47							0.00	12.99																								
Burlington	694	32.5	15.5	88 0	65.5	51.3	60	111	-27	1271	6101	5.64	1 41	36 61	15.10	.08	6.28	6.9	24.7	13.0	81	70	75	85	56	59	11.0	8.0	73	50	78	169	77	119	103	10	55	19	35	128	10
Charles City(U)(1952)	1013	25.7	7 8	84.8	62.3	46 5	61	108	-34	1494	7504	4.28	1.15	31.42	12.78	T	6.74	9.9	43.4	17.5	-	--	--	--	--	--	7.7	6.0	48	49	74	121	118	126	111	--	42	-	17	155	28
Davenport(U) (1956)	568	32.0	16 5	87.3	67.2	51 4	84	111	-27	1262	6091	4.79	1.31	34.27	12.68	.01	6.57	7.2	26.6	11.2	--	--	--	--	--	--	---	---	--	--	--	---	---	---	112	9	42	9	22	123	11
Des Moines (U)	807	31 4	14.2	87 6	66.6	50 9	78	110	-30	1308	6274	5.05	1.11	30.93	15.79	T	5.37	8.9	32 2	17.7	83	N69	75	77	N49	54	10 1	8.0	71	54	74	124	118	123	107	10	47	7	25	129	15
Des Moines	948	30.8	13 3	86 8	65 6	50 2	18	105	-21	1330	6446	4.99	1 08	30 74	14.19	.03	5.50	8.6	30.4	19.8	79	71	73	84	55	55	12.5	10.2	76	47	73	102	97	166	103	9	48	15	28	140	13
Dubuque (U) (1950)	641	27.9	11.3	84.7	60.4	48.3	76	110	-32	1407	6910	4.68	1.31	33 26	14.16	.02	5.48	9.2	34.9	14.9	81	70	75	78	52	60	7.0	5.8	47	48	73	114	115	136	114	11	39	12	16	131	17
Dubuque	1065	27.2	11.6	83.2	63.3	47.0	7	99	-26	1414	7271	5.09	1.11	32 85	8.14	T	4.36	7.9	37.2	9.3	83	73	79	85	58	65	---	---	--	--	--	92	101	172	108	12	44	26	11	154	12
Sioux City	1094	28.9	9 2	88 4	64.2	48 6	17	107	-24	1423	7012	4.41	.74	24.90	8.67	T	3.89	5.8	29.0	11.4	78	67	72	86	55	54	11.0	9.0	91	57	76	105	107	153	98	10	45	19	34	151	18
Waterloo	870	28.0	9.4	86.2	62.8	47.7	9	103	-27	1435	7144	4.76	1 01	32.06	8.45	T	3.08	7.8	24.2	---	--	--	--	--	--	--	---	---	--	--	--	---	- -	---	74	5	34	22	21	158	19
KANSAS							71	121	-40							0.00	12.59																								
Concordia (U)	1375	37.6	18.6	91.2	68.7	54 5	73	116	-25	1144	5323	4.23	59	25.40	13.74	T	6.46	4.2	20.5	17.2	78	63	68	76	46	48	7.7	7.1	65	60	79	141	129	95	86	6	45	11	48	117	6
Dodge City	2594	42 0	18 6	92 9	66 9	55.0	15	107	-15	1076	5058	3.01	.49	20 58	8.69	T	4.17	4.7	19.6	9.3	78	58	61	76	45	42	14.6	13.9	78	68	78	145	107	113	77	6	54	26	64	127	2
Goodland	3645	39 3	12 3	90 9	60.2	49 9	37	111	-22	1215	6367	3.02	.31	18.21	8.09	.00	2.95	5.1	30.1	15.2	76	53	62	80	42	40	12.4	11.9	--	--	--	141	131	93	75	11	51	32	59	155	9
Topeka (U)	926	39 8	20 8	91.8	69.4	55.9	69	114	-25	1088	4919	4 61	1 00	33 28	14.10	T	8.08	---	----	----	--	--	--	--	--	--	---	---	--	--	--	142	122	101	97	--	--	--	48	106	4
Topeka	877	38.8	18 6	90 7	67 7	54 6	11	109	-21	1125	5209	4.66	.97	33.09	12.02	T	4.48	5.0	18.7	9.3	77	63	67	86	55	55	10.4	9.3	66	50	66	118	100	147	95	6	58	11	58	128	4
Wichita (U) (1955)	1372	41 3	22 6	92.3	69 4	57 0	67	114	-22	1023	4571	4.99	.98	30 70	14.43	.00	7 99	3.2	13.6	12.3	78	63	66	77	48	49	12.5	11.6	100	61	80	158	112	95	87	4	52	11	54	96	2
Wichita	1321	41.3	22 6	92.3	69 4	57 0	4	113	-1	1023	4571	4.99	98	30.70	10.46	T	4.24	2.9	7.7	5.0	78	61	65	74	41	38	13.5	11.9	66	59	84	137	102	126	76	2	53	17	82	113	*

See reference notes at end of table.

NORMALS, MEANS AND EXTREMES

State and Station	Elevation ground (feet)	Temperature (°F) Normal (1921-1950) January Daily maximum	January Daily minimum	July Daily maximum	July Daily minimum	Annual	Extremes Length, yrs.	Record highest	Record lowest	Normal degree days (1921-1950) January	Seasonal	Precipitation (inches) Normal (1921-1950) Wettest month	Driest month	Annual	Extremes Wettest month	Driest month	Maximum in 24 hours	Snow, Sleet Mean total January	Seasonal	Extreme Maximum in 24 hours	Relative humidity (percent) January 7:00 a.m. EST	January 1:00 p.m. EST	January 7:00 p.m. EST	July 7:00 a.m. EST	July 1:00 p.m. EST	July 7:00 p.m. EST	Wind Speed (m.p.h.) Mean hourly January	Mean hourly July	Fastest mile	Sunshine (percent of possible) January	July	Annual mean number of days Sunrise to sunset Clear	Partly cloudy	Cloudy	Precipitation .01 inch or more	Snow, sleet, hail 1.0 inch or more	Thunderstorms	Heavy fog	Temperature Max. 90° and above	Min. 32° and below	Min. Zero and below
KENTUCKY							69	114	-33							0.00	10.10																								
Bowling Green (1952)	534	45.6	27.0	88.9	65.6	56.9	65	113	-20	890	4279	5.66	2.88	50.10	20.70	0.03	6.15	5.0	8.8	---	--	--	--	--	--	-	--	-	-	--	-	---	- -	---	---			--			---
Lexington	979	22.7	25.1	87.4	65.7	55.4	74	108	-20	964	4677	4.50	2.44	43.71	16.65	11	8.06	6.1	19.1	13.4	82	73	74	79	56	65	13.5	8.8	56	36	64	127	106	132	133	6	47	12	25	91	2
Louisville (U)	457	43.2	27.9	87.9	69.3	57.3	c	c	c	911	4279	4.67	2.48	41.60	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c
Louisville	474	43.6	26.2	89.1	66.6	56.5	85	107	-20	933	4439	4.67	2.70	41.47	19.17	07	5.80	4.1	13.4	15.0	78	68	69	77	52	57	9.9	7.0	68	41	73	118	115	132	122	4	46	9	34	76	1
LOUISIANA							67	114	-16							0.00	21.40																								
Baton Rouge	64	61.3	43.4	90.0	72.2	67.5	7	103	19	424	1595	5.87	2.98	59.13	13.23	09	4.96	T	T	T	87	61	67	92	60	72	10.0	6.2		--	-	110	120	135	106	0	66	34	100	15	0
Burrwood (1952)	5	65.2	49.0	89.0	76.1	70.7	45	99	10	303	1033	7.31	3.56	58.40	18.99	00	10.80	T	T	T	--	--	--	--	--	--	---	---	-	--	--	---	---	---	---	-		--	---	-	---
Lake Charles	12	61.8	43.4	91.1	73.3	68.3	19	104	12	416	1543	6.93	3.44	57.82	17.90	T	16.01	6	.6	3.4	89	68	76	93	62	72	10.7	6.6	69	--	-	98	120	147	107	*	70	39	86	12	0
New Orleans (U)	9	63.5	48.3	90.3	75.8	70.4	84	102	7	341	1175	7.09	3.66	63.54	25.11	T	14.01	1	2	8.2	85	67	73	84	64	72	8.3	6.4	98	49	58	117	138	110	120	*	73	14	57	4	0
New Orleans (1950)	3	63.2	46.5	90.1	73.4	69.1	14	100	19	364	1317	5.90	3.18	59.65	16.87	21	7.87	T	T	T	--	--	-	--	--	--	---	---	--	--	-	--	--	---	---	0	-	--	-	5	0
Shreveport (U) (1955)	174	56.4	39.2	93.4	73.8	66.4	82	110	-5	550	2117	4.83	2.22	45.10	25.45	T	12.44	9	1.8	11.0	83	67	66	86	56	62	9.0	7.1	59	47	78	150	109	106	99	-	49	6	84	22	*
Shreveport	252	56.1	39.5	93.3	73.6	66.8	6	106	16	550	2058	4.83	2.22	45.10	11.19	04	7.17	T	T	T	83	65	66	91	55	57	10.9	7.7	--	50	76	135	9	139	90	0	58	16	102	24	0
MAINE							70	105	-48							0.00	7.72																								
Caribou	624	18.1	-.8	74.5	53.5	37.2	19	96	-41	1745	10173	4.03	1.73	35.88	8.14	12	6.23	21.1	101.3	18.2	73	69	73	82	58	72	12.6	10.0	--	--	--	57	106	202	154	30	23	27	3	191	44
Eastport (U) (1952)	33	29.8	14.1	69.2	51.9	42.3	80	93	-23	1333	8266	3.66	2.49	35.92	13.22	.13	5.48	16.9	71.6	18.5	74	72	71	85	77	83	13.5	7.5	83	45	56	89	114	162	149	23	13	60	*	137	16
Portland	61	30.7	10.6	78.7	56.9	44.5	17	100	-39	1373	7681	4.43	2.59	41.78	9.97	26	7.49	19.6	66.6	21.0	81	65	73	78	58	76	9.2	7.5	76	55	68	119	99	147	127	16	17	51	5	161	15
MARYLAND							63	109	-40							T	14.75																								
Baltimore (U)	14	43.6	29.6	86.9	70.0	57.1	86	107	-7	880	4203	4.38	2.95	42.59	17.69	05	7.82	6.1	22.7	24.5	72	N58	66	71	N52	65	10.3	8.8	†66	48	65	121	123	121	133	6	32	15	25	72	*
Baltimore	146	42.8	25.6	86.6	66.0	54.7	7	102	-4	955	4787	4.38	2.95	42.59	18.35	15	7.82	6.0	15.1	8.4	77	60	68	76	48	62	10.5	8.7	80	46	69	106	114	145	115	6	28	31	30	95	*
Frederick	294	41.4	24.0	87.9	65.4	54.7	16	102	-13	1001	4854	4.03	2.58	40.23	11.26	.15	5.56	6.4	19.8	17.5	--	64	--	56	--	--	---	---	--	-	--	---	---	---	126	5	19	9	33	119	1
MASSACHUSETTS							70	106	-30							0.00	11.14																								
Blue Hill Obs. (R)	629	34.0	18.6	79.7	61.4	47.3	73	101	-21	----	----	4.20	3.45	46.28	18.78	06	9.93	15.6	58.8	20.0	--	--	--	--	--	--	17.4	13.0	121	44	57	101	127	137	138	16	25	98	4	131	5
Boston	15	36.5	21.6	80.0	64.3	50.7	86	104	-18	1113	5791	3.50	2.79	38.76	17.09	T	8.40	12.0	42.3	16.5	71	59	67	72	55	70	13.3	10.3	87	49	64	113	116	136	125	11	19	16	11	104	2
Nantucket	43	39.3	24.8	73.8	60.3	48.8	71	95	-6	1020	6102	4.05	2.83	41.69	12.92	.01	5.73	7.1	26.5	20.1	81	73	80	85	74	90	14.8	11.8	91	43	64	109	107	149	131	6	18	87	*	87	*
Pittsfield	1153	29.8	12.5	79.0	56.1	44.5	19	95	-25	1358	7694	4.95	2.51	44.24	10.32	.60	4.25	17.2	72.3	15.8	--	--	--	--	--	--	---	---	--	--	--	57	127	181	144	21	28	45	2	160	12
Worcester	986	31.3	16.6	79.3	61.0	47.0	9	99	-19	1271	6979	4.31	2.57	42.02	18.68	.59	6.38	13.6	49.4	10.2	78	66	72	73	52	66	16.0	11.5	76	--	--	90	116	159	129	17	17	83	6	134	4
MICHIGAN							71	112	-51							0.00	9.91																								
Alpena (U)	587	28.1	14.2	76.8	57.9	43.5	44	104	-28	1358	8073	3.20	1.45	26.63	7.43	.16	4.40	16.1	64.8	16.7	80	71	73	77	61	68	11.8	9.2	61	29	70	82	120	163	146	20	29	21	4	155	10
Detroit	619	33.1	19.3	83.5	62.6	49.3	24	105	-16	1203	6404	3.61	2.02	31.03	8.05	.38	3.72	8.2	32.0	9.8	82	71	77	74	50	56	11.3	8.1	68	31	71	81	107	177	133	12	34	12	14	125	2
Detroit, Willow Run	722	32.1	18.5	84.3	62.6	49.2	11	100	-9	1231	6469	3.44	1.74	30.16	8.71	50	4.78	8.6	34.3	8.0	81	71	76	78	48	55	11.5	8.8	60	--	--	83	102	180	126	13	35	31	20	134	3
East Lansing (U)	856	30.9	16.6	82.4	59.7	47.3	52	102	-25	1277	6982	3.75	1.81	31.08	9.21	.04	5.47	11.2	47.4	18.1	81	71	--	80	50	--	9.9	6.4	50	34	72	94	111	160	144	14	38	11	10	145	7
Escanaba (U)	594	25.0	10.0	75.3	58.4	41.9	48	100	-31	1473	8657	3.22	1.37	27.08	9.93	.07	5.05	14.0	56.7	14.5	78	70	75	80	65	69	10.2	9.1	68	42	66	104	107	154	129	19	33	20	*	163	20
Flint	766	30.5	15.8	82.7	59.2	46.8	16	101	-16	1296	7128	3.48	1.58	30.14	8.68	.07	6.04	9.1	37.2	13.4	84	75	80	82	53	61	11.6	7.6	81	--	--	72	109	184	133	13	32	19	13	149	7
Grand Rapids (U)	638	31.8	19.7	84.0	63.2	49.3	c	c	c	1215	6474	3.47	1.73	31.35	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c
Grand Rapids	681	30.7	16.3	83.6	59.4	47.1	18	102	-22	1287	7075	3.45	1.73	31.50	8.42	.03	4.10	15.9	69.3	10.0	87	78	82	82	51	56	11.0	7.8	65	28	70	72	91	202	140	22	37	19	14	149	6
Marquette (U)	677	25.2	12.1	75.1	57.1	42.2	20	102	-17	1435	8529	3.46	1.72	31.24	10.20	.21	4.65	18.7	98.4	16.1	75	69	73	76	64	66	8.9	7.1	57	29	65	62	105	198	155	29	29	16	6	159	9
Muskegon	627	31.4	18.3	80.5	59.2	46.8	16	97	-14	1243	7089	3.34	1.64	29.01	7.12	.33	3.51	20.0	68.3	12.5	82	76	78	83	57	61	---	---	--	--	--	80	92	193	141	24	37	23	6	146	2
Sault Ste. Marie	721	21.9	5.7	75.4	52.4	39.3	16	98	-25	1587	9475	3.49	1.52	30.19	6.66	.25	2.67	21.2	102.1	14.3	84	77	83	87	61	69	10.3	8.5	58	33	62	67	91	207	164	34	29	46	2	178	25
MINNESOTA							71	114	-59							0.00	10.75																								
Duluth (U)	1162	18.7	1.9	75.8	55.8	39.2	82	106	-41	1696	9574	3.72	1.00	26.67	11.52	.07	5.35	11.1	56.0	23.0	78	74	74	87	61	66	12.3	10.5	75	46	67	110	119	136	126	16	31	37	2	173	41
Duluth	1409	17.2	-.7	76.8	56.0	38.2	16	97	-35	1758	9937	4.33	1.20	29.72	8.48	.13	3.45	16.7	80.8	25.4	77	73	74	87	62	66	12.5	10.6	72	52	66	80	101	184	134	22	35	53	2	190	50
International Falls	1179	13.6	-7.7	78.6	53.0	36.3	18	98	-41	1922	10600	3.73	.85	24.17	11.26	.10	4.82	10.8	62.0	13.9	75	69	72	88	57	59	11.3	9.0	35	--	--	82	104	179	137	19	29	13	4	198	66
Minneapolis-St. Paul	830	23.1	6.1	84.9	63.3	45.6	20	104	-31	1562	7853	4.26	.80	24.71	7.80	T	4.12	6.6	42.7	16.2	81	71	75	82	54	55	10.6	9.5	92	50	69	103	102	160	113	12	37	13	17	155	29
Rochester	1017	23.5	5.1	84.2	59.4	44.5	19	108	-40	1572	8095	4.33	.75	28.48	9.66	T	5.26	8.5	42.4	10.0	75	67	72	83	55	57	---	---	--	--	--	78	135	152	105	13	40	16	14	166	34
St. Cloud	1034	20.7	.2	83.2	58.0	41.9	18	103	-40	1690	8893	3.85	.69	24.16	9.34	.01	4.62	6.8	44.4	12.2	76	71	73	87	57	60	---	---	--	--	--	94	109	162	110	14	36	20	11	178	43
St. Paul (1952)	703	23.3	6.5	84.9	63.7	45.8	80	108	-41	1553	7804	4.23	.87	26.50	11.67	T	5.67	8.9	41.2	17.0	75	69	69	79	51	53	9.5	8.1	92	--	--	104	128	133	114	13	34	9	12	154	32
MISSISSIPPI							69	115	-16							0.00	12.35																								
Jackson	305	58.6	37.9	93.6	70.5	65.4	18	106	-5	535	2202	6.23	2.10	50.86	15.76	T	7.50	1.3	1.5	10.6	86	65	71	90	55	65	9.7	5.9	68	39	63	117	118	130	107	*	62	15	99	36	*
Meridian	294	58.5	36.5	92.0	69.8	64.5	68	105	-7	561	2333	6.58	2.38	55.07	20.06	T	9.50	.6	1.2	7.6	86	61	69	87	56	70	6.4	4.6	47	--	--	136	118	111	109	*	63	9	66	37	*
Vicksburg (U)	234	57.6	40.8	90.0	72.9	66.1	84	104	-1	507	2000	6.03	1.77	49.63	22.24	T	9.97	1.0	1.7	10.0	82	65	67	87	61	70	8.5	6.4	49	44	69	130	120	115	108	*	61	9	61	19	*
MISSOURI							70	118	-40							0.00	12.25																								
Columbia	778	38.8	20.7	88.8	66.8	54.6	18	113	-18	1091	5113	4.90	1.57	39.33	13.30	.09	4.05	2.8	15.4	7.5	79	65	69	84	54	56	11.0	7.7	63	45	79	116	103	146	109	5	56	15	43	112	3
Kansas City	741	39.0	21.0	91.2	70.5	56.1	24	113	-13	1085	4888	5.02	1.16	35.31	11.94	.04	5.96	4.5	17.2	8.5	78	64	67	76	48	47	10.1	9.2	72	50	78	122	106	137	101	5	49	14	55	101	2
St. Joseph	809	36.9	17.3	91.4	68.8	54.5	9	107	-13	1175	5336	6.46	1.01	35.28	13.73	.06	4.76	4.8	18.9	9.0	79	66	70	88	59	59	11.1	8.6	64	46	62	121	99	145	97	5	59	18	47	127	5
St. Louis (U)	465	41.0	25.6	89.6	71.6	57.3	22	112	-12	983	4469	4.10	1.88	37.86	20.45	.03	8.78	3.6	14.3	12.4	b17	b65	b68	b73	b50	b55	12.6	9.5	82	45	73	128	106	131	111	6	51	8	46	84	1
St. Louis (1950)	552	40.8	23.6	90.0	69.3	56.3	14	---	---	1017	4699	4.37	1.66	36.73	14.78	T	5.15	---	---	---	--	--	--	--	--	--	---	---	--	--	--	---	---	---	---	--	--	--	---	---	---
Springfield	1265	41.7	23.7	87.7	67.2	55.7	12	113	-11	1001	4693	5.56	1.76	41.51	10.96	.13	5.48	3.0	10.8	12.5	83	69	73	87	57	60	13.1	10.0	66	44	74	115	98	152	106	5	64	20	44	100	1
MONTANA							91	117	-70							0.00	10.10																								
Billings	3568	32.3	13.4	87.9	58.6	47.2	23	106	-38	1305	7106	2.61	.44	13.10	7.64	T	2.83	7.2	53.0	23.7	67	63	60	65	40	32	12.6	9.9	73	49	78	91	124	150	92	20	31	19	29	150	17
Butte	5530	28.0	.4	79.8	45.0	38.3	26	100	-52	1575	9760	2.28	.53	12.67	5.40	T	2.02	7.4	50.6	13.0	x76	x70	x71	x82	x36	x33	7.4	8.2	--	--	--	79	111	175	107	19	41	6	5	227	44
Glasgow (U)	2277	19.6	1.4	86.7	57.6	42.0	14	108	-50	1690	8869	3.48	.34	13.26	6.95	T	2.83	7.6	36.2	8.4	75	70	74	73	39	33	---	---	--	--	--	87	104	174	92	11	28	9	27	184	49
Great Falls	3664	31.7	13.6	83.8	55.3	45.1	20	105	-35	1311	7555	2.96	.55	14.03	8.13	T	3.20	8.2	53.5	11.0	67	63	63	64	37	31	17.3	11.4	82	50	80	85	112	168	98	20	29	13	15	148	22
Havre (U)	2488	26.3	6.1	85.9	56.6	43.6	54	107	-57	1513	8213	2.98	.39	12.31	7.09	T	2.70	7.3	37.1	22.9	82	71	78	75	38	35	8.8	7.2	59	49	78	123	124	118	89	12	26	4	21	173	37

See reference notes at end of table.

NORMALS, MEANS AND EXTREMES

State and Station	Elevation ground (feet)	Temperature (°F) Normal (1921-1950) January Daily maximum	January Daily minimum	July Daily maximum	July Daily minimum	Annual	Extremes Length, yrs.	Record highest	Record lowest	Normal degree days (1921-1950) January	Seasonal	Precipitation (inches) Normal (1921-1950) Wettest month	Driest month	Annual	Extremes Wettest month	Driest month	Maximum in 24 hours	Snow, Sleet Mean total January	Seasonal	Extreme Maximum in 24 hours	Relative humidity (percent) January 7:00 a.m. EST	January 1:00 p.m. EST	January 7:00 p.m. EST	July 7:00 a.m. EST	July 1:00 p.m. EST	July 7:00 p.m. EST	Wind Speed (m.p.h.) Mean hourly January	Mean hourly July	Fastest mile	Sunshine (percent of possible) January	July	Annual mean number of days Sunrise to sunset Clear	Partly cloudy	Cloudy	Precipitation .01 inch or more	Snow, sleet, hail 1.0 inch or more	Thunderstorms	Heavy fog	Temperature Max. 90° and above	Min. 32° and below	Min. Zero and below
MONTANA (Cont'd.)																																									
Helena (U)	4090	27.3	9.9	80.5	53.2	43.2	--	---	---	1438	8126	2.45	0.49	12.55	----	----	----	---	----	----	--	--	--	--	--	--	---	---	--	--	--	---	---	---	---			--	-	- -	--
Helena	3893	27.7	7.5	83.8	52.2	43.0	17	102	-42	1469	8250	2.15	.41	11.30	4.74	0.03	1.99	9.0	47.6	13.3	73	69	67	73	42	33	6.7	8.0	73	51	79	82	110	173	99	15	40	9	13	182	27
Kalispell	2965	28.0	12.6	82.1	49.9	43.2	8	97	38	1386	8055	2.43	.92	16.35	3.56	T	1.99	20.9	66.0	15.4	--	76	--	--	42	--	9.1	7.2	--	--		76	84	205	131	23	26	38	7	181	17
Miles City	2629	26.6	5.5	89.9	60.0	45.4	20	110	-37	1516	7850	2.84	.36	12.81	9.78	T	2.67	5.6	29.4	10.5	--	--	--	--	--	--	9.0	10.1	—	—	--	101	109	155	88	12	31	8	37	175	34
Missoula	3200	28.6	10.1	86.3	50.4	44.1	13	105	-33	1414	7873	1.87	.78	12.76	4.10	.02	1.82	10.5	43.3	11.2	84	78	76	77	40	29	5.0	6.5	72	30	78	75	84	206	124	14	27	22	18	181	13
NEBRASKA							82	118	-47							0.00	13.15																								
Grand Island	1841	30.0	11.9	92.9	64.9	51.0	27	117	-26	1302	6311	3.87	.55	22.70	10.43	.00	5.41	6.5	26.9	8.6	78	62	69	81	49	47	11.7	11.8	--	--	-	138	106	121	79	9	46	16	56	146	12
Lincoln (U)	1166	34.3	15.7	90.5	67.8	52.7	2	105	-5	1240	5865	4.10	.82	25.73	6.07	.23	4.86	8.2	34.7	10.4	--	--	--	--	--	--	10.0	9.8	64	56	77	127	103	135	93	11	50	6	51	131	5
Lincoln (1954)	1184	34.3	15.7	90.5	67.8	52.7	68	115	-29	1240	5865	4.10	.82	25.73	14.21	.00	8.38	5.7	26.3	12.4	--	--	--	--	--	--	10.4	9.2	66	57	76	131	112	122	95	--	47	5	40	129	11
Norfolk	1544	29.4	9.2	88.7	63.7	48.3	12	113	-26	1417	7065	4.78	.78	25.69	9.11	T	3.46	4.9	26.9	7.4	79	65	71	83	53	51	---	---	--	--	--	120	103	142	86	9	50	12	37	158	19
North Platte	2779	36.8	11.2	89.4	62.2	49.5	6	112	-14	1271	6546	2.92	.34	17.54	7.21	T	3.61	4.3	29.9	9.7	81	63	68	83	47	42	9.7	10.5	72	54	76	124	113	128	79	9	47	16	46	178	12
Omaha	978	32.4	13.5	89.3	67.6	51.6	22	114	-21	1302	6160	4.51	.81	25.90	10.81	T	3.62	8.4	31.3	13.7	81	68	72	81	52	51	11.5	9.5	109	53	81	118	108	139	94	10	51	15	42	136	12
Scottsbluff	3950	36.7	10.3	90.1	59.0	48.2	15	107	-27	1287	6841	2.78	.33	15.00	8.33	T	3.74	6.8	37.5	9.2	71	53	58	78	42	40	9.5	9.2	80	—	--	134	107	124	80	12	45	10	41	179	15
Valentine	2587	33.3	6.7	88.6	60.5	47.2	2	105	24	1395	7266	3.16	.46	18.23	3.38	.01	1.74	6.3	22.9	6.7	--	-	--	--	--	--	10.0	9.9	65	62	76	115	108	142	80	8	52	8	37	183	25
NEVADA							69	122	-50							0.00	4.37																								
Elko	5075	34.5	9.2	91.3	49.1	45.7	27	104	-43	1336	7335	1.07	.29	9.13	3.35	T	1.62	10.7	36.0	16.7	80	72	70	59	25	20	5.7	6.3	--	--	--	135	102	128	76	12	22	5	43	214	20
Ely	6257	37.4	8.6	88.6	48.1	45.2	19	99	-27	1302	7443	1.29	.50	10.52	2.68	.00	1.42	9.1	42.8	13.1	74	61	61	52	23	24	11.3	11.0	74	61	79	139	106	120	68	12	30	*	14	217	21
Las Vegas	2162	55.4	33.0	105.4	75.6	66.8	21	117	8	653	2425	.58	.13	4.35	3.39	.00	2.59	1.0	1.2	5.0	61	41	34	31	19	14	6.6	9.5	--	74	85	210	85	70	25	*	13	*	140	58	0
Reno	4397	45.7	16.6	91.8	47.3	49.5	16	104	-16	1048	6036	1.05	.22	6.96	5.25	.00	2.37	7.0	22.8	16.9	81	67	54	72	25	19	6.6	6.8	72	65	91	175	91	99	47	7	13	8	47	188	4
Tonopah (1952)	6101	37.4	22.7	87.1	62.0	51.0	--	---	---	1082	5813	.55	.19	4.81	3.26	.00	1.97	---	----	----	--	--	--	--	--	--	---	---	--	-	--	---	--	- -	--	-	-	--			
Winnemucca	4299	37.4	18.2	92.0	56.1	49.1	77	108	36	1153	6369	1.01	.18	8.75	3.23	.00	1.64	8.0	27.8	18.2	84	66	65	48	20	17	8.1	7.5	69	53	89	169	95	101	71	8	12	1	41	172	7
NEW HAMPSHIRE							82	106	-46							0.00	8.00																								
Concord	339	31.6	8.6	82.6	55.3	44.8	87	102	-37	1392	7612	3.62	2.30	37.23	10.97	T	5.97	17.5	68.2	19.0	78	60	69	80	49	69	6.2	4.9	72	48	56	139	106	120	120	20	24	53	9	154	15
Mt. Washington	6262	14.1	-3.3	55.1	43.4	27.0	25	71	-46	1803	13663	6.58	4.75	70.20	15.57	.75	5.20	26.3	184.5	32.0	80	81	80	92	87	91	47.3	25.5	231	33	30	52	77	236	203	57	16	303	0	242	64
NEW JERSEY							73	110	-34							0.00	14.81																								
Atlantic City (U)	8	42.4	29.1	79.3	67.9	54.1	84	104	-9	905	4741	4.72	2.98	41.77	14.87	.01	9.21	4.1	14.3	18.0	79	68	74	81	72	82	16.2	13.4	91	51	67	118	122	125	122	5	23	21	3	75	*
Newark	11	39.0	24.0	84.9	65.6	52.9	27	105	-14	1039	5252	4.20	3.10	42.96	11.84	.07	4.59	6.3	24.7	26.0	72	59	65	74	51	64	11.2	8.7	--	--	--	94	118	153	123	6	24	27	22	96	*
Trenton (U)	56	39.8	25.4	84.6	66.0	53.5	85	106	-14	1004	5068	4.59	2.65	40.06	15.22	.06	5.42	6.3	23.4	16.0	73	62	68	77	55	68	10.5	8.4	73	48	67	104	116	145	115	6	34	22	[illegible]	92	*
NEW MEXICO							66	116	-50							0.00	11.28																								
Albuquerque	5310	45.6	21.8	91.6	66.4	56.6	18	104	-5	970	4389	1.43	.28	8.68	3.25	.00	1.92	2.0	9.2	6.8	68	51	46	59	34	28	8.3	9.2	90	68	76	171	116	78	60	4	46	4	65	167	*
Clayton	4969	46.7	19.0	88.4	59.8	53.1	13	102	-17	995	5138	2.59	.27	15.42	7.77	.00	4.67	4.0	18.5	10.9	61	43	48	75	41	41	16.8	12.4	--	--	--	176	99	90	66	6	55	14	12	138	3
Raton	6379	42.8	9.5	84.4	52.7	48.2	13	98	-24	1203	6417	2.50	.35	15.42	7.61	.00	3.97	5.7	24.4	8.0	70	46	51	80	38	43	--	--	--	-	-	135	139	91	73	9	78	8	20	183	9
Roswell	3612	53.8	25.3	92.1	65.8	59.8	10	108	-15	787	3424	2.00	.39	12.07	5.64	.00	3.37	3.2	8.1	8.9	64	42	38	71	38	32	8.4	9.1	75	--		188	101	76	48	4	45	6	108	[illegible]	1
NEW YORK							68	108	-52							0.00	10.45																								
Albany (U)	19	32.9	17.4	82.6	63.6	49.4	—	—	-	1234	6319	4.08	2.18	35.81	----	----	----	---	----	----	--	--	--	--	--	--	-	-	-	-		-	-	---	---	-	--	--	---	---	
Albany	277	31.9	11.0	82.5	60.2	47.2	19	100	-26	1318	6962	3.37	2.03	31.82	8.96	.52	4.08	15.6	56.2	15.9	75	63	71	79	52	64	9.9	7.3	71	42	65	73	116	176	131	15	31	23	15	145	11
Bear Mountain (1952)	1300	32.8	18.9	79.5	62.6	48.3	13	99	-23	1212	6511	1.71	2.90	44.29	16.87	.25	5.50	11.3	48.9	23.0	--	--	--	--	--	--	--	--	-	--	--	73	122	170	126	13	27	98	1	130	3
Binghamton (U)	858	31.0	17.3	82.5	60.0	48.4	67	103	-28	1218	6556	3.69	2.21	36.26	9.59	.16	4.55	12.3	51.1	21.0	82	68	77	86	56	70	6.9	4.7	72	32	55	68	105	192	152	14	31	27	10	133	7
Binghamton	1601	29.7	13.6	79.1	59.0	45.2	12	---	---	1342	7537	3.87	2.30	37.66	----	----	----	---	----	----	82	68	77	85	55	70	-	--	72	32	55	68	108	189	---	--	31	--	---	---	
Buffalo	693	32.4	18.5	81.1	60.0	47.5	84	99	-21	1225	6838	3.09	2.47	32.29	10.63	.05	4.28	19.1	75.4	24.3	79	72	78	78	53	63	17.4	12.1	91	32	70	72	129	164	166	22	30	15	2	127	4
New York (U)	[illegible]	39.9	25.8	82.3	66.9	53.4	87	102	-14	995	5050	4.34	3.04	42.03	14.51	.11	9.40	7.4	30.0	25.8	72	N62	66	75	N57	67	16.4	12.1	113	51	65	105	130	130	124	8	31	20	7	92	*
New York Central Park	132	39.2	26.1	84.7	67.4	54.0	89	106	-15	1001	4965	4.40	3.03	43.36	16.85	.02	5.41	7.7	29.6	26.4	68	62	62	75	56	63	11.1	7.9	-	49	66	103	127	135	122	8	-	-	1	81	1
New York	[illegible]	39.1	26.8	84.[illegible]	67.8	53.9	17	103	7	992	4989	4.27	2.91	40.83	16.05	.03	7.11	6.5	27.7	22.8	69	59	63	73	54	64	--	--	-	--	-	---	---	---	121	7	--	-	19	76	*
Oswego (U)(1952)	292	31.7	17.6	77.8	62.[illegible]	47.5	82	100	-23	1249	6975	3.33	2.48	33.07	10.50	.18	3.76	23.8	87.9	19.1	78	68	77	76	63	70	12.1	7.9	48	19	69	79	102	184	163	28	26	9	2	127	6
Rochester	543	32.7	16.7	82.7	[illegible]	47.5	86	102	22	1249	6863	3.09	2.36	31.74	9.70	.08	4.19	18.0	75.2	29.8	81	73	79	80	50	60	11.0	7.5	73	32	70	83	113	169	167	25	28	14	8	132	5
Schenectady (1952)	217	28.8	14.2	82.3	62.8	47.2	8	102	28	1349	7050	3.86	2.22	35.25	8.69	.64	7.46	16.7	62.7	----	-	-	-	-	--	-	---	---		--	-	-			--			-		---	
Syracuse	[illegible]	33.9	[illegible]	[illegible]	[illegible]	48.8	[illegible]	102	26	1225	6520	3.68	2.52	36.42	15.92	.19	4.79	20.2	82.9	27.2	76	70	76	71	54	65	11.1	8.1	69	31	67	72	114	179	168	24	[illegible]	5	8	132	[illegible]
NORTH CAROLINA							[illegible]	109	-21							0.00	22.22																								
Asheville (U)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	56.3	[illegible]	99	[illegible]	794	[illegible]	4.50	2.11	37.22	13.75	.02	7.92	2.9	10.8	15.8	82	59	69	88	56	73	9.6	6.1	52	48	59	115	129	121	131		52	56	9	[illegible]	*
Charlotte	[illegible]	[illegible]	[illegible]	88.8	[illegible]	[illegible]	79	104	[illegible]	704	[illegible]	4.67	2.6[illegible]	43.0[illegible]	16.55	T	6.59	1.5	5.7	14.0	80	60	66	82	55	68	7.4	5.9	57	52	65	123	116	126	120	2	46	20	40	46	*
Greensboro	[illegible]	[illegible]	[illegible]	[illegible]	66.9	[illegible]	29	102	[illegible]	[illegible]	[illegible]	4.91	[illegible]	42.49	[illegible]	.13	7.19	2.6	6.7	14.3	83	59	71	85	56	72	8.3	6.7	63	49	64	112	[illegible]	[illegible]	[illegible]	1	50	32	57	84	
Hatteras (U)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	83	97	8	[illegible]	[illegible]	6.18	[illegible]	[illegible]	[illegible]	T	14.73	.3	1.0	12.0	84	75	84	82	74	85	14.3	11.7	110	46	66	112	[illegible]	112	124	*	40	9	1	[illegible]	
Raleigh (U)	[illegible]	[illegible]	[illegible]	88.8	69.6	[illegible]	[illegible]	[illegible]		691	[illegible]	[illegible]	[illegible]	45.83	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	--	--	-	-	--	-	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Raleigh	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	71	[illegible]	[illegible]	712	[illegible]	[illegible]	[illegible]	[illegible]	13.63	.06	6.66	2.1	7.1	17.8	82	57	70	86	55	72	8.4	6.7	66	49	62	131	116	118	[illegible]	4	[illegible]	18	4	[illegible]	*
Wilmington	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	57	[illegible]	[illegible]	[illegible]	[illegible]	5.16	[illegible]	[illegible]	21.12	[illegible]	9.52	.4	1.5	11.1	83	59	76	86	63	79	9.5	9.0	82	57	65	133	129	[illegible]	[illegible]	*	46	11	26	28	*
Winston-Salem	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	12.92	.15	6.24	3.0	8.6	18.0	74	55	63	81	51	65	9.1	7.2	48		-	118	107	140	[illegible]	2	44	34	41	85	*
NORTH DAKOTA							66	121	[illegible]							[illegible]	7.70																								
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	8.29	T	3.25	7.2	36.9	13.5	77	71	[illegible]	83	52	49	10.2	9.9	72	54	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	12	22	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	112	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	T	4.82	6.1	[illegible]	13.1	76	72	75	86	[illegible]	[illegible]	9.9	[illegible]	57	[illegible]	71	113	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	60
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4.72	6.3	31.9	11.2	75	70	73	86	56	54	13.5	11.4	91	[illegible]	68	88	[illegible]	[illegible]	106	[illegible]	[illegible]	12	[illegible]	182	55
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	11.66	7.88	[illegible]	3.06	5.7	32.8	10.6	74	67	69	78	[illegible]	11	6.8	7.0	60	51	79	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	29	7	[illegible]	[illegible]	43

NORMALS, MEANS AND EXTREMES

State and Station	Elevation ground (feet)	Temperature (°F)								Normal degree days (1921-1950)		Precipitation (inches)									Relative humidity (percent)						Wind Speed (m.p.h.)			Sunshine (percent of possible)		Annual mean number of days									
		Normal (1921-1950)					Extremes					Normal (1921-1950)			Extremes			Snow, Sleet			January			July			Mean hourly					Sunrise to sunset							Temperature		
		January		July														Mean total		Extreme																			Max.	Min.	
		Daily maximum	Daily minimum	Daily maximum	Daily minimum	Annual	Length, yrs.	Record highest	Record lowest	January	Seasonal	Wettest month	Driest month	Annual	Wettest month	Driest month	Maximum in 24 hours	January	Seasonal	Maximum in 24 hours	7:00 a.m. EST	1:00 p.m. EST	7:00 p.m. EST	7:00 a.m. EST	1:00 p.m. EST	7:00 p.m. EST	January	July	Fastest mile	January	July	Clear	Partly cloudy	Cloudy	Precipitation .01 inch or more	Snow, sleet, hail 1.0 inch or more	Thunderstorms	Heavy fog	90° and above	32° and below	Zero and below
OHIO							84	113	-39							0.00	8.70																								
Akron-Canton	1210	34.8	20.0	83.1	61.6	49.7	71	104	-20	1166	6203	4.20	2.13	37.26	11.98	.22	5.96	8.6	36.1	15.6	83	74	79	82	53	64	11.8	7.4	--	--	--	77	113	175	141	10	39	21	12	128	5
Cincinnati (U) (1950)	553	42.3	26.9	88.0	68.1	50.3	80	109	-17	942	4532	4.07	2.19	39.34	13.68	.13	5.22	5.4	18.1	11.0	--	--	--	--	--	--	8.9	5.5	49	40	72	c	c	c	130	7	46	10	26	89	1
Cincinnati	869	39.7	23.8	85.9	64.3	53.6	16	---	---	1021	5195	4.04	2.17	39.16	----	----	----	---	----	----	82	70	74	84	52	60	---	---	--	--	--	108	115	142	---	--	--	--	---	---	-
Cincinnati Obs.	761	40.9	25.2	87.2	65.9	54.9	42	109	-17	989	4870	4.07	2.19	39.34	13.68	.17	4.77	5.1	17.3	11.0	82	69	74	84	52	60	8.5	5.5	49	41	76	109	113	143	134	6	52	18	29	97	1
Cleveland (U)	653	36.0	23.0	80.9	66.5	51.5	--	---	---	1101	5717	3.35	2.19	33.50	----	----	----	---	----	----	--	--	--	--	--	--	---	---	--	--	--	---	---	---	---	--	--	--	---	---	--
Cleveland	787	36.0	20.9	84.7	62.6	50.6	17	103	-9	1132	6006	3.13	2.12	32.08	9.50	.61	3.73	10.6	52.5	15.0	82	73	79	79	52	58	12.5	8.9	74	27	69	75	106	184	156	20	38	14	20	119	4
Columbus (U)	724	38.2	23.9	85.8	65.8	53.4	--	---	---	1051	5277	3.66	2.00	34.36	----	----	----	---	----	----	--	--	--	--	--	--	---	---	--	--	--	---	---	---	---	--	--	--	---	---	--
Columbus	815	37.8	21.6	86.2	62.6	52.0	79	106	-20	1094	5615	4.33	2.18	37.88	10.71	.10	3.91	6.7	21.9	11.9	82	71	76	83	52	60	9.8	6.6	84	36	71	101	118	146	140	6	43	6	21	107	3
Dayton	1002	37.3	22.1	85.3	64.7	52.2	43	106	-16	1094	5597	3.90	2.11	35.15	12.41	.10	4.56	6.2	20.1	10.0	81	73	76	78	52	56	11.4	7.7	78	38	72	101	114	150	132	6	48	14	20	106	4
Portsmouth (R) (1954)	670	42.7	23.4	87.7	61.6	54.1	34	107	-25	989	4965	4.26	2.28	38.56	9.92	.51	3.43	8.8	32.9	10.1	b71	b59	b59	b88	b47	b54	7.7	3.4	60	--	--	a39	a75	a142	106	9	63	64	36	113	0
Sandusky (U)	603	35.7	21.8	83.7	65.5	51.3	80	105	-16	1122	5859	3.73	1.92	33.16	12.51	.09	5.95	8.2	28.2	12.3	81	68	78	72	56	65	10.8	7.6	77	35	71	91	121	153	138	13	34	6	13	111	3
Toledo	676	34.7	18.0	85.3	60.9	49.4	87	105	-16	1197	6394	3.55	1.86	31.84	8.49	.04	5.98	8.0	30.4	19.0	80	72	76	76	52	59	12.6	9.1	87	33	71	115	114	136	131	10	35	7	13	121	5
Youngstown	1178	34.9	20.0	83.3	61.2	49.8	14	100	-12	1163	6172	4.16	2.72	41.33	9.87	.43	4.31	11.2	51.6	20.7	84	74	80	82	53	65	11.7	7.7	--	--	--	74	105	186	166	16	38	30	11	135	4
OKLAHOMA							66	120	-27							0.00	19.75																								
Oklahoma City(U)(1953)	1254	47.2	28.3	93.1	71.8	61.0	63	113	-17	843	3519	4.42	1.28	32.59	14.12	T	7.87	c2.7	c7.8	c11.3	c79	c62	c65	c80	c49	c51	---	---	66	c57	c78	c161	c107	c97	82	c2	c45	c8	64	70	*
Oklahoma City	1280	47.0	27.2	93.3	70.9	60.4	18	109	-10	865	3644	4.25	1.24	30.22	10.78	T	4.82	3.4	8.6	8.4	79	63	64	82	53	49	15.5	12.1	87	52	80	153	97	115	83	2	51	18	73	77	*
Tulsa	672	46.9	27.9	93.1	71.1	60.6	19	112	-8	856	3584	5.15	1.57	37.68	18.00	T	7.30	4.0	8.3	9.0	79	62	65	83	53	52	12.1	9.1	75	49	73	125	107	133	89	3	56	7	72	75	1
OREGON							68	119	-54							0.00	10.17																								
Astoria	8	44.0	36.1	66.7	54.8	51.4	4	93	15	772	4995	13.21	1.07	75.99	18.94	.10	3.55	2.9	5.4	3.1	88	85	81	91	74	71	7.6	7.0	--	--	--	56	73	236	202	3	9	40	1	47	0
Baker (U) (1952)	3446	32.3	15.9	84.2	51.0	46.1	62	104	-25	1268	7087	1.31	.33	10.02	4.00	T	1.83	11.3	40.4	16.7	†83	†81	†78	†69	†68	†36	5.9	5.8	53	41	83	122	107	136	103	45	16	3	15	156	6
Burns (U)	4140	35.5	12.2	87.3	52.2	46.8	19	103	-25	1274	6918	1.47	.25	10.25	3.97	.00	1.85	15.6	48.2	10.9	80	72	67	56	32	20	---	---	--	--	--	119	101	145	89	17	13	7	20	183	7
Eugene	361	44.8	31.6	82.4	50.7	52.4	15	105	-4	831	4779	6.00	.26	37.51	19.49	T	4.82	5.7	8.3	7.2	c94	87	82	c89	55	39	8.9	8.2	--	--	--	79	88	198	143	3	5	55	12	62	*
Meacham	4050	32.0	17.7	77.3	49.0	43.5	13	97	-15	1243	7888	4.38	.46	33.29	9.29	.00	3.00	33.2	157.3	22.9	--	79	--	--	42	--	---	---	--	--	--	88	73	204	151	46	18	28	3	174	5
Medford	1312	44.6	29.8	88.8	54.7	54.5	28	115	-3	862	4547	3.13	.17	18.15	9.16	.00	3.17	4.2	8.3	7.9	92	87	74	75	44	27	4.5	5.7	--	--	--	118	80	167	99	3	9	44	46	79	*
Pendleton	1492	36.9	24.2	89.0	59.9	52.7	22	110	-22	1066	5204	1.69	.26	12.96	3.03	.00	1.49	8.9	19.0	13.3	82	78	78	56	35	24	7.9	9.7	--	--	--	104	95	166	100	7	11	27	29	87	3
Portland (U)	30	44.2	34.7	79.2	57.8	54.6	55	107	3	791	4143	7.10	.42	39.91	17.45	.00	5.01	5.3	9.2	16.0	87	81	78	85	62	47	9.9	7.0	60	21	66	69	71	225	149	3	7	26	8	22	0
Portland	21	43.3	31.5	79.2	55.3	53.0	16	---	--	856	4632	6.17	.42	35.23	----	----	----	---	----	----	87	82	78	86	63	48	9.8	6.8	57	19	65	67	68	230	---	--	8	23	---	---	--
Roseburg (U) (1952)	479	47.5	34.5	83.4	54.3	54.6	75	109	-6	744	4122	4.93	.20	30.50	12.82	.00	4.15	3.1	6.6	8.0	91	87	79	85	54	38	3.9	5.1	40	c	c	c	c	c	133	1	4	49	14	34	*
Roseburg	505	47.1	31.8	83.2	51.2	53.1	5	102	9	791	4556	4.93	.20	30.50	15.74	T	4.03	5.4	9.2	9.1	--	84	75	--	54	36	4.4	6.1	34	24	78	105	118	142	137	3	6	55	13	66	0
Salem	195	44.8	31.9	83.2	52.2	53.1	20	108	-10	825	4574	7.12	.32	39.85	15.40	.00	3.16	4.0	6.4	10.8	88	83	79	87	54	40	9.3	6.8	--	--	--	76	90	199	151	2	6	38	15	60	*
Sexton Summit (R)	3836	41.6	30.0	76.4	50.0	48.1	13	100	8	905	6217	4.70	.29	30.96	14.71	.00	5.20	27.6	102.1	18.3	87	86	--	62	45	--	---	---	--	--	--	117	71	177	135	33	7	168	2	114	0
Troutdale (1952)	29	42.2	31.4	80.0	53.1	52.4	7	103	3	874	4775	7.24	.53	42.92	11.25	.03	2.84	8.9	14.8	7.3	85	80	76	91	63	50	11.7	4.7	--	--	--	67	77	221	164	5	9	26	13	52	0
PENNSYLVANIA							70	111	-42							0.00	34.50																								
Allentown	376	36.5	20.4	85.5	62.7	50.9	14	102	-10	1132	5880	4.78	2.64	42.25	12.10	.34	4.79	7.4	26.0	12.3	79	64	71	79	50	63	10.4	6.9	--	--	--	90	120	155	126	8	35	32	20	129	2
Erie	732	34.2	20.1	80.6	60.1	48.3	84	99	-16	1172	6558	3.50	2.07	34.48	13.27	.02	10.42	12.6	54.9	26.5	b84	b79	b73	b79	b64	b70	12.4	7.6	60	22	66	90	118	157	161	15	33	3	4	117	2
Harrisburg	335	38.6	23.6	85.6	65.1	53.0	19	102	-4	1051	5258	3.70	2.24	36.01	9.07	.23	4.36	9.1	29.6	21.0	72	59	65	77	51	62	8.1	6.2	68	45	70	85	107	173	125	8	34	23	26	104	*
Park Place (U) (1953)	1932	30.8	16.8	77.8	59.5	46.1	24	98	-22	1277	7175	5.54	2.52	46.65	19.81	.72	7.83	9.8	44.8	16.0	86	74	78	82	63	77	---	---	--	--	--	83	104	178	138	15	25	104	2	145	5
Philadelphia(U)(1954)	26	41.5	28.2	85.3	69.0	55.7	84	106	-11	933	4523	4.62	2.61	41.44	12.10	.09	5.89	5.7	21.2	21.0	74	65	68	75	56	66	10.9	8.7	88	45	64	109	122	134	123	6	27	10	14	76	*
Philadelphia	7	40.9	25.4	86.5	66.0	54.3	16	102	1	986	4866	4.58	2.60	41.13	9.70	.11	4.81	5.0	16.9	9.8	77	60	68	78	51	64	10.3	8.2	67	46	64	90	118	157	120	5	29	32	27	92	0
Pittsburgh(U) (1952)	749	40.2	25.8	85.1	65.6	53.9	78	103	-20	992	5048	3.83	2.35	36.23	10.25	.06	4.08	8.6	34.7	17.5	77	67	63	77	53	60	11.7	8.7	73	32	64	85	128	152	151	11	41	25	16	102	2
Pittsburgh	1151	36.6	21.3	82.8	61.8	50.6	5	99	-7	1116	5905	4.07	2.37	36.92	8.20	.40	3.56	6.9	29.9	10.2	78	68	72	81	52	61	11.2	8.2	51	39	67	64	115	186	149	9	38	17	11	119	2
Pittsburgh Allegheny (1952)	1252	38.0	22.7	83.4	63.3	51.9	17	102	-16	1073	5555	3.84	2.35	36.49	10.25	.53	3.23	9.0	41.7	17.5	81	67	74	81	53	61	11.7	8.4	64	31	61	67	120	178	156	12	42	31	13	114	2
Reading (U)	266	39.1	25.3	85.2	66.1	53.7	60	105	-14	1017	5060	4.43	2.68	40.02	14.85	.04	6.08	8.5	29.2	15.5	73	54	69	74	49	64	9.5	7.1	95	44	62	105	118	142	126	7	33	14	20	95	*
Scranton (U)	746	35.4	21.0	83.2	61.9	50.1	c	c	c	1141	6047	4.43	2.02	36.61	c	c	c	c	c	c	c	c	--	c	c	--	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c
Scranton	940	34.3	19.5	83.0	61.4	49.3	57	103	-19	1181	6284	5.33	2.02	40.49	11.76	.08	5.09	9.7	41.1	20.0	76	N67	--	77	N50	--	7.4	5.8	60	37	64	80	131	154	138	13	32	7	9	119	2
Shippingport	736	33.8	20.7	80.5	60.0	51.0	2	92	-3	1163	5647	5.17	1.40	38.96	7.01	.71	3.30	3.6	17.4	9.0	e76	e64	--	e80	e55	--	3.3	2.0	63	--	--	---	---	---	144	5	40	21	10	126	1
Williamsport	527	36.0	20.9	85.2	61.4	50.7	62	106	-18	1132	5898	4.31	2.34	39.49	10.32	.16	5.22	9.8	36.6	13.7	77	63	70	84	51	65	---	---	--	--	--	68	117	180	131	10	--	--	19	129	3
RHODE ISLAND							70	102	-23							0.00	12.13																								
Block Island	110	38.0	25.7	75.3	62.9	49.9	77	95	-10	1026	5843	3.67	2.55	38.63	12.93	T	6.63	4.9	19.9	12.0	79	74	77	88	77	90	---	---	--	45	62	125	115	125	122	7	17	53	*	85	*
Providence(U) (1952)	12	37.6	23.0	82.6	64.4	51.4	c	c	c	1076	5607	3.75	2.83	39.63	c	c	c	c	c	c	--	--	--	--	--	--	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c
Providence	55	36.8	20.6	80.0	61.9	49.4	53	102	-17	1125	6125	3.75	2.83	39.63	12.24	.04	6.17	9.6	33.0	15.0	73	60	67	79	56	72	11.8	9.1	95	49	63	125	110	130	123	10	21	32	9	108	2
SOUTH CAROLINA							73	111	-13							0.00	13.25																								
Charleston (U)	9	59.0	43.8	88.0	75.0	66.6	87	104	7	445	1769	8.04	1.92	45.99	19.18	.01	10.57	T	.2	3.9	87	56	76	88	64	81	9.9	9.3	76	58	66	103	115	147	110	*	59	32	27	9	0
Charleston	41	61.4	39.2	89.4	70.8	65.2	15	---	---	472	1973	8.04	2.05	48.14	17.31	.04	----	---	---	---	87	55	76	88	64	82	---	---	--	--	--	---	---	---	---	--	--	--	---	---	--
Columbia (U)	332	57.0	38.7	90.2	71.3	64.4	c	c	c	538	2284	5.74	2.00	41.58	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c
Columbia	217	58.1	35.9	91.9	70.8	64.0	70	107	-2	566	2435	6.56	2.25	46.15	16.72	.04	7.66	.4	1.8	11.7	81	57	65	83	55	68	8.0	6.9	54	53	63	138	115	112	112	*	50	12	62	33	*
Florence	146	56.3	36.3	91.1	70.6	63.6	76	108	-1	588	2507	6.45	2.27	45.33	21.33	.00	9.15	.5	1.3	10.0	84	53	68	85	55	72	---	---	--	--	--	170	86	109	106	0	52	28	55	39	0
Greenville	1018	51.6	35.0	87.9	68.8	61.0	40	104	4	673	3060	4.81	3.00	47.65	13.36	.07	7.35	1.4	3.7	14.4	78	59	67	81	54	66	8.5	6.9	79	52	66	126	110	129	121	*	53	16	42	42	0
Spartanburg	801	52.1	34.7	88.7	69.1	61.2	27	104	5	670	3044	4.70	2.97	46.66	12.00	.04	6.85	1.0	3.0	11.2	--	--	--	--	--	--	---	---	--	--	--	114	121	130	111	*	48	20	53	49	0
SOUTH DAKOTA							68	120	-58							0.00	8.00																								
Huron	1282	24.8	2.1	89.5	61.3	45.7	18	110	-34	1597	7902	3.06	.45	17.54	7.12	T	4.15	6.6	37.0	10.7	79	72	76	86	52	49	11.8	11.0	77	53	77	104	141	147	95	13	44	14	29	172	34
Rapid City	3165	33.1	9.1	85.8	58.8	46.1	15	109	-27	1361	7535	3.36	.32	17.10	7.35	.01	3.17	6.1	36.5	16.3	71	61	67	70	43	40	9.7	10.0	65	55	73	109	117	139	93	10	50	16	31	166	22
Sioux Falls	1420	24.4	4.0	87.9	61.6	45.8	12	108	-27	1575	7848	4.25	.67	25.24	7.94	T	4.32	6.2	42.7	18.9	72	64	70	84	52	52	11.4	9.5	--	--	--	104	105	156	93	12	47	21	27	169	32

See reference notes at end of table.

NORMALS, MEANS AND EXTREMES

State and Station	Elevation ground (feet)	Temperature (°F) Normal (1921-1950) January Daily maximum	January Daily minimum	July Daily maximum	July Daily minimum	Annual	Extremes Length, yrs.	Record highest	Record lowest	Normal degree days (1921-1950) January	Seasonal	Precipitation (inches) Normal (1921-1950) Wettest month	Driest month	Annual	Extremes Wettest month	Driest month	Maximum in 24 hours	Snow, Sleet Mean total January	Seasonal	Extreme Maximum in 24 hours	Relative humidity (percent) January 7:00 a.m. EST	January 1:00 p.m. EST	January 7:00 p.m. EST	July 7:00 a.m. EST	July 1:00 p.m. EST	July 7:00 p.m. EST	Wind Speed (m.p.h.) Mean hourly January	July	Fastest mile	Sunshine (percent of possible) January	July	Annual mean number of days Sunrise to sunset Clear	Partly cloudy	Cloudy	Precipitation .01 inch or more	Snow, sleet, hail 1.0 inch or more	Thunderstorms	Heavy fog	Temperature Max. 90° and above	Min. 32° and below	Zero and below
TENNESSEE							75	113	-32							0.00	11.00																								
Bristol	1519	48.5	28.6	85.5	64.0	56.4	20	102	-10	818	4148	5.14	2.39	41.24	9.73	0.32	3.21	3.3	10.8	16.2	85	65	72	88	55	67	6.9	4.1	--	--	--	88	117	160	132	3	50	40	25	93	*
Chattanooga	670	51.6	31.6	89.6	67.0	60.0	79	106	-10	725	3384	6.05	2.69	53.60	15.29	.04	7.61	2.0	5.6	12.0	80	62	68	83	56	66	7.6	5.5	82	43	61	114	130	121	131	5	59	27	40	51	*
Knoxville	950	49.8	31.1	89.1	67.6	59.3	87	104	-16	760	3590	4.83	2.53	45.51	17.32	.07	6.20	2.6	8.9	18.2	83	65	69	83	55	66	7.3	5.9	71	42	64	120	121	124	132	3	47	18	32	64	*
Memphis (U)	271	49.3	34.5	89.4	73.2	62.4	c	c	c	716	3006	5.38	2.50	46.81	c	c	c	c	c	c	--	--	--	--	--	--	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c
Memphis	263	50.3	32.9	91.1	71.3	61.8	83	106	-11	725	3137	5.59	2.55	49.42	18.16	.00	10.48	1.9	5.1	18.0	82	67	73	85	56	59	12.3	7.9	57	44	73	140	107	118	112	2	50	6	53	45	*
Nashville	577	48.9	30.9	90.6	69.3	60.1	87	107	-13	778	3513	5.28	2.52	45.03	14.75	.03	6.05	2.6	8.2	17.0	84	67	73	81	53	61	9.6	6.9	73	42	69	120	120	125	120	3	52	11	42	62	*
Oak Ridge (R)	905	48.8	29.2	88.3	65.1	57.8	10	105	0	806	3885	6.06	2.42	53.72	13.27	.54	4.73	2.3	5.0	6.5	--	--	--	--	--	--	5.0	3.7	--	--	--	121	100	144	129	2	57	35	46	79	*
Oak Ridge Area	886	48.7	30.4	87.8	65.6	58.1	13	103	1	787	3823	5.64	2.77	52.38	12.84	.50	7.75	---	---	---	--	--	--	--	--	--	5.7	3.8	--	--	--	---	---	---	119	--	--	--	44	74	0
TEXAS							80	120	-23							0.00	36.40																								
Abilene	1759	55.1	31.4	94.6	71.5	64.1	18	109	-9	673	2657	3.68	.88	22.55	13.19	.00	4.06	1.4	3.0	5.0	76	54	55	75	43	38	13.3	11.6	109	59	78	151	99	115	63	1	43	5	110	43	*
Amarillo	3590	48.9	21.6	91.8	63.8	56.6	17	108	-14	921	4345	3.25	.62	21.12	9.81	.00	6.75	3.9	12.5	12.2	71	50	52	76	43	42	13.1	12.2	84	65	76	159	107	99	65	3	52	22	72	111	1
Austin	615	59.8	40.0	94.4	73.7	68.2	16	109	-2	484	1713	4.37	1.67	35.18	9.93	.00	4.69	.9	1.0	7.0	82	63	63	89	50	47	10.0	8.7	57	47	79	122	116	127	83	*	40	21	114	18	*
Big Spring (1952)	2569	55.8	33.0	94.6	70.7	64.6	51	117	-7	639	2480	2.78	.60	17.39	12.89	.00	6.77	.8	2.7	3.5	--	--	--	--	--	--	---	---	--	--	--	175	109	81	54	1	40	11	110	65	*
Brownsville	16	69.6	51.4	92.5	75.1	73.6	18	104	22	219	617	5.13	1.11	27.62	13.06	T	8.18	T	T	T	89	65	76	92	55	65	12.3	11.8	57	48	81	99	140	126	70	0	25	24	115	1	0
Corpus Christi	41	66.3	47.4	92.5	75.0	71.7	19	104	18	299	924	4.70	1.39	28.00	14.54	.00	7.68	.1	.1	1.1	88	66	75	93	58	68	12.3	11.8	70	48	87	118	119	128	72	*	34	24	100	5	0
Dallas	487	55.3	36.0	95.4	75.6	66.5	17	111	2	607	2272	4.97	1.83	34.42	13.85	T	9.18	1.2	1.7	3.3	81	62	63	79	49	46	10.1	9.8	65	45	79	142	98	125	82	1	41	7	105	31	0
Del Rio (1956)	109	62.2	41.6	93.3	76.1	69.8	51	111	11	419	1407	2.51	.80	18.62	13.71	.00	8.88	.4	.7	4.7	81	58	53	80	50	41	7.8	9.7	62	53	75	153	118	94	61	*	24	6	118	14	0
El Paso	3920	55.8	30.9	93.5	69.0	63.3	18	107	-6	670	2641	1.32	.27	7.83	5.19	.00	2.89	1.7	4.0	7.2	63	45	39	60	37	30	10.1	9.9	70	74	78	194	101	70	43	1	40	1	101	51	*
Fort Worth Meacham Fld (1952)	688	54.9	35.5	95.0	74.2	65.9	15	110	-2	622	2361	4.84	1.75	32.29	16.97	T	6.03	1.5	2.9	4.5	79	60	61	80	49	47	12.4	10.6	61	54	76	139	104	122	84	1	45	10	98	34	*
Fort Worth Amon Carter	544	54.9	35.6	95.2	74.9	66.0	4	109	13	619	2338	4.92	1.88	33.69	12.64	.11	4.55	1.3	1.9	3.8	79	62	64	72	40	36	12.5	11.5	--	-	-	157	98	110	72	1	46	10	116	37	0
Galveston (U)	7	59.8	49.2	87.4	78.6	70.1	86	101	8	356	1211	5.44	2.98	45.29	26.01	.00	14.35	T	.2	15.4	87	77	83	82	69	74	11.4	9.6	91	50	72	143	124	98	98	*	48	20	13	4	0
Galveston	5	60.1	48.2	88.7	77.9	70.1	6	97	18	362	1233	5.82	3.14	47.98	13.31	T	8.53	T	T	T	84	86	74	82	84	70	13.6	11.9	--	--	--	126	116	126	85	0	53	32	33	3	0
Houston (U)	41	61.9	45.7	92.3	75.2	70.0	19	105	10	378	1276	4.84	2.81	45.37	17.64	.01	10.83	.3	.3	3.0	87	66	73	92	58	65	10.7	8.3	73	44	67	95	124	146	102	*	56	16	89	6	0
Houston	50	62.6	44.0	92.2	[illegible]	68.9	17	---	-	394	1388	4.91	2.70	46.93	22.31	T	----	---	---	---	85	66	73	90	58	66	---	---	--	--	--	---	---	---	---	--	--	--	--	--	-
Laredo	500	68.8	46.1	99.7	[illegible]	74.3	21	115	18	270	781	3.18	.85	19.49	8.62	.00	5.55	.1	.1	2.0	82	58	53	83	45	40	10.1	15.4	--	-	--	131	122	112	56	*	31	10	177	6	0
Lubbock	3243	51.8	25.7	92.0	66.6	59.5	11	107	-9	812	3587	3.36	.53	18.89	7.80	.00	5.14	1.3	5.5	8.0	72	48	49	76	45	39	12.9	12.3	70	--	--	172	102	91	55	2	46	11	88	102	*
Midland	2854	56.6	31.8	94.2	69.7	64.2	10	109	-1	645	2565	2.14	.62	16.20	4.30	.00	1.72	1.6	2.4	5.9	68	43	44	69	41	36	7.8	8.6	58	--	--	174	94	97	45	1	37	13	114	55	*
Palestine (U) (1952)	491	57.2	39.6	92.0	73.0	66.5	71	108	-6	531	1980	4.69	1.76	40.54	17.25	T	12.06	.8	1.8	9.0	82	64	65	87	54	58	8.0	6.2	45	46	79	132	123	110	94	1	46	12	73	22	*
Port Arthur (U) (1952)	5	60.9	46.5	90.0	76.1	69.5	36	102	11	381	1340	6.48	3.25	[illegible]	24.25	.00	17.76	.2	.3	2.7	--	--	--	--	--	--	11.0	9.0	91	47	68	125	124	116	108	*	72	20	56	6	0
Port Arthur	16	61.7	44.0	90.7	72.6	68.1	4	100	24	406	1517	6.80	2.93	[illegible]	14.04	.06	7.53	T	T	T	87	71	79	92	63	71	12.7	8.8	72	38	63	102	130	133	96	0	67	40	87	7	0
San Angelo	1903	57.2	37.3	94.4	71.0	66.2	10	107	1	556	2107	2.96	.95	[illegible]	7.10	.00	4.65	1.4	2.4	5.1	71	49	45	72	41	35	10.4	9.7	69	--	--	167	97	101	51	1	40	5	114	39	0
San Antonio	792	60.9	40.3	95.1	73.2	[illegible]	17	106	0	462	1579	3.52	1.40	27.93	15.78	.00	6.87	.4	.4	4.7	81	61	59	88	49	45	9.0	8.6	74	45	75	107	120	138	76	*	38	21	116	16	*
Victoria	110	64.1	46.2	92.8	76.8	71.2	11	107	12	352	1126	4.13	1.97	35.66	8.92	.01	5.36	.1	.1	1.0	85	63	69	93	52	60	11.3	9.3	72	--	--	100	126	139	88	*	46	28	119	9	0
Waco	500	57.1	[illegible]	95.4	74.6	67.3	15	108	-5	557	2025	4.15	1.38	32.95	13.37	.00	7.18	1.1	1.4	7.0	82	64	64	82	49	46	12.6	11.1	--	-	-	133	105	127	76	*	50	12	109	25	*
Wichita Falls	1020	[illegible]	[illegible]	94.8	72.7	63.1	14	110	-12	756	3025	3.86	1.31	26.64	12.03	.00	4.49	2.1	4.8	5.0	76	57	60	74	46	42	11.6	10.5	--	--	--	163	97	105	68	2	47	12	106	59	*
UTAH							67	116	-50							0.00	4.50																								
Blanding (1952)	6036	38.1	15.0	87.3	57.3	49.6	46	110	-23	1190	6138	1.47	.58	[illegible]	7.01	.00	----	---	---	---	--	--	--	--	--	--	---	---	--	--	--	--	---	---	---	--	--	--	---	---	--
Milford	5028	36.0	11.5	92.5	55.5	49.0	9	104	-28	1277	6445	1.06	.40	[illegible]	1.98	.00	1.20	13.0	40.4	16.3	82	68	65	59	28	25	11.5	9.0	--	--	--	153	105	107	54	12	30	64	57	178	15
Salt Lake City (U) (1953)	4260	36.6	21.1	91.7	64.7	53.0	80	105	-20	1119	5463	1.91	.59	15.81	5.81	.00	2.72	12.5	55.1	15.3	--	--	--	--	--	--	---	---	-	--	--	--	---	---			-		51	106	1
Salt Lake City	4220	35.9	[illegible]	92.3	60.8	51.3	29	106	-30	1194	5866	1.76	.61	14.74	4.90	.00	2.41	13.9	51.6	15.4	80	70	72	55	27	23	7.4	9.6	71	46	82	135	107	123	87	17	35	[illegible]	52	133	5
VERMONT							70	105	-50							0.00	8.77																								
Burlington	331	27.6	8.2	82.4	58.4	44.5	51	101	-30	1460	7865	3.75	1.53	32.22	11.54	.15	4.49	14.3	64.3	24.2	81	69	77	76	54	66	11.7	8.2	72	34	62	71	109	186	148	20	27	11	4	154	21
VIRGINIA							67	110	-29							0.00	11.20																								
Cape Henry (U) (1952)	16	49.4	35.5	84.8	70.6	59.7	79	104	5	698	3307	5.31	2.48	41.64	16.82	.00	7.18	2.0	7.1	12.0	80	69	76	82	68	80	13.1	9.6	134	50	67	131	117	117	119	3	39	23	19	37	0
Lynchburg	947	46.6	28.7	86.1	65.9	56.6	86	106	-7	846	4153	4.35	2.37	39.57	14.87	.03	7.59	4.2	13.6	16.4	74	58	67	79	56	69	8.3	6.6	62	48	68	126	133	106	124	4	35	22	32	78	*
Norfolk (U)	11	50.7	35.4	86.7	70.7	60.7	c	c	c	679	3119	6.05	2.45	43.26	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c
Norfolk	26	50.0	33.0	86.0	68.9	59.2	87	105	2	729	3454	6.05	2.45	43.26	15.61	.04	6.84	2.5	8.5	17.7	79	61	71	81	60	75	11.9	9.5	80	50	66	129	115	121	124	3	38	16	26	40	0
Richmond (U)	162	48.4	30.7	87.3	68.4	56.6	c	c	c	787	3720	5.38	2.41	42.17	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c
Richmond	162	48.1	28.4	87.8	67.2	57.7	28	104	-12	828	3955	5.64	2.49	42.89	18.87	.35	8.79	4.5	10.5	21.6	82	58	72	84	55	73	8.2	6.9	68	47	73	102	108	155	115	2	37	30	43	83	1
Roanoke	1174	46.6	29.2	86.8	65.0	56.6	19	104	4	840	4152	4.91	2.56	41.58	12.91	.37	6.27	4.2	15.0	13.8	74	56	64	81	51	65	9.7	6.3	--	--	-	98	120	147	126	5	43	28	36	82	0
WASHINGTON							91	118	-42							[illegible]	12.00																								
Ellensburg (1952)	1727	32.6	15.6	84.7	54.3	47.9	12	103	-28	1268	6542	1.47	.14	[illegible]	[illegible]	[illegible]	1.14	13.2	38.5	11.2	--	--	--	--	--	--	5.8	17.2	--	--	-	110	99	156	81	14	10	36	20	160	9
Kelso (1952)	17	43.6	31.1	75.8	50.2	50.7	6	96	-1	856	5239	6.74	.67	[illegible]	[illegible]	[illegible]	3.06	10.3	16.9	7.7	89	84	80	93	65	56	---	---	--	--	--	57	83	225	161	5	-	-	3	75	*
North Head (1952)	194	46.5	38.0	61.2	53.4	50.7	65	97	11	704	5211	9.03	.85	[illegible]	[illegible]	[illegible]	4.29	2.7	5.2	8.0	87	80	84	92	87	84	16.4	14.0	113	28	49	67	90	208	194	--	3	44	*	11	0
Olympia	190	43.3	30.6	76.3	49.2	50.0	16	103	-1	868	5501	8.66	.66	[illegible]	[illegible]	.00	4.93	8.7	17.0	13.7	91	87	80	91	61	47	6.9	5.4	--	--	--	53	93	219	159	6	3	94	5	87	*
Omak (1952)	1228	27.8	14.9	87.9	54.2	47.4	43	114	-26	1352	6806	1.52	.34	11.27	[illegible]	.00	2.21	8.6	29.3	---	--	--	--	--	--	--	---	---	--	--	--	---	---	--	59		-	-	--	---	--
Port Angeles (1952)	11	43.7	36.5	63.9	51.0	49.0	6	80	11	772	5850	4.34	.44	23.03	7.15	.09	3.34	6.3	9.4	5.6	82	78	77	89	79	76	9.7	13.8	--	--	--	62	84	219	141	5	4	40	0	16	
Seattle (U)	14	45.2	36.2	75.1	56.1	53.2	24	100	11	753	4438	5.34	.52	31.92	10.93	T	3.31	5.2	8.9	11.5	85	80	74	85	63	47	10.1	7.9	65	28	61	71	93	201	151	3	6	-	1	15	*
Seattle (Boeing Fld)	14	45.0	33.0	76.2	54.1	52.2	16	---	---	806	4785	5.72	.58	34.28	15.43	T	----	---	---	---	86	80	74	86	63	47	---	---	--	--	--	---	---	---	---	--	--	--	--	---	--
Seattle-Tacoma	386	43.0	31.4	75.0	52.8	50.7	13	96	0	862	5275	5.68	.58	33.80	12.92	.11	3.41	8.7	17.6	21.4	87	85	83	91	69	50	11.5	9.6	-	--	--	51	86	228	160	5	9	55	1	55	*
Spokane	2357	30.2	19.6	82.4	56.8	47.1	10	100	-24	1243	6852	2.21	.36	14.92	5.71	T	1.67	23.8	63.3	13.0	84	79	78	66	39	27	7.9	7.8	56	27	81	89	93	183	117	[illegible]	10	44	13	143	9
Stampede Pass (R)	3958	27.5	19.8	67.2	46.5	39.9	14	88	11	1280	9149	14.66	1.29	93.60	29.06	.36	7.01	90.5	473.4	36.2	93	91	91	87	68	61	12.8	12.3	94	--		70	60	235	203	85	8	252	0	[illegible]	4
Tacoma (U) (1952)	127	44.2	34.4	73.7	54.9	51.8	56	98	7	797	4866	5.90	.61	35.20	18.87	.00	3.79	5.7	12.1	16.0	92	82	81	87	61	50	7.9	7.6	61	21	61	73	107	185	150	4	5	30	*	32	[illegible]
Tatoosh Is (R)	101	44.9	39.0	59.2	51.7	49.3	55	88	14	713	5724	12.04	1.99	75.75	22.57	.02	5.91	3.8	7.7	12.0	85	83	83	95	89	87	19.9	9.7	94	26	47	60	80	225	195	3	5	60	0	8	0

See reference notes at end of table

NORMALS, MEANS AND EXTREMES

YEAR 1957

State and Station	Elevation ground (feet)	Temperature (°F)								Normal degree days (1921-1950)		Precipitation (inches)									Relative humidity (percent)						Wind Speed (m.p.h.)			Sunshine (percent of possible)		Annual mean number of days									
		Normal (1921-1950)					Extremes					Normal (1921-1950)			Extremes			Snow, Sleet			January			July			Mean hourly					Sunrise to sunset							Temperature		
		January		July														Mean total		Extreme																			Max.	Min.	
		Daily maximum	Daily minimum	Daily maximum	Daily minimum	Annual	Length, yrs.	Record highest	Record lowest	January	Seasonal	Wettest month	Driest month	Annual	Wettest month	Driest month	Maximum in 24 hours	January	Seasonal	Maximum in 24 hours	7:00 a.m. EST	1:00 p.m. EST	7:00 p.m. EST	7:00 a.m. EST	1:00 p.m. EST	7:00 p.m. EST	January	July	Fastest mile	January	July	Clear	Partly cloudy	Cloudy	Precipitation .01 inch or more	Snow, sleet, hail 1.0 inch or more	Thunderstorms	Heavy fog	90° and above	32° and below	Zero and below
WASHINGTON (Cont'd.)																																									
Walla Walla (U)	949	37.7	26.3	89.3	63.0	54.2	43	112	-16	1023	4848	1.86	0.28	15.07	4.52	0.00	2.02	8.3	21.0	14.0	b80	75	b78	b50	34	b22	5.2	5.4	62	24	85	123	91	151	106	7	10	13	36	66	1
Yakima	1061	35.9	17.8	89.9	52.9	50.2	11	103	-25	1181	5845	1.10	.18	7.21	3.25	.00	1.27	12.4	28.1	8.5	83	75	74	71	35	26	5.7	7.6	35	34	86	112	92	161	72	10	9	19	32	154	6
WEST VIRGINIA							67	112	-37							0.00	19.00																								
Charleston	950	46.3	26.5	87.3	63.5	55.8	49	108	-17	887	4417	5.45	2.81	45.00	11.32	.00	3.70	4.9	16.8	15.1	78	64	69	87	52	66	8.6	5.9	--	--	--	63	115	187	152	7	45	109	30	97	*
Elkins	1970	42.8	21.5	82.5	57.4	50.4	59	99	-28	1017	5773	5.26	2.86	44.04	11.10	.26	5.45	11.0	47.2	18.8	82	65	77	94	61	76	6.3	3.7	72	33	56	71	116	178	171	20	46	67	3	132	4
Huntington (U)	565	48.0	28.0	88.6	65.2	57.4	17	105	-10	837	4073	4.82	2.43	41.79	8.93	.22	4.23	5.4	15.5	10.3	--	--	--	--	--	--	---	---	--	--	--	---	---	---	136	--	--	--	51	97	1
Parkersburg (U)	615	42.7	26.1	86.2	65.1	54.9	69	106	-27	949	4750	4.18	2.12	39.11	11.46	.07	4.81	6.8	24.1	18.3	82	66	74	80	52	67	7.2	5.1	66	29	63	110	103	152	143	6	43	11	23	97	2
Petersburg (U) 1953	1013	44.6	23.0	88.0	60.6	53.8	13	102	-14	967	4966	3.48	1.64	30.77	17.15	.36	7.41	5.9	20.7	11.6	76	51	60	90	53	68	---	---	--	--	--	83	105	177	125	6	40	36	34	116	1
WISCONSIN							67	114	-54							0.00	11.72																								
Green Bay	689	24.5	7.7	81.1	58.7	43.6	8	99	-31	1516	8259	3.57	1.26	26.51	6.50	T	3.68	8.2	40.3	9.3	75	68	73	86	59	64	10.6	8.2	109	47	64	94	103	168	121	13	37	29	7	169	25
La Crosse	652	25.0	6.3	85.1	62.8	46.2	7	103	-37	1528	7650	3.87	1.11	28.92	9.16	.02	3.84	8.1	40.8	11.0	77	66	72	85	59	61	9.0	7.6	60	--	--	90	100	175	112	10	47	22	15	154	21
Madison (U)	938	26.7	11.8	82.2	64.0	46.9	87	107	-29	1417	7300	4.11	1.27	30.71	10.69	T	5.31	9.6	37.9	12.9	--	--	--	--	--	--	---	---	--	--	--	---	---	---	115	11	--	--	8	143	18
Madison	857	27.9	10.3	85.7	60.2	46.6	18	102	-37	1423	7417	4.02	1.13	30.00	10.93	.06	5.25	8.4	37.6	10.3	75	67	73	82	52	59	11.1	8.7	77	47	73	100	96	169	115	12	39	22	19	156	19
Milwaukee (U)	620	30.0	16.0	80.1	64.4	47.7	--	---	---	1302	6944	3.36	1.42	28.87	----	----	----	---	----	---	--	--	--	--	--	--	---	---	--	--	--	---	---	---	---	--	--	--	---	---	--
Milwaukee	672	29.2	14.5	81.2	61.4	46.8	17	101	-24	1336	7205	3.33	1.27	27.57	9.87	15	5.28	11.5	39.1	12.3	76	70	73	81	58	64	13.4	10.0	73	40	70	93	102	170	119	12	37	26	11	139	10
WYOMING							98	114	-63							0.00	5.50																								
Casper	5322	31.8	12.8	86.3	55.8	45.1	18	104	-40	1324	7638	2.32	.65	14.09	5.75	T	3.09	10.0	70.4	20.6	67	56	60	65	30	26	17.8	10.6	--	--	--	105	116	144	93	22	38	9	26	171	16
Cheyenne	6131	37.1	13.8	82.6	53.6	44.9	22	100	-34	1225	7562	2.46	.52	16.25	5.35	T	2.68	6.7	58.1	16.5	59	48	55	73	36	40	14.2	9.5	69	60	69	104	135	126	101	18	54	23	9	179	13
Lander	5563	28.0	5.6	84.4	56.3	43.2	11	101	-31	1494	8303	2.57	.49	14.18	6.88	T	3.56	6.8	88.7	19.8	65	57	56	56	34	28	6.6	7.7	77	64	78	126	127	112	69	2	31	2	21	188	22
Rock Springs (1953)	6741	27.8	8.2	83.7	53.8	42.5	22	98	-33	1457	8473	1.10	.41	8.82	3.71	T	2.80	6.4	44.6	8.9	73	65	66	58	27	26	13.6	10.1	--	--	--	102	121	142	84	16	40	7	7	196	19
Sheridan	3942	32.8	7.4	86.1	55.0	44.5	17	106	-31	1392	7903	2.64	.61	16.75	9.54	.07	3.84	9.7	69.9	26.7	73	62	66	72	36	35	7.7	7.5	84	57	76	101	118	146	109	23	38	6	26	181	23
PACIFIC AREA																																									
Canton Island	9	88.0	78.0	90.0	78.4	83.7	11	98	70	----	----	3.78	.27	20.01	14.57	T	5.07	.0	.0	.0	79	79	65	80	80	65	---	---	--	--	--	79	179	107	99	0	5	0	168	0	0
Koror (R)	94	85.0	75.4	85.2	75.8	80.9	8	93	69	----	----	18.81	7.68	147.98	27.46	1.65	11.57	0	.0	.0	87	91	80	90	92	82	---	---	--	--	--	3	81	281	282	0	43	0	54	0	0
Majuro, Marshall Is.	10	----	----	----	----	----	2	89	70	----	----	----	----	-----	24.26	2.28	10.01	.0	.0	.0	83	84	78	84	85	79	---	---	--	--	--	13	89	263	253	0	17	0	0	0	0
Ponape (R)	120	86.4	76.0	88.0	72.7	81.0	7	96	67	----	----	19.66	7.87	182.44	33.04	2.40	22.48	.0	.0	.0	85	85	77	95	96	80	---	---	--	--	--	4	80	281	303	0	29	0	51	0	0
Truk (Moen Is.)	8	85.3	76.5	86.6	74.0	80.8	7	94	70	----	----	13.46	6.63	131.91	24.14	.84	10.44	.0	.0	.0	81	83	78	87	89	81	---	---	--	--	--	8	62	295	286	0	23	0	1	0	0
Wake Island	11	81.1	73.8	86.3	77.6	79.9	10	92	64	----	----	8.90	1.26	41.30	E17.66	.27	E15.00	.0	.0	.0	74	75	66	81	82	73	13.5	12.2	--	--	--	127	156	82	194	0	6	0	4	0	0
Yap (R)	53	85.4	76.1	87.6	75.7	81.6	9	97	70	----	----	16.60	4.71	122.14	29.44	1.08	8.87	.0	.0	.0	85	87	78	89	91	79	10.0	4.2	--	--	--	11	69	285	262	0	9	0	72	0	0
HAWAII							53	100	18							0.00																									
Hilo	31	78.4	62.4	82.6	67.0	73.0	11	93	55	----	----	15.99	9.48	139.98	50.82	.36	13.41	.0	.0	.0	85	82	69	89	83	69	6.9	6.3	--	49	44	23	117	225	285	0	7	0	*	0	0
Honolulu (U)	12	76.7	67.2	82.2	73.5	75.2	35	88	57	0	0	4.31	.63	23.92	16.70	.06	8.07	.0	.0	.0	80	80	62	74	69	56	9.8	13.5	65	67	73	106	160	99	149	0	7	0	0	0	0
Honolulu	7	78.6	65.8	84.6	73.0	75.9	--	---	--	----	----	4.65	.23	21.70	----	----	----	---	---	---	80	80	62	74	69	56	9.6	13.4	59	66	72	107	160	98	---	0	7	0	0	0	0
Lihue	115	77.4	62.7	82.4	72.4	74.0	7	90	51	----	----	6.23	1.65	42.49	18.45	.30	11.20	0	.0	.0	84	85	69	81	76	65	10.3	12.4	58	45	57	53	168	144	209	0	10	0	*	0	0
CARIBBEAN																																									
St. Croix (1953)	53	82.5	69.1	88.2	75.5	79.1	6	95	62	----	----	5.84	2.05	42.35	15.23	.17	7.76	.0	.0	.0	76	66	80	77	70	84	12.7	13.0	--	--	--	39	216	110	196	0	43	0	27	0	0
Swan Island (1954)	28	82.5	73.3	87.4	77.4	80.7	12	92	64	----	----	9.25	1.00	53.82	27.61	.02	10.77	---	---	---	80	72	80	85	75	81	10.5	9.4	40	--	--	95	159	111	157	0	45	0	19	0	0
PUERTO RICO							58	103	40							0.00																									
San Juan (U)	47	79.6	70.2	84.2	75.7	78.0	59	94	62	0	0	6.51	2.42	60.00	16.88	.05	10.55	.0	.0	.0	81	71	77	78	75	82	12.2	13.1	E149	64	65	93	196	76	209	0	49	0	9	0	0
San Juan	9	80.1	69.5	86.0	75.0	78.1	--	---	--	----	----	7.49	2.78	67.80	----	----	----	---	---	---	c	c	c	c	c	c	c	c	c	c	c	c	c	c	---	--	--	--	---	---	--
Santa Isabel (1953)	28	83.0	64.9	86.9	72.0	76.7	8	96	57	----	----	4.54	.48	32.66	12.37	.05	6.62	.0	.0	0	78	59	76	61	58	67	6.7	7.4	--	--	--	105	175	85	99	0	70	0	35	0	0
ALASKA (Northern)							71	100	-76							0.00																									
Anchorage	92	20.4	5.5	65.4	49.1	35.3	35	86	-38	1612	10789	2.71	.40	14.27	5.91	.00	2.06	10.8	59.7	17.7	74	74	72	85	74	62	5.2	5.6	66	41	47	d74	d86	d205	103	22	1	25	#10	202	25
Barrow	22	-8.5	-21.6	46.0	33.3	10.1	37	78	-56	2483	19994	.83	.10	4.11	2.44	.00	1.00	2.2	26.1	15.0	b63	b65	b67	b96	b92	b89	11.0	11.8	70	--	--	63	51	183	67	3	*	62	#*	323	168
Bethel	10	14.6	-1.1	62.4	46.6	29.6	15	86	-52	1804	12880	4.02	.82	18.17	12.37	.02	2.40	11.6	62.2	18.7	80	80	80	94	87	70	11.1	9.2	--	--	--	58	66	241	160	23	2	20	#8	221	78
Fairbanks	436	-.3	-19.2	70.5	51.2	26.2	28	93	-66	2319	14158	2.26	.29	11.92	6.88	T	2.33	13.8	60.4	15.5	68	69	68	88	72	52	3.2	5.8	60	34	45	71	90	204	112	19	8	20	#48	231	120
King Salmon	44	21.7	6.5	62.6	46.6	34.1	15	88	-40	1578	11235	4.01	.84	22.46	6.44	.00	1.45	7.7	45.3	9.5	77	77	76	92	83	60	10.4	9.6	--	--	--	59	69	237	151	15	1	37	#12	205	56
Kotzebue	10	.6	13.7	58.5	46.7	20.6	15	82	-48	222	16151	1.95	.27	8.03	5.18	T	1.80	5.5	41.4	8.6	71	71	71	89	86	78	15.3	12.9	--	--	--	84	73	208	113	13	*	22	#4	252	119
McGrath	334	1.1	-18.5	68.0	49.3	25.5	15	88	-64	2285	14390	3.63	.49	19.13	6.26	.01	2.39	16.7	88.7	15.2	71	69	71	87	75	57	2.7	5.4	--	--	--	63	64	238	144	26	6	9	#28	230	113
Nome	13	12.9	-1.7	55.4	43.8	26.3	11	81	-42	1841	14086	3.76	.59	18.69	7.82	.02	2.38	11.4	61.3	8.4	79	80	79	91	87	84	12.0	9.9	75	47	28	82	64	219	133	21	*	24	#2	238	89
Northway (1956)	1713	-8.5	-25.7	69.8	48.5	22.4	14	88	-72	2545	15506	2.89	.22	11.35	6.42	T	3.91	7.7	40.1	11.5	68	67	65	87	67	50	3.0	5.9	--	--	--	45	84	236	102	11	12	17	#37	247	138
ALASKA (Southern)							74	99	-51																																
Annette	110	38.6	30.5	62.5	51.0	45.6	10	86	1	942	7096	14.38	4.49	96.59	31.98	.71	5.62	13.7	52.6	14.2	77	76	72	92	80	74	13.6	8.6	--	--	--	43	57	265	221	17	1	20	#15	86	0
Cold Bay	90	33.5	24.7	54.4	45.4	38.4	13	78	-9	1113	9687	4.38	1.34	33.20	9.97	.02	2.75	6.0	41.7	9.7	89	90	86	94	92	83	17.3	15.5	--	--	--	12	50	303	201	12	0	41	#*	163	2
Cordova	40	32.4	17.6	60.1	46.4	38.6	14	84	-33	1240	9615	15.56	4.19	98.64	27.72	.08	7.92	27.4	125.7	18.1	82	81	81	91	87	80	4.4	3.4	--	--	--	53	52	260	216	37	1	11	#8	193	23
Galena (1952)	120	-.9	17.7	69.2	51.0	25.2	5	87	-64	2303	14538	2.84	.18	14.62	4.45	.08	2.34	8.8	51.2	9.0	69	70	69	82	73	59	6.0	8.2	--	--	--	72	77	216	126	17	5	11	#23	232	113
Juneau (U)	80	33.5	25.5	61.9	50.1	42.5	--	---	--	1101	8187	13.03	4.13	90.25	----	----	----	---	---	---	--	--	--	--	--	--	---	---	--	--	--	---	---	---	---	--	--	--	---	---	--
Juneau	15	31.2	21.1	62.4	47.0	40.6	14	84	-21	1203	8888	8.47	2.98	55.94	13.29	.27	4.66	17.5	92.1	31.0	78	79	76	88	76	67	8.6	7.2	68	30	28	45	39	281	222	24	*	21	#22	148	12
St. Paul Island	22	29.9	22.9	49.3	42.4	35.2	40	64	-26	1197	10839	3.49	1.02	24.24	9.32	.08	1.93	12.7	54.7	13.0	b87	b87	b86	b95	b96	b92	19.5	11.0	114	--	--	25	69	271	199	19	*	40	#0	189	4
Yakutat	28	33.0	19.9	58.6	46.8	39.3	11	86	-22	1194	9354	19.93	4.96	134.15	43.88	.52	7.13	40.4	210.9	26.0	81	82	80	96	84	78	9.2	7.0	--	--	--	40	45	280	223	50	1	32	#5	174	12

Data from airport or from airport and Urban site records combined.
U indicates Urban, R indicates Rural sites.
Data for this table are based on records through 1957 except as indicated in notes.
Date in Parenthesis after station name indicates last year included in summarization of data.
Normal values are based on the period 1921-1950, and are means adjusted to represent observations taken at the present standard location.

Degree days are based on a daily average of 65°F.
Fastest mile is the speed of the wind recorded in the shortest time on an automatic recording wind instrument.
a clear day averages 0-3 tenths sky cover, partly cloudy 4-7 tenths and cloudy 8-10 tenths.
Heavy fog includes data formerly referred to as "Dense" or "Thick." The upper visibility limit for heavy fog is 1/4 mile.
* Less than one half
- Data not available

† Airport data
# Number of days Maximum 70 F or above (Alaskan stations)
E estimated during hurricane or typhoon
N computed as of noon local time
T trace, an amount too small to measure

b relative humidity recorded 30 minutes later
c airport and city office records combined
d sun below horizon November 18 - January 24
e 8 00 a.m. and 2 p.m., EST.

ELEVATIONS–STATION PRESSURE

State and station	Ft.
ALABAMA	
Birmingham	700
Mobile	221
Montgomery	218
ARIZONA	
Flagstaff	7018
Phoenix	1107
Prescott	5022
Tucson	2555
Winslow	4883
Yuma	141
ARKANSAS	
Fort Smith	463
Little Rock	357
Texarkana	368
CALIFORNIA	
Bakersfield	492
Bishop	4145
Blue Canyon	5283
Burbank	725
Eureka CO	60
Fresno	327
Los Angeles CO	512
Los Angeles	104
Mt. Shasta CO	3587
Oakland	7
Red Bluff	353
Sacramento	25
Sandberg	4523
San Diego	87
San Francisco CO	----
San Francisco	18
Santa Maria	238
COLORADO	
Alamosa	7543
Colorado Springs	6170
Denver	5292
Grand Junction	4602
Pueblo	4690
CONNECTICUT	
Bridgeport	17
Hartford	159
New Haven	13
DELAWARE	
Wilmington	80
DISTRICT OF COLUMBIA	
Washington CO	----
Wash. Nat'l. AP	112
FLORIDA	
Apalachicola	35
Daytona Beach	41
Fort Myers	12
Jacksonville CO	----
Jacksonville	31
Key West CO	21
Lakeland CO	----
Miami CO	--
Miami	25
Miami Beach	----
Orlando	119
Pensacola CO	56
Tallahassee	68
Tampa	35
West Palm Beach	21
GEORGIA	
Athens	811
Atlanta	1173
Augusta	182
Columbus	394
Macon	370
Rome	643
Savannah	65
IDAHO	
Boise	2739
Idaho Falls CO 46W	4939
Idaho Falls CO 42NW	----
Lewiston	1436
Pocatello	4478
ILLINOIS	
Cairo CO	357
Chicago	623
Moline	606
Peoria	609
Springfield	636
INDIANA	
Evansville	431
Fort Wayne	857
Indianapolis	823
South Bend	773
IOWA	
Burlington	702
Des Moines	860
Dubuque	699
Sioux City	1138
Waterloo	878
KANSAS	
Concordia CO	1392
Dodge City	2509
Goodland	3688
Topeka	987
Wichita	1358
KENTUCKY	
Lexington	989
Louisville	525
LOUISIANA	
Baton Rouge	76
Lake Charles	32
New Orleans CO	53
New Orleans	3
Shreveport	249
MAINE	
Caribou	628
Portland	103
MARYLAND	
Baltimore CO	
Baltimore	123
Frederick	- -
MASSACHUSETTS	
Blue Hill. Obs.	640
Boston	124
Nantucket	12
Pittsfield	1169
MICHIGAN	
Alpena	609
Detroit	730
Detroit (Willow Run)	777
East Lansing CO	-
Escanaba CO	612
Flint	766
Grand Rapids	707
Marquette CO	734
Muskegon	633
Sault Ste. Marie	614
MINNESOTA	
Duluth	1133
International Falls	1126
Minneapolis	919
Rochester	1021
St. Cloud	1043
MISSISSIPPI	
Jackson	331
Meridian	375
Vicksburg CO	247
MISSOURI	
Columbia	784
Kansas City	963
St. Joseph	----
St. Louis CO	564
St. Louis	564
Springfield	1324
MONTANA	
Billings	3570
Glasgow	2086
Great Falls	3657
Havre	2507
Helena	4123
Kalispell	-- -
Miles City	--
Missoula	3263
NEBRASKA	
Grand Island	1856
Lincoln CO	-
Norfolk	1551
North Omaha	1323
North Platte	2821
Omaha	1105
Scottsbluff	3958
Valentine CO	2590
NEVADA	
Elko	5078
Ely	6262
Las Vegas	1869
Reno	4527
Winnemucca	4339
NEW HAMPSHIRE	
Concord	269
Mt. Washington	6267
NEW JERSEY	
Atlantic City CO	52
Newark	30
Trenton CO	190
NEW MEXICO	
Albuquerque	4972
Clayton	5052
Raton	6376
Roswell	3566
NEW YORK	
Albany	97
Binghamton	1636
Buffalo	768
New York Central Park	156
New York CO	314
New York	52
Rochester	523
Schenectady	217
Syracuse	596
NORTH CAROLINA	
Asheville	2253
Charlotte	779
Greensboro	886
Hatteras CO	11
Raleigh	376
Wilmington	38
Winston-Salem	978
NORTH DAKOTA	
Bismarck	1677
Devils Lake CO	1478
Fargo	940
Williston CO	1878
OHIO	
Akron	1052
Cincinnati CO	627
Cincinnati Obs.	---
Cincinnati	877
Cleveland	762
Columbus CO	---
Columbus	822
Dayton	1003
Sandusky CO	629
Toledo	692
Youngstown	1186
OKLAHOMA	
Oklahoma City	1214
Tulsa	674
OREGON	
Astoria	22
Burns	4162
Eugene	373
Meacham	4056
Medford	1329
Pendleton	1495
Portland	154
Roseburg	510
Salem	201
Sexton Summit CO	3841
PENNSYLVANIA	
Allentown	385
Harrisburg	378
Philadelphia CO	
Philadelphia	114
Pittsburgh CO	
Pittsburgh	842
Reading CO	323
Scranton	948
Shippingport CO	-
Williamsport	525
RHODE ISLAND	
Block Island	118
Providence	159
SOUTH CAROLINA	
Charleston CO	
Charleston	48
Columbia	225
Florence	151
Greenville	1040
Spartanburg	824
SOUTH DAKOTA	
Huron	1301
Rapid City	3259
Sioux Falls	1427
TENNESSEE	
Bristol	1525
TENNESSEE (Cont'd.)	
Chattanooga	762
Knoxville	980
Memphis CO	----
Memphis	[illegible]
Nashville	546
Oak Ridge	914
TEXAS	
Abilene	[illegible]
Amarillo	[illegible]
Austin	605
Brownsville	57
Corpus Christi	20
Dallas	512
Del Rio	944
El Paso	[illegible]
Fort Worth	576
Galveston CO	
Galveston	54
Houston CO	138
Houston	62
Laredo	418
Lubbock	3241
Midland	2862
Port Arthur	34
San Angelo	1908
San Antonio	693
Victoria	117
Waco	503
Wichita Falls	1030
UTAH	
Milford	5097
Salt Lake City	4357
VERMONT	
Burlington	[illegible]
VIRGINIA	
Lynchburg	937
Norfolk	30
Richmond	164
Roanoke	1176
WASHINGTON	
Olympia	200
Seattle CO	
Seattle	388
Seattle-Tacoma	----
Spokane	1929
Stampede Pass CO	3967
Tatoosh	86
Walla Walla CO	991
Yakima	1076
WEST VIRGINIA	
Charleston	989
Elkins	
Huntington CO	
Parkersburg CO	637
WISCONSIN	
Green Bay	617
La Crosse	672
Madison	974
Milwaukee	681
WYOMING	
Casper	5290
Cheyenne	6144
Lander	5352
Sheridan	3790
PACIFIC AREA	
Canton Island	11
Hilo, T.H.	36
Honolulu, T.H.	15
Koror, CO	109
Lihue, T.H.	148
Majuro	10
Ponape CO	151
Truk (Moen Island)	6
Wake Island	13
Yap CO	56
WEST INDIES	
San Juan CO	
San Juan, P.R.	62
ALASKA	
Anchorage	132
Annette	110
Barrow	13
Bethel	38
Cold Bay	103
Cordova	40
Fairbanks	454
Juneau	24
King Salmon	49
Kotzebue	16
McGrath	338
Nome	22
Northway	1721
St. Paul Island	28
Yakutat	31

These are the elevations to which station pressure values in Table 2, monthly Climatological Data, National Summary, pertain. They are the elevations (in feet above mean sea level) of the barometer as of January 1, 1900, or at the time of establishment of station subsequent to that date. Average monthly station pressures continue to be reduced to these elevations to provide homogeneity of data over a long period of time.

GENERAL SUMMARY OF TORNADOES—1957

By L. V. Wolford
U. S. Weather Bureau
Washington D. C.

More tornadoes were reported in 1957 than in any previous year during the 42-year period of tabulation of these storms by the Weather Bureau, and property damage was high, but the loss of life was moderate. A total of 924 of these storms (851 tornadoes and 73 waterspouts) touched the ground or water surface on 175 days, causing property damage estimated at about $75 million, 191 deaths, and 2,343 personal injuries. Also, 772 funnel clouds aloft and 46 dust devils were reported during the year. These are not included in this discussion, but are presented in separate tabulations at the end of this article. The estimated amount of property damage has been exceeded only once (in 1953) during the period 1916 to 1957. The death toll of 191, however, was not high, considering the number of tornadoes which occurred during the year. This no doubt is due to progress in tornado forecasting and public alertness and cooperation. In 18 previous years, the death toll has been greater than in 1957.

We wish to emphasize that it is impractical to make an accurate comparison of tornado data with that of previous years, principally the number of tornadoes, tornado days, and property damage, because of the increased alertness and general interest in these storms, advances in observational and forecasting technique, and changes in the monetary value of property.

Of the 851 tornadoes, 91 passed over open country or touched the ground momentarily causing no damage, and of the 73 waterspouts, 69 resulted in no damage; thus leaving a total of 760 damaging tornadoes and 4 damaging waterspouts. In the following discussion, waterspouts are included with the tornadoes. Details can be obtained from the accompanying tabulations.

Five of the 1957 tornadoes crossed states' boundaries, two of which were among the most disastrous of the year in regard to the estimated property losses. On May 20, the tornado which originated near Williamsburg, Kans., and moved to the Ruskin Heights area in Missouri resulted in losses of 44 lives and property damage estimated at millions of dollars. On June 20, the Fargo, N. Dak., to Moorhead, Minn., tornado caused 10 deaths and $10 to $15 million damage. The South Carolina-North Carolina storm on April 8 caused property losses of over $2 million and 4 fatalities. Another boundary-crossing tornado occurred on November 17 in Mississippi and Alabama and resulted in a loss of 2 lives and property damage of about $60 thousand. The final boundary-crossing storm on May 20 caused only negligible damage in Colorado and Kansas.

Tornadoes were reported during each month of the year. May exceeded all other months with 230 occurrences, followed by April with 217 and June with 164. July recorded the fourth highest total of 67. Sixty-five occurred in November, 39 in March and December each, 36 in August, 22 in September and October each, 18 in January, and 5 in February for the least number of the year. The total of 39 tornadoes in December was the largest number reported in that month during the 42-year period, and was also unusual in that 21 twisters were reported in Illinois and 7 in Missouri where they rarely occur at that time of the year. In only four previous years has Illinois been visited by December tornadoes and in only two previous years have tornadoes been reported in Missouri in that month. Tornadoes were particularly active on May 20 when 37, the greatest number of the year for a single day, were reported. These storms were also numerous on April 22 and April 2, with 32 and 29 occurrences, respectively.

Forty-five states and the Territory of Hawaii experienced tornadic storms during 1957. Over one-third of the year's total occurred in the three states of Texas, Oklahoma, and Kansas. Texas reported 162, Oklahoma 106, and Kansas 64 tornadoes. Connecticut, Idaho, Montana, New Jersey, New York, Utah, West Virginia, and the Territory of Hawaii each had one occurrence, and the District of Columbia, Maryland, Nevada, Rhode Island, Alaska, and the West Indies reported none.

The loss of 191 lives resulted from tornadoes in 17 states. Eighty-seven of these fatalities occurred on 6 days in May for the greatest number of any month in the year. Forty-four, the most deaths on a single day, were caused by the disastrous Kansas-Missouri tornado on May 20. The Silverton, Tex., tornado on May 15 accounted for 21 deaths, the second highest toll for a single day. Another death occurred on the 15th in Texas, making a total of 22 for that date, and on the 21st, 15 deaths were reported in Missouri. April recorded the next highest monthly death toll of 29, 17 of which resulted from tornadoes on the 2d in Oklahoma and Texas. November had the third highest total of 25, with 14 reported on the 7th. Of the December total of 18, 16 persons were killed on the 18th in Illinois and Missouri. The Fargo, N. Dak.,-Moorhead, Minn., tornado of June 20 was responsible for 10 of the 14 deaths reported during June. The total of 13 in January all occurred on the 22d in Oklahoma and Louisiana. September and October each reported two deaths, March one, and February, July, and August no loss of life. Missouri had the highest death toll of 55 during the year, 52 in May and 3 in December. Texas reported the second greatest total of 37, followed by Oklahoma with 22.

The greatest amount of property damage of over $18 million occurred during June, followed closely by about $17 million in April, and $16 million in May. Damages during January, July, November, and December were also well over the $1 million mark. During the remaining 5 months, losses ranged from $5 thousand in February to over $700 thousand in September. Nineteen tornadoes in 13 states caused property damage of $1 million or over. Total yearly losses of over $10 million were reported in Texas, Missouri, and North Dakota. Two of the most destructive tornadoes of the year, from a monetary standpoint, were the boundary-crossing ones in Kansas and Missouri on May 20 and in Minnesota-North Dakota on June 20, with losses estimated at millions of dollars in the former and $10 to $15 million in the latter storm. On May 21, a tornado in Missouri caused death to 8 persons, injuries to 50 others, and property damage of $5 to $10 million. In Texas, the Dallas tornado on April 2 resulted in $4 million damage, 10 fatalities, and 200 injuries. Eleven persons lost their lives, 200 were injured, and property damage estimates exceeded $4 million in an Illinois twister on December 18. Another Illinois storm caused damage of $3 million, death to 2 persons, and injuries to 50 others on June 14. Losses of slightly over $2 million to property occurred from two other tornadoes, the April 8 boundary-crossing one in the Carolinas and the November 7 twister at Groves, Tex. Eleven other tornadoes caused losses of $1 million or over in 9 states.

Tornado paths during 1957 averaged about 11-1/2 miles in length and 209 yards in width. Data concerning the distance traveled were reported on 504 of the year's tornadoes. Seventy-three percent moved over paths of less than 10 miles. The remaining 27 percent, or 137 tornadoes, traveled more than 10 miles, 4 of which moved for distances of 100 miles or over. The longest reported path during the year was 150 miles in Iowa on July 4. On April 8, a tornado passed through 3 counties in South Carolina, crossed into North Carolina where it moved through 4 counties for a distance of 115 miles. Two other tornadoes, both occurring in May, traveled for about 100 miles. The Missouri storm on the 22d appears to have remained on the ground for the entire distance, while on the 20th the tornado which originated in Colorado and passed into Kansas lifted and dipped several times along its path. Three tornadoes in Indiana, traveling for only one-tenth of a mile each, were the shortest reported paths of the year. Tracks of the 1957 tornadoes are presented at the end of this publication.

Of the 908 tornadoes on which the time of occurrence was given, 710 or about 78 percent were reported between noon and midnight, and 198 or 22 percent between midnight and noon. Eleven percent were between 5 and 6 p.m., for the hour of greatest occurrence, followed closely by 9 percent for each hour between 2 and 5 p.m. The least number of 9 or about 1 percent was reported between 7 and 8 a.m. It is interesting to note that tornadoes occur more frequently in the morning hours in the Southern States than elsewhere in the country. Slightly less than 50 percent in each of the states of Alabama, Arkansas, Mississippi, South Carolina, and Virginia and about 33 percent of those in Georgia, Oklahoma, Tennessee, and Texas were reported between midnight and noon.

As usual, the greater portion of the 1957 tornadoes moved from the southwest to the northeast, with about 61 percent traveling in that direction. Sixteen percent came from the west and 7 percent from the northwest, making about 84 percent from a general westerly direction. See the tornado rose for 1957 presented in figure 1 and the chart of tornado tracks shown in the back of this publication.

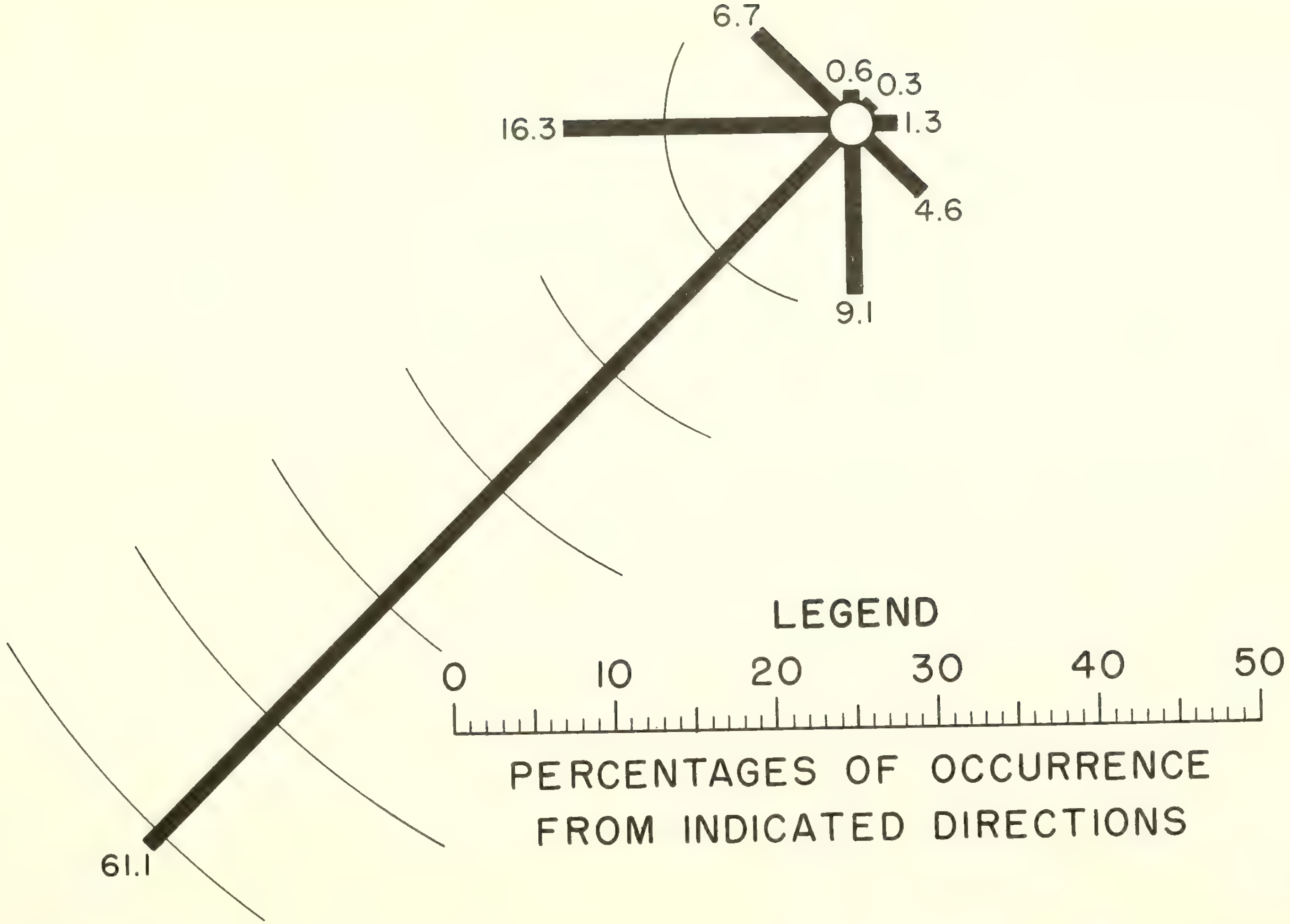

FIGURE 1.—TORNADO ROSE FOR THE UNITED STATES, GIVING THE PERCENTAGE OF TORNADOES MOVING FROM THE INDICATED DIRECTIONS DURING 1957

TORNADO DATA

YEAR 1957

State and date	Hour	County	Direction of advance	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Remarks
						Killed	Injured	Property (exclusive of crops)	Crops	
ALABAMA										
1. Jan. 22	10 p.m.	Dallas	(a)	(b)	(c)	0	0	3	1	At Summerfield, suspected tornado. Sudden and very brief onrush of wind demolished 2 chickenhouses in yard and blew heavy 8-inch creosoted timber through fence.
2. Feb. 1	Evening	Houston	(a)	(b)	(c)	0	0	2	1	At Dothan, building in backyard destroyed, with no other damage such as TV antennas nor surrounding trees. Struck with "roar like air planes."
3. Mar. 31	11:30 p.m.	Mobile	N	1	70	0	4	4	1	Storm occurred 6 miles southwest of center of Mobile.
4. Mar. 31	11:30 p.m.	Mobile	(a)	(a)	(a)	0	0	1	1	Waterspout reported in swamp north of Mobile Bay. It was well to right of projected path of tornado at that time which occurred southwest of Mobile. Since there could have been error in estimating distance away of formations observed by light of occasional lightning, it could have been either the tornado which occurred southwest of Mobile or separate storm.
5. Apr. 7	11:45 p.m.	Franklin	NE	(a)	(a)	0	0	4	1	Suspected tornado. $12,000 damage in Red Bay and remainder of damage between Red Bay and Mississippi.
6. Apr. 8	9:46 a.m.	Marion and Lawrence	ENE	55	100	0	5	5	1	Path skipping. However, 2 long continuous stretches reported. 8-mile long path beginning just south of Hamilton, lifted and hit in Bankhead Forest for 14-mile long path, ending at Pine Grove, Lawrence County. Scattered fallen timber in forest occasionally as far as 1/4 mile from center of path. Of total damage, $150,000 to timber.
7. Apr. 8	10:15 a.m.	Morgan and Marshall	ENE	35	40-200	2	90	6	1	Number of injured include persons injured in tornado also in Cullman County on same date. Tornado began 6 miles southwest of Falkville and ended about 10 miles north of Arab, Marshall County. Funnel said to have lashed from side to side, making somewhat zigzag path and varying the width. Some skipping in path.
8. Apr. 8	10:30 a.m.	Cullman, Marshall, and Morgan	ENE	15	(a)	0	(a)	5	1	Storm moved from northeastern Cullman County into Marshall County across southeastern corner of Morgan County at Hulaco and ended after hitting at Union Chapel, southeast of Union Grove. Path shipping. Persons injured in this storm included in number for storm #7 above. It was not possible to ascertain accurately division of damage between these last 2 tornadoes because of news and other reports lumping data.
9. May 10	7:45 p.m.	Henry	(a)	(b)	(c)	0	0	3	1	Suspected tornado at Headland. 1 person saw it dip near his house without touching ground, to later dip and hit another house.
10. June 28	7:30 a.m.	Clarke	(a)	(a)	(a)	0	0	(a)	(a)	Suspected tornado. The Thomasville Times reported that small fish fell at Magnolia Terminal in Marengo County during shower of rain. This report was verified by Cooperative Observer at Thomasville. Crayfish and tiny frogs also part of precipitation.
11. June 28	8:30 a.m.	Clarke	NE	3	100	0	0	3	2	Skipping path touched in 7 places. On Indian Ridge Road, just east of Whatley, 2 houses severely damaged, and garage and considerable timber destroyed.
12. June 28	8:50 a.m.	Wilcox	NE	2	35-100	0	0	4	1	At Oakhill, church reduced to rubble, with furnishings not recognizable. Other damage to timber.

See reference notes at end of table.

TORNADO DATA

YEAR 1957

State and date	Hour	County	Direction of advance	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Remarks
						Killed	Injured	Property (exclusive of crops)	Crops	
ALABAMA cont'd										
13. June 28	9:35 a.m.	Lowndes and Montgomery	NE	13	120	0	0	4	1	Path from 3 miles south of Hayneville to about 3 miles southwest of Hope Hull. Path mostly through pasture and woodland, with damage mostly to houses and barns. Man in house which was damaged beyond repair said house at time it was hit was filled and surrounded by dark mist which looked like smoke.
14. June 28	9:45 a.m.	Conecuh and Butler	NE	20	400	0	0	5	3	Tornado path skipping from 4 miles southeast of Skinnerton, Conecuh County, to about 4 miles west-southwest of Liberty, Butler County. Path variable in width, ranging up to 400 yards when in weakened condition. Worst damage 3 miles south of Butler Springs, where 7 houses destroyed.
15. June 28	9:55 a.m.	Monroe	NE	10	100	0	4	5	3	Tornado began 1 mile south of Frisco City. Skipping path ended near Bermuda. Most of damage at Excel, where 4 persons injured. Timber damage in Bermuda area about $4,000. Eyewitness living about 200 yards from path of storm at Excel, told of seeing funnel cloud pass over his house about 5 minutes before the later one hit.
16. June 28	10 a.m.	Lowndes and Montgomery	NE	25	150	0	8	5	3	Path skipping, and at times rather broad, with scattered fallen trees occasionally as far as 200 yards from center. About $60,000 of total damage was at Davenport, on Highway 331, where all the injuries occurred. Path began about 2 miles south of Fort Deposit, and ended at Sprague Junction, Montgomery County. Storm reached Sprague Junction about 11 a.m., about an hour after its beginning.
17. June 28	10:15 a.m.	Butler	NE	14	125	0	0	5	3	Tornado path began about 6 miles southwest of Greenville and ended about 6 miles east-northeast of city. Most damage to junior college just southeast of Greenville and in Knob City, south-southwest of Greenville.
18. June 28	10:25 a.m.	Conecuh	NE	10	150	0	0	4	3	Storm first sighted 4 miles west of Middleton Airport, Evergreen. Path began 5 miles west of Evergreen and passed 1-1/2 miles north of city. Path through woods and fields, on ground about 50 percent of time. House and store destroyed and barn damaged.
19. June 28	11 a.m.	Conecuh, Covington, and Butler	NE	12	200	0	2	4	3	Began in Conecuh County, passed 1-1/2 miles southwest of Brooke, Covington County, and ended near Oaky Streak, Butler County. Path skipping. About $30,000 damage in Brooke community.
20. June 28	11:50 a.m.	Crenshaw	NE	(a)	(a)	0	0	(a)	(a)	Tornado reported by Highway Patrol who followed storm moving toward Luverne. Sparsely settled, unproductive country, with damage confined to woods.
21. June 28	Morning	Conecuh	NE	1	(c)	0	0	3	1	Aerial inspection of path of tornado near Middleton Airport revealed path of this storm about 500 yards northwest of main path being tracked. This short-path storm destroyed barn and some timber.
22. June 28	Morning	Montgomery	NE	(b)	100	0	0	(d)	1	Short path of fallen trees lying in opposite directions to ones on other side of path, across U.S. Highway 331, 1 mile north of Sellers.

See reference notes at end of table.

State and date	Hour	County	Direction of advance	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Remarks
						Killed	Injured	Property (exclusive of crops)	Crops	
ALABAMA Cont'd										
23. June 28	Morning	Montgomery	NE	5	150	0	0	3	1	Tornado crossed U.S. Highway 231, then crossed Highway 82, 4 miles west-northwest of Downing and ended about 3 miles northwest of Downing. Path through woods and pastures. House and barn destroyed. Path on ground about 75 percent of time.
24. June 28	5:45 p.m.	Barbour	NE	14	100	0	1	4	2	Tornado began about 8 miles northeast of Brundidge. Last trace of it was when it passed over Batesville without doing any damage in the community. Path skipping and over sparsely settled country. It destroyed 2 houses, 4 barns, other smaller buildings, and considerable timber. The tornadoes on June 28 associated with passage of hurricane.
25. Aug. 15	5:30 p.m.	Russell	(a)	(a)	(a)	0	0	3	1	Suspected tornado in Huguley community, 8 miles west of Phenix City. Several houses damaged. Storm called tornado by press.
26. Aug. 15	5:30 p.m.	Lee	(a)	(b)	150	0	0	3	1	Suspected tornado at Smiths community. Diagnosed as tornado by press and Highway Patrol. 2 houses damaged considerably and 2 barns destroyed. 3 power poles snapped.
27. Sept. 18	2:45 p.m.	Dallas	NNW	10	100	0	0	4	2	Tornado began along river just east of Selma and followed skipping path. 3 important short dips destroyed 3 tenant houses, damaged 3 others, and destroyed a crib. Crop damage mostly to open cotton.
28. Nov. 8	2:25 a.m.	Pickens	NE	8	(a)	0	5	5	1	Tornado path slightly northwest of Aliceville.
29. Nov. 8	4:22 a.m.	Dallas	NE	1-1/2	60-400	0	0	5	1	Storm in northwest suburbs of Selma diagnosed as tornado, although damage was by winds blowing all in same direction. Short path of fallen trees about 50 yards wide first made, followed by skip of about 1/2 mile. Second hit about 200 yards wide and about 400 yards long. Short distance further to northeast, it hit third time over path about 400 yards wide and about 500 yards long. Several hundred houses damaged, but only a few heavily damaged and none demolished. Automobile turned over and left resting on its side. Pressure jump occurred at Craig Field at 4 a.m., accompanied by drop of several degrees in temperature, and it is believed that tornado aloft managed to briefly penetrate unfavorable surface conditions to produce surface gusts on right hand side of path.
30. Nov. 8	4:30 a.m.	Shelby	NE	9	40	0	0	4	1	Tornado 2 miles northeast of Columbiana to 2 miles west of Wilsonville. Skipping path with width reported only along last 2-1/2 miles.
31. Nov. 8	Early a.m.	Tuscaloosa	(a)	(b)	(c)	0	0	2	1	Suspected tornado blew down power pole between Buhl and Coker. No estimate of damage caused by power being off.
32. Nov. 8	Early a.m.	Franklin	(a)	(b)	(c)	0	0	2	1	Suspected tornado. 5 power poles and 2 trees blown down.
*33. Nov. 17	1:10 p.m.	Lamar	NE	(a)	(a)	0	0	3	1	Brief dips at Pine Springs, near Sulligent, of tornado which hit near Gattman, Miss.
34. Nov. 17	3:12 p.m.	Walker	NE	5	3-400	4	15	4	1	Extended from 6 miles northwest of Jasper to 1 mile north of Manchester. Hail occurred ahead of tornado.

See reference notes at end of table.

TORNADO DATA

State and date	Hour	County	Direction of advance	Length of path, miles	Width of path, yards	Number of persons: Killed	Number of persons: Injured	Estimated damage by categories †: Property (exclusive of crops)	Estimated damage by categories †: Crops	Remarks
ALABAMA Cont'd.										
35. Nov. 17	4:10 p.m.	Cullman	NE	8	(a)	0	3	5	4	From Trimble to Crane Hill and Bethsaida. It became wide and dissipated over Cullman, where damage scattered. Crop damage mostly to unpicked cotton.
36. Nov. 18	1:30 p.m.	Franklin	NE	8	(a)	0	0	4	1	1 house partially destroyed, and another moved on foundation at Belgreen.
37. Nov. 18	2:30 p.m.	Greene and Hale	NE	28	(a)	0	5	5	1	From Forkland, Greene County, it "plowed several miles" and lifted to strike again in Hale County, passing successively Sawyerville, near Akron, and at Havana.
38. Nov. 18	2:45 p.m.	Tuscaloosa	NE	3	(c)	0	1	4	1	Tornado path 12 miles north of Tuscaloosa.
39. Nov. 18	2:45 p.m.	Dallas	NE	35	(c)	0	0	4	1	Tornado made skipping path with only brief dips to ground from Safford to near Orrville, near Marion Junction, and on to Summerfield and Plantersville. At Plantersville, hail as large as hens' eggs reported. Residents of Plantersville terrified by funnel dipping up and down.
40. Nov. 18	3:30 p.m.	Jefferson	NE	7	50-200	1	35	6	1	From Ensley past North Birmingham to Tarrant City. Storm passed about 2 miles northwest of Birmingham Airport.
41. Nov. 18	4:15 p.m.	De Kalb	(a)	(b)	(c)	0	0	4	1	Tornado dipped at Fairview community near Dawson. 2 homes, 2 broiler houses, and several other buildings wrecked.
42. Nov. 18	4:35 p.m.	Tallapoosa	(a)	(b)	(c)	0	0	4	1	Tornado in Spring Hill subdivision of Alexander City. 2 houses, 1 trailer, and other buildings damaged. Trees strewn "like match sticks."
43. Nov. 18	5:15 p.m.	Cleburne	(a)	(a)	(a)	0	0	4	1	Tornado in Macedonia area. A number of broiler houses destroyed, scattered roof damage, porches damaged, and trailer destroyed.
44. Nov. 18	Late afternoon	Lawrence and Morgan	NE	(a)	(a)	0	0	(d)	1	Funnel cloud formed southwest of Decatur and passed over city. It may have caused light damage reported in southeastern Lawrence County.
45. Nov. 18	Late afternoon	Morgan	(a)	(b)	(c)	0	0	4	1	Brief dips of tornado wrecked 1 home, took back porch off another home, blew washhouse away, and unroofed barn at Hulaco.
46. Nov. 18	Late afternoon	Blount and Marshall	NE	30	100	3	12	5	3	From Rosa near Oneonta, passed Snead and Horton and finally just northwest of Albertville in Marshall County. Pilot of aircraft reported path as straight as an arrow and with only 1 lift which made it miss Short Creek and Town Creek.
47. Nov. 18	Late afternoon	Clay	(a)	(b)	(c)	0	0	4	1	Tornado at Ashland unroofed 1 building, moved 1 house off pillars, and damaged several roofs. 3 other buildings badly damaged. Porches removed from several houses.
48. Dec. 19	11:15 p.m.	Colbert	(a)	(b)	(c)	0	7	4	1	At Littleville.
49. Dec. 19	Late evening	Fayette	(a)	(b)	(c)	0	0	3	1	1 home and outbuildings destroyed 4 miles south of Winfield.
50. Dec. 20	2:30 a.m.	Chilton	NE	(b)	(c)	0	0	5	1	At Clanton.
51. Dec. 20	3 a.m.	Conecuh	NE	3/4	35	0	0	3	1	Hit twice with blows about 1/2 mile apart. 2 houses and 1 barn destroyed. Occurred 8 miles east of Castleberry.

See reference notes at end of table.

TORNADO DATA

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ARIZONA										
1. Apr. 29	2:15 p.m.	Apache	NE	2-1/2	105	0	0	(a)	1	4 miles northeast of Dinnehotso, cedar trees uprooted on Indian Reservation; no other damage.
2. Aug. 4	6 p.m.	Maricopa	W	12	(a)	0	0	3	1	Possible tornado near Sentinel damaged service station.
3. Aug. 18	5:45 p.m.	Coconino	(a)	(a)	(a)	0	0	1	1	Possible tornado moved over open country east of Flagstaff.
4. Aug. 20	Afternoon	Yavapai	(a)	(a)	(a)	0	0	1	1	Pilot reported funnel cloud reaching ground 40 miles northwest of Prescott.
5. Aug. 29	2:30 p.m.	Maricopa	N	(a)	800	0	0	4	1	Filling station unroofed and houses damaged at Sentinel.
ARKANSAS										
1. Jan. 22	6:45 a.m.	Johnson	ENE	14	(a)	0	0	(e)	1	In Hunt, Horse Head Lake, and Harmony areas, several homes and buildings damaged.
2. Jan. 22	9 a.m.	Hot Spring	NE	4	880	0	0	4	1	2 miles southeast of Bismarck, 2 homes destroyed, 8 damaged; 11 other buildings destroyed, and 10 damaged.
3. Jan. 22	11:30 a.m.	Craighead	(a)	(a)	(a)	0	0	(e)	1	Several barns destroyed, houses and other buildings damaged, and grain elevator damaged in Crossroads community.
4. Jan. 22	1:15 p.m.	Ashley	NE	4	(c)	0	0	4	1	4 miles west of Crossett, house and outbuildings damaged; 300,000 board feet of standing timber and 700 cords of pulp timber damaged.
5. Apr. 3	12:05 p.m.	Greene	NE	(b)	(c)	0	0	2	1	Funnel cloud touched ground briefly, destroying garage in Alexander community.
6. Apr. 3	12:05 p.m.	Craighead	NE	20	100	0	0	4	1	Funnel observed by several persons. Several buildings destroyed and rice dryer damaged at Cash.
7. Apr. 3	12:30 p.m.	Craighead	(a)	(a)	(a)	0	0	2	1	Near Manila, 2 houses damaged; funnel cloud observed.
8. Apr. 4	5:30 p.m.	Lonoke	NE	f 400	20	0	0	3	1	Occurred 10 miles south of Carlisle. Damaged limited to 20 acres.
9. Apr. 7	11:05 p.m.	Scott	NE	4	300	0	0	3	1	3 barns and several roofs damaged in Elm Park area, north of Waldron.
10. Apr. 23	4 a.m.	Pope	NE	1/4	100	0	0	2	1	Damage limited to a 1-block area in Russellville. Funnel observed aloft for 10 minutes after lifting.
11. Apr. 25	Midnight	Craighead	NE	1/2	300	0	0	4	1	Tornado at Jonesboro touched ground in 2 places; building lifted 40 feet into air.
12. May 11	11 a.m.	Logan	NE	(a)	(a)	0	0	(d)	1	Funnel observed to touch ground 1 mile southeast of Prairie View and again 1/4 mile northeast of town. Several buildings damaged.
13. May 13	10:20 a.m.	Little River	NE	1	75	0	1	(e)	(d)	At Ashdown, 1 house destroyed and cotton compress and other buildings damaged.
14. May 13	10:35 a.m.	Howard	NE	2	200	0	1	4	3	Property damage in Mineral Springs and in Unity and Blackland communities.
15. May 13	11:20 a.m.	Pike	SE	(a)	50	0	0	4	1	6 houses destroyed and 9 buildings damaged at Delight.
16. May 13	11:45 a.m. -12:25 p.m.	Hot Spring	NE	15	880	0	0	5	1	From Friendship to Malvern storm skipped along path, touching ground in several places. Principal damage to brick plant in Malvern.
17. May 13	12:50-2 p.m.	Faulkner	NE	19	50-75	1	18	5	1	Storm first struck 1-1/4 miles southwest of Conway and followed narrow path to Guy. Principal damage, with death and injuries, in Conway.

See reference notes at end of table.

TORNADO DATA

YEAR 1957

State and date	Hour	County	Direction of advance	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Remarks
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ARKANSAS (Cont'd)										
18. May 13	2 p.m.	Izard	NE	2	400	0	1	4	1	To south and west of Oxford.
19. May 23	4:30-5 p.m.	Columbia	N	6	880	0	0	4	1	From McNeil to College Hill Church, garages and small buildings destroyed and roofs damaged.
20. May 23	5:30 p.m.	Howard	NE	1/2	440	0	0	(d)	1	Damage confined to city of Dierks.
21. May 23	7:20 p.m.	Drew	NE	6	25	0	0	5	4	Tornado moved from 3 miles southwest of Monticello to 3 miles northeast. Extensive property damage. Crop damage included peaches and tomatoes.
22. May 25	6 a.m.	Garland	N	(a)	(a)	0	0	(d)	(d)	2 funnels observed; only scattered light damage.
23. May 25	6 a.m.	Garland	N	(a)	(a)					
24. June 13	6:25 p.m.	Faulkner	NE	1	25	0	0	3	1	Buildings damaged at Damascus. Several persons observed funnel at rear edge of rain cloud.
25. June 13	6:30 p.m.	Faulkner	(a)	(a)	(a)	0	0	(e)	1	Occurred from Pinnacle Springs Road to southeast of Guy. House and barn damaged. Funnel observed.
26. Dec. 19	12:44 p.m.	Columbia and Ouachita	NE	15	(a)	**2**	**9**	**4**	1	Principal damage in the Cotton Belt community between Waldo and McNeil in Columbia County. 5 homes destroyed, 5 damaged, 3 other buildings destroyed.
27. Dec. 19	3:40 p.m.	Jefferson	NE	5	100	0	0	4	1	Damage to 2 farms near Sherrill and at Tucker State Prison Farm.
CALIFORNIA										
1. Jan. 29	2:10 p.m.	San Diego	(a)	(a)	(a)	0	0	1	1	Waterspout observed northwest of San Diego Airport.
2. May 19	8:18 a.m.	Fresno	ENE	[f] 200	(c)	0	0	(d)	(d)	Very small tornado, but observed by reliable witnesses.
3. Oct. 21	9:50 a.m.	San Diego	(a)	(a)	(a)	0	0	1	1	2 waterspouts observed offshore near Oceanside by airline pilot.
4. Oct. 21	9:50 a.m.	San Diego	(a)	(a)	(a)					
COLORADO										
1. Apr. 21	Night	Washington	(a)	(a)	(a)	0	0	(e)	1	Tornado upset cattle shed 60x16 feet on farm 11 miles northeast of Akron. Several large trees uprooted.
2. Apr. 22	11 a.m.	Kit Carson	NE	(a)	(a)	0	0	(e)	1	Considerable damage to farm buildings near Burlington.
*3. May 20	Afternoon	Kit Carson	(a)	(a)	(a)	0	0	1	1	Observed 6 miles southeast of Burlington, moved into Kansas.
4. May 24	Afternoon	Weld	(a)	(a)	(a)	0	0	(d)	1	Several small tornadoes north of Greeley reached ground, damaging buildings.
5. May 24	Afternoon	Weld	(a)	(a)	(a)					
6. May 24	Afternoon	Otero	(a)	(a)	(a)	0	0	(d)	1	Small tornado 5 miles northwest of La Junta picked up building and set it down in field.
7. May 24	Afternoon	Kit Carson	(a)	(a)	(a)	0	0	(d)	1	Demolished brooder house on farm 9 miles north of Burlington.
8. May 29	Afternoon	Larimer	(a)	(a)	(a)	0	0	2	1	Damage to farm building 10 miles north of Ft. Collins.
9. May 29	Afternoon	Weld	(a)	(a)	(a)	0	0	1	1	2 tornadoes observed, 1 southwest of Greeley, the other west of Nunn.
10. May 29	Afternoon	Weld	(a)	(a)	(a)					
11. May 30	Afternoon	Weld	(a)	(a)	(a)	0	0	3	1	Most damage at Windsor to school and farm buildings.
12. May 30	Afternoon	Washington	(a)	(a)	(a)	0	0	1	1	Small tornadoes sighted near Akron and Otis.
13. May 30	Afternoon	Washington	(a)	(a)	(a)					
14. May 30	Afternoon	Larimer	(a)	(a)	(a)	0	0	1	1	Small tornado sighted in vicinity of Loveland.
15. June 11	Afternoon	Bent	E	(a)	(a)	0	0	(d)	1	Near Ft. Lyon, corral blown down and 2 trees uprooted.
16. June 21	1:15 a.m.	Yuma	(a)	(a)	(a)	0	0	3	1	Buildings on 2 farms damaged in Wages area.

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COLORADO Cont'd.										
17. June 22-23	P.m.-a.m.	Baca	(a)	(a)	(a)	0	0	2	1	Struck ranch southwest of Campo, demolishing barn and chickenhouse.
18. June 30	Afternoon	Cheyenne	(a)	(a)	(a)	0	0	(e)	1	2 tornadoes, 1 north of First View destroyed barn, the other 16 miles southeast of Cheyenne Wells destroyed barn and caused other minor damage.
19. June 30	Afternoon	Cheyenne	(a)	(a)	(a)					
20. June 30	Afternoon	Kit Carson	(a)	(a)	(a)	0	0	(a)	1	Tore limbs off trees, upset hayracks and other farm implements near Stratton.
21. June 30	Afternoon	Yuma	(a)	(a)	(a)	0	0	2	1	At Eckley, barn demolished, house damaged, windmill blown down, and trees uprooted.
22. July 3	4:40 p.m.	Rio Blanco	(a)	(a)	(a)	0	0	2	1	High school at Meeker damaged.
23. July 30	Afternoon	Yuma	E	(a)	(a)	0	0	(e)	1	Tore down buildings, windmills, and 1 house south of Yuma.
24. Aug. 5	4 p.m.	El Paso	(a)	(a)	(a)	0	0	(e)	1	Twister took part of roof off lumber company building and blew stacked lumber about.
CONNECTICUT										
1. June 19	1:30 p.m.	Hartford	NNE	1 4	400	0	0	4	5	Tornado struck shade-tobacco area about 1 mile east of Glastonbury. 70 acres of tobacco destroyed. Tent poles, 6-inches in diameter, twisted off at ground level and tent cloth ripped beyond repair. 5 huge trees blown over at different angles and 2 pine trees sheared off 15 feet above ground. 2 curing barns blown in, but not unroofed. Driver of loaded bus facing wind claimed it was forced back 5 feet with brakes on and in low gear. Large wagon driven and several 500-gallon drums blown into side of third curing barn, but structural damage to barn slight.
DELAWARE										
1. July 5	5 p.m.	Sussex	(a)	(a)	(a)	0	0	3	1	At Fenwick Island Beach, small tornado picked up jeep, carried it 50 feet; took small house off foundation; lifted small boat out of water and carried it about 200 feet against telephone pole.
2. Sept. 10	3:20 p.m.	Sussex	NE	(a)	(a)	0	0	(e)	1	At Bridgeville, large chickenhouse hurled 50 feet into tree; cut swath of destruction through woodlands.
FLORIDA										
1. Feb. 25	Morning	Escambia	NE	(a)	(a)	0	1	(d)	1	Demolished drive-in theater screen and upset several house trailers.
2. Mar. 4	12:30 p.m.	Polk	NE	(b)	20	0	0	(d)	1	Cloud touched ground in uninhabited area at Lakeland. Funnel cloud observed.
3. Apr. 19	Noon	Highlands	(a)	(a)	(a)	0	0	1	1	Waterspout over Lake Jackson dissipated before inflicking any damage.
4. May 5	Afternoon	Broward	(a)	(a)	(a)	0	0	(a)	1	Waterspout off Pompano Beach.
5. May 13	1:15 p.m.	Hendry	(a)	(a)	(a)	0	0	(d)	(d)	At Clewiston, funnel cloud touched ground briefly, damaging several buildings.
6. May 16	4:45 p.m.	Polk	W	6	150	0	0	3	1	Tornado at Auburndale.
7. May 29	Afternoon	Lee	(a)	(a)	(a)	0	0	(a)	1	Waterspout seen off Captiva.
8. May 30	Afternoon	Palm Beach	(a)	(a)	(a)	0	0	(a)	1	Waterspout near Boynton Inlet.
9. June 5	7:40 a.m.	Dade	(a)	(a)	(a)	0	0	(a)	1	Waterspout observed at Miami.

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TORNADO DATA

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						Killed	Injured	Property (exclusive of crops)	Crops	
FLORIDA (Cont'd)										
10. June 8	3 p.m.	Alachua	NW	(b)	(a)	0	0	3	1	Tornado near Newberry unroofed 1 house, blew down 2 tobacco barns, and uprooted several trees.
11. June 8	3 p.m.	Marion	NW	(b)	50	0	0	3	1	Tornado 20 miles east of Ocala in timberland unroofed 1 house.
12. June 8	3-4 p.m.	Clay	NW	(b)	25	0	0	4	1	Tornado near Orange Park and Doctors Inlet demolished several houses and blew down numerous trees.
13. June 8	3-4 p.m.	Putnam	(a)	(a)	(a)	0	0	(d)	1	Tornado near Georgetown affected rural area only.
14. June 8	4-5 p.m.	Duval	NW	(b)	(a)	0	0	4	1	Tornado in East Springfield section of Jacksonville demolished paint shop and unroofed church.
15. June 8	5:15 p.m.	Duval	NW	(b)	(a)	0	0	4	1	Tornado affected Jacksonville Naval Air Station.
16. July 2	6:30 p.m.	Duval	SE	(a)	(a)	0	0	(a)	1	Suspected tornado at Jacksonville.
17. July 9	2:15 p.m.	Duval	(a)	(a)	20	0	0	(d)	1	Tornado cloud briefly touched ground at Jacksonville.
18. July 15	8 p.m.	Dade	(a)	(a)	(a)	0	0	(a)	1	Suspected tornado at Miami.
19. July 17	5:50 a.m.	Monroe	(a)	(a)	(a)	0	0	(d)	1	Waterspout near Key West moved ashore.
20. July 18	9:28 a.m.	Pinellas	(a)	(a)	(a)	0	0	(a)	1	Waterspout observed at St. Petersburg.
21. July 24	Afternoon	Palm Beach	(a)	(a)	(a)	0	0	(a)	1	Waterspout observed at Palm Beach.
22. July 25	4 p.m.	Monroe	(a)	(a)	(a)	0	0	(a)	1	Waterspout near Key West.
23. July 29	Noon	Dade	(a)	(a)	(a)	0	0	(a)	1	4 waterspouts seen east of Miami.
24. July 29	Noon	Dade	(a)	(a)	(a)					
25. July 29	Noon	Dade	(a)	(a)	(a)					
26. July 29	Noon	Dade	(a)	(a)	(a)					
27. July 30	Early afternoon	Volusia	NE	(a)	(a)	0	0	(a)	1	Waterspout along Halifax River near Daytona Beach.
28. Aug. 6	3 p.m.	Palm Beach	(a)	(a)	(a)	0	0	(a)	1	Waterspout observed at Palm Beach.
29. Aug. 7	5-6 p.m.	Duval	(a)	(a)	(a)	0	0	(a)	(a)	Waterspouts reported near Mayport.
30. Aug. 7	5-6 p.m.	Duval	(a)	(a)	(a)					
31. Aug. 19	Noon	Lee	(a)	(a)	(a)	0	0	(a)	1	Waterspout near Ft. Myers.
32. Aug. 23	5 p.m.	Pinellas	(a)	(a)	(a)	0	0	(a)	(a)	Waterspout at Pass-a-Grille.
33. Aug. 24	10:30 a.m.	Monroe	(a)	(a)	(a)	0	0	(a)	1	Waterspout near Tavernier.
34. Aug. 29	11 a.m.	Volusia	(a)	(a)	(a)	0	0	1	1	Waterspout off Daytona Beach, dissipated at sea.
35. Sept. 5	Afternoon	Bay	(a)	(a)	(a)	0	0	(a)	1	Waterspout off Panama City.
36. Sept. 9	6 p.m.	Duval	(a)	(a)	(a)	0	0	(a)	(a)	Waterspout at Jacksonville.
37. Sept. 19	11:45 a.m.	Pasco	(a)	(a)	(a)	0	0	(a)	1	Waterspout off New Port Richey touched water.
38. Sept. 30	1:45 p.m.	Taylor	NW	(a)	(a)	0	0	(d)	1	Waterspout off Keatons Beach moved ashore, damaging several buildings.
39. Oct. 8	12:30 p.m.	Dade	(a)	(a)	(a)	0	0	3	1	Tornado and several waterspouts sighted in and around Dade County. Tornado at Tamiami Airport.
40. Oct. 8	12:30 p.m.	Dade	(a)	(a)	(a)					
41. Oct. 8	12:30 p.m.	Dade	(a)	(a)	(a)					
42. Oct. 20	(a)	St. Lucie	(a)	(a)	(a)	0	0	(a)	1	Waterspout observed at Fort Pierce.
43. Nov. 14	8:30 a.m.	Gadsden	(a)	(a)	(a)	0	0	3	1	Suspected tornado near Quincy.
44. Nov. 25	5 p.m.	Monroe	(a)	(a)	(a)	0	0	(a)	1	4 waterspouts sighted near Alligator Reef.
45. Nov. 25	5 p.m.	Monroe	(a)	(a)	(a)					
46. Nov. 25	5 p.m.	Monroe	(a)	(a)	(a)					
47. Nov. 25	5 p.m.	Monroe	(a)	(a)	(a)					
48. Dec. 11	11 a.m.	Hillsborough	(a)	(a)	(a)	0	0	(a)	1	Unroofed several chickenhouses near Limona.
49. Dec. 11	Afternoon	Lee	(a	(a)	(a)	0	0	(a)	1	Waterspout sighted off Captiva.

See reference notes at end of table.

TORNADO DATA

YEAR 1957

State and date	Hour	County	Direction of advance	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Remarks
						Killed	Injured	Property (exclusive of crops)	Crops	
GEORGIA										
1. Apr. 5	3 a.m.	Lamar	E	(b)	(c)	0	0	(e)	1	In Barnesville and Antioch community. Several barns destroyed and many porches and roofs damaged. Trees blown down and utility lines damaged.
2. Apr. 5	4-5:30 a.m.	Schley to Wilkinson	NE	80	200-800	2	3	5	(d)	Storm moved alternately along ground and through air through Schley, Macon, Peach, Houston, Twiggs, and Wilkinson Counties. Heaviest damage in Schley County where storm moved along surface 15 miles, killing 2 children and injuring 3 persons. Many buildings destroyed or damaged.
3. Apr. 5	6:15-7:15 a.m.	Warren to Columbia	NE-E	30	200-800	0	2	4	1	Storm first observed near Warrenton, Warren County, moved through McDuffie County near Thomson, and then apparently separated into 2 tornadoes, 1 moving northeastward and the other eastward through Columbia County. Many buildings destroyed or damaged, trees uprooted, and utility lines downed.
4. Apr. 5	8:30 a.m.	Colquitt and Cook	ENE	10	200	0	0	3	1	Damage to houses and barns near Moultrie, Colquitt County, and near Lenox, Cook County. Funnel cloud reported by witnesses.
5. Apr. 5	11 a.m.	Ware	E	(b)	(c)	0	1	3	1	1 house destroyed and other buildings and trees damaged in Jamestown community, 6 miles north of Waycross.
6. Apr. 5	11:34 a.m.	Chatham	(d)	f/ 500	(c)	0	0	(d)	1	Damage to roofs, small buildings, and trees near Savannah.
7. Apr. 8	2 p.m.	Gordon	NE	10	200	0	20	5	1	Storm first struck southwest of Calhoun, moved about 10 miles to within 2 miles of city. 70 buildings destroyed or damaged and 10 house trailers demolished. Funnel observed by many persons.
8. Apr. 8	4-5 p.m.	Tift, Irwin, and Coffee	SE	50	150-800	0	0	5	4	Storm moved 50 miles along ground and through air from near Chula, Tift County, through southern Irwin and Coffee Counties. Many homes, tobacco barns, and other buildings destroyed or damaged near Harding, River Bend, Gladys, and Lax. Planing mill destroyed near Douglas, Coffee County.
9. Apr. 8	4:30 p.m.	Telfair	ESE	15	400	1	5	(e)	(d)	First struck in China Hill section, hit again between Jacksonville and Lumber City. 1 man killed, another injured in truck trying to outrun storm. Truck whirled through air 100 yards. TV blown into well, without breaking picture tube.
10. Apr. 8	6:30 p.m.	Randolph	E	4	200	0	1	4	1	3 homes, 2 barns, church, and school destroyed or damaged in Friendship community.
11. May 3	8:05 p.m.	Glynn	SE	1	50	0	1	4	1	10 buildings destroyed or damaged, utility lines downed and trees uprooted. 1 person injured by flying glass.
12. June 5	3 p.m.	Colquitt	NE	2	200	0	0	3	1	Roofs damaged and trees blown down. Funnel cloud observed.
13. June 8	8:15 p.m.	Glynn	(a)	(b)	(c)	0	0	4	1	Suspected tornado destroyed administration building and damaged other property on Jekyll Island.
14. June 13	P.m.	Tattnall	(a)	(b)	(c)	0	0	3	1	Roofs damaged and trees and utility lines downed by suspected small tornado at Collins.
15. Nov. 8	9-10 a.m.	Early and Calhoun	NE	15	(a)	0	1	4	1	Storm moved from south of Blakely, Early County, to near Leary, Calhoun County, causing damage at 4 different places. 7 small houses and

See reference notes at end of table.

TORNADO DATA

YEAR 1957

State and date	Hour	County	Direction of advance	Length of path, miles	Width of path, yards	Number of persons: Killed	Number of persons: Injured	Estimated damage by categories †: Property (exclusive of crops)	Estimated damage by categories †: Crops	Remarks
GEORGIA (Cont'd)										several barns destroyed and larger houses damaged.
16. Nov. 18	5:45 p.m.	Chattooga	NE	12	500	0	1	5	2	3 houses destroyed or heavily damaged and several barns and chickenhouses demolished at Gore.
17. Nov. 18	Evening	Murray	NE	(b)	(c)	0	0	4	1	1 church and 3 houses severely damaged and barns destroyed at Crandall.
18. Nov. 29	2:45 p.m.	Bacon	NE	1	300	0	6	4	3	3 houses and several barns and outhouses destroyed. 3 automobiles wrecked, livestock and chickens killed, and timber destroyed near Alma.
IDAHO										
1. June 5	2:45 p.m.	Twin Falls	N	(b)	(c)	0	0	1	1	Near Twin Falls Airport, funnel touched ground briefly. No damage.
ILLINOIS										
1. Mar. 14	2 p.m.	Schuyler	NE	5	(a)	0	0	4	(a)	Wrecked veterinary office and caused other damage at Rushville.
2. Mar. 14	2:55 p.m.	Mason	NE	(a)	100	0	0	4	(a)	In Mason City area, light to moderate damage to about a dozen residences and farmsteads.
3. Mar. 14	3:10 p.m.	Logan	NE	(a)	(a)	0	0	4	(a)	2 farmsteads damaged at Latham.
4. Mar. 14	4:20 p.m.	Champaign, Douglas, and Piatt	NE	8	30	0	0	4	(a)	Damage to about 10 farmsteads at Atwood and Parkville.
5. Mar. 14	6:10 p.m.	Lake	NE	2	35	0	0	3	1	Occurred at Round Lake.
6. Apr. 3	2 p.m.	Alexander and Pulaski	NE	(a)	(a)	0	2	T 5	C	3 buildings unroofed in Mound City; light damage in Cairo, and several farms damaged near Tansil.
7. Apr. 18	2 p.m.	Monroe	NE	(a)	(a)	0	0	(d)	1	Occurred near Warnock.
8.Apr. 25	2:30 a.m.	St. Clair	NE	2	200-300	0	0	4	1	2 farmsteads damaged 3 miles northwest of Freeburg.
9. Apr. 26	2 p.m.	McLean and Ford	NE	25	30	0	0	4	1	Intermittent path from near Le Roy to east of Gibson City.
10. May 9	7:10 p.m.	Hancock	NE	4	200	0	0	3	1	Some damage on 4 or 5 farms south and east of La Harpe.
11. May 13	11 a.m.	Sangamon	NE	(b)	(c)	0	0	2	1	At Camp Butler National Cemetary.
12. May 21	3:50 p.m.	Monroe and St. Clair	ENE	25	150	0	0	5	1	Intermittent path from south of Columbia to Belleville and Scott Air Force Base. Damage most severe near Columbia.
13. May 21	5 p.m.	Richland	ENE	4	150	0	0	4	1	Several farmsteads damaged in Claremont area.
14. May 21	6:07 p.m.	Union and Jackson	ENE	9	200	0	0	5	5	Struck near Makanda and heavy damage at Alto Pass. Peach orchards damaged.
15. May 21	7:40 p.m.	McDonough	ENE	10	120	0	0	5	1	Homes destroyed at southeast edge of Colmar and several farmsteads damaged.
16. June 10	10:05 p.m.	Pike, Morgan, and Cass	NE	50	(a)	0	0	4	1	Intermittent path with damage near Pittsfield, Concord, and Philadelphia. 6 homes damaged at Philadelphia.
17. June 12	8 p.m.	Douglas	NE	1	(a)	0	0	2	1	At tree-top level. Minor damage to trees and wires at Tuscola.
18. June 14	1 p.m.	Pike	E	23	(a)	0	1	5	1	Probable tornado with path from Rockford to Milton. Much damage to buildings, trees, and utility lines.
19. June 14	1:30 p.m.	Morgan	E	3	(a)	0	5	5	1	Probable tornado struck eastern portion of business district of Jacksonville.

See reference notes at end of table.

TORNADO DATA

State and date	Hour	County	Direction of advance	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Remarks
						Killed	Injured	Property (exclusive of crops)	Crops	
ILLINOIS (Cont'd)										
20. June 14	2 p.m.	Sangamon	ENE	6	220	2	50	6	1	Path from southwest of Springfield through south side, with severe tornado destruction in small area.
21. June 14	3 p.m.	Kankakee	NE	1	80	0	0	5	1	Occurred 4 miles east of Aroma Park.
22. Dec. 18	2 p.m.	Randolph and Perry	ENE	20	(a)	0	0	4	1	Reported north of Chester, north of Steeleville to Jamestown and Conant. 10 homesteads damaged.
23. Dec. 18	3:15 p.m.	Randolph and Perry	ENE	18	(a)	0	0	5	1	Reported from near Chester to Denmark. Heavy damage to school and homes damaged or demolished at Willisville.
24. Dec. 18	3:20 p.m.	Madison	ENE	1	(a)	0	1	4	1	9 buildings damaged in southern Wood River area.
25. Dec. 18	3:35 p.m.	Mason	NE	(b)	(c)	0	1	4	1	Hit southeast side of Mason City. 3or 4 buildings damaged.
26. Dec. 18	3:35 p.m.	Perry	ENE	2-3	(a)	0	1	5	1	Occurred at junction of Highways 150 and 154. 16 houses heavily damaged at Cutler "Y".
27. Dec. 18	3:45 p.m.	Jefferson	ENE	5	(a)	0	2	4	1	8 buildings damaged at Boyd and near Kell.
28. Dec. 18	3:55-4:10 p.m.	Jefferson	ENE	18	100-250	1	45	6	1	First observed 10 miles west-southwest of Mt. Vernon, continued across north side of town. Much destruction on southwest side of Mr. Vernon.
29. Dec. 18	4 p.m.	Jackson	ENE	5	(a)	0	0	4	1	Damage to 3 or 4 homesteads north and northeast of Ava.
30. Dec. 18	4:15 p.m.	Randolph	(a)	5	(a)	0	0	4	1	Near Rockwood, freight cars overturned and buildings damaged.
31. Dec. 18	4:30 p.m.	Jefferson	ENE	12	200	0	0	4	1	Moved through far north side of Mt. Vernon. Damage to about 6 residences and 6 farmsteads.
32. Dec. 18	4:35 p.m.	Perry	ENE	5	200	1	0	5	1	Occurred at junction of Highways 51 and 154. Small crossroads settlement at Sunfield "Y" wiped out. Heavy destruction in small area.
33. Dec. 18	4:45 p.m.	Jackson, Williamson, and Franklin	ENE	30	200-300	11	200	6	1	About 40 houses destroyed in Gorham and 40 in Murphysboro. Intermittent path with damage near De Soto, Hurst, Bush, and Plumfield.
34. Dec. 18	5 p.m.	Wayne and Clay	NE	20	100-200	0	1	5	1	Near Orchardville to south of Clay City, about 20 farmsteads damaged or destroyed.
35. Dec. 18	5:25 p.m.	Jackson	(a)	1-2	(a)	0	5	4	1	Struck trailer camp 1 to 2 miles south of Carbondale, destroying 15 trailers and damaging 3 houses.
36. Dec. 18	5:25 p.m.	Jasper	NE	6	(a)	0	(a)	4	1	Damage on 3 or 4 farmsteads between Boos and Ste. Marie.
37. Dec. 18	5:35 p.m.	Hamilton	ENE	2-3	150	0	3	5	1	Heavy damage on south side of Dahlgren.
38. Dec. 18	6 p.m.	Hamilton, White and Edwards	ENE	20	(a)	0	(a)	5	1	From southwest of Springerton to northwest of Grayville about 20 farmsteads damaged.
39. Dec. 18	6 p.m.	Johnson	(a)	(b)	(a)	0	(a)	4	1	Church destroyed and damage to school and 2 farms near Forman and Belknap.
40. Dec. 18	6:40 p.m.	Vermilion	NE	4	60	0	0	4	1	Occurred near Sidell.
41. Dec. 19	5:50 p.m.	Jefferson	NE	1	65	0	0	4	1	Heavy damage to 1 farmstead, lighter damage to other buildings near Waltonville.
42. Dec. 19	9 p.m.	Saline	NE	1/2	100	0	0	4	1	Near Pankeyville, barn and other buildings damaged.

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TORNADO DATA

YEAR 1957

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						Killed	Injured	Property (exclusive of crops)	Crops	
INDIANA										
1. Mar. 14	6 p.m.	Sullivan	NE	5	(a)	0	0	4	1	South of Fairbanks and northeast of Hutsonville, barn and roof of barn and house damaged.
2. Mar. 14	6:30 p.m.	Lake	ENE	10	30	0	0	4	1	3 buildings and 7 trailers damaged at Schererville.
3. Mar. 14	7:10 p.m.	La Porte	ENE	(a)	(a)	0	0	3	1	Trailer demolished and house damaged northwest of La Porte.
4. Mar. 14	7:30 p.m.	Owen	NE	1/10	30	0	0	2	1	Minor damage 3 miles south of Spencer.
5. Apr. 5	12:05 p.m.	Delaware	(a)	(a)	(a)	0	0	4	1	In and around Muncie, housetrailer overturned, metal garage roof hurled 50 feet, powerlines downed, and front of house damaged.
6. Apr. 5	12:30 p.m.	Grant	(a)	(a)	(a)	0	0	2	1	Tornado dipped down, destroyed small shed and tore down utility line at Fairmount.
7. Apr. 5	1 p.m.	Randolph	(a)	(a)	(a)	0	0	3	1	Door of hanger torn off at Winchester Airport.
8. Apr. 5	Early afternoon	Lawrence	(a)	(a)	(a)	0	0	3	1	Roof of house destroyed at Bartlettsville.
9. Apr. 5	Early afternoon	Lawrence	(a)	(a)	(a)	0	0	3	1	2 buildings damaged by small tornado at Needmore.
10. Apr. 5	Afternoon	Jay	(a)	(a)	(a)	0	0	3	1	Struck near Redkey and Poling; demolished shed, tore roof off houses, and damaged street lights.
11. Apr. 5	Afternoon	Henry	(a)	(a)	(a)	0	1	4	1	In northwestern part of county, TV antennas, powerlines, trees, and roofs of small buildings blown down and part of gymasium unroofed.
12. Apr. 24	Noon	Bartholomew	(a)	(a)	(a)	0	0	3	1	House unroofed northwest of Columbus.
13. Apr. 26	12:30 p.m.	Jasper	(a)	(a)	(a)	0	0	3	1	Farm buildings damaged 1 mile east of Kniman.
14. Apr. 26	2:30 p.m.	Wabash	NE	(a)	(a)	0	0	1	1	Funnel cloud reported by pilot 35 miles west-northwest of North Manchester, touching ground at times.
15. Apr. 26	4 p.m.	Miami	(a)	(a)	(a)	0	0	3	1	Tornado struck southern edge of Denver.
16. Apr. 26	Evening	Hancock	NE	(a)	(a)	0	0	3	1	Near Greenfield, small tornado damaged several buildings along Sugar Creek, 2 miles north of Highway 40.
17. May 11	4:50 p.m.	Allen	(a)	(a)	(a)	0	0	2	1	House damaged 6 miles northeast of Ft. Wayne.
18. May 21	8:03 p.m.	Warrick	(a)	(a)	(a)	0	2	4	1	12 miles east of Evansville, house destroyed by observed tornado.
19. June 11	P.m.	Sullivan	E	2/10	70	0	0	T/4	C	Tornado struck 4 miles east of Sullivan, destroying barn and 10 telephone poles.
20. June 13	A.m.	Wabash	(a)	1/10	10	0	0	3	1	Farm buildings damaged 4 miles east of North Manchester.
21. June 13	A.m.	Wayne	(a)	1/10	10	0	0	4	1	Tornado struck church.
22. June 14	7:15 p.m.	Fulton	(a)	(a)	(a)	0	0	4	1	2 barns, home, and other buildings destroyed 5 miles west of Rochester.
23. June 14	7:15 p.m.	Kosciusko	(a)	(a)	(a)	0	0	4	1	Cottage, boats, and docks damaged along shore of Webster Lake.
24. June 28	(a)	Ripley	(a)	(a)	(a)	0	0	4	1	Several buildings damaged at Cross Plains.
25. July 4	5 p.m.	Shelby	(a)	(a)	(a)	0	0	T/5	C	Buildings damaged or destroyed between Bengal and Marietta.
26. July 4	Evening	Boone	(a)	(a)	(a)	0	0	4	1	Some buildings destroyed northwest of Dover.

See reference notes at end of table.

TORNADO DATA

State and date	Hour	County	Direction of advance	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Remarks
						Killed	Injured	Property (exclusive of crops)	Crops	
INDIANA (Cont'd)										
27. July 12	8 p.m.	Lake	N	[f] 200	25	0	0	5	1	Hangar and aircraft destroyed at Cedar Lake Airport.
IOWA										
1. Apr. 19	1:30 p.m.	Winneshiek	N	1	300	0	0	2	1	Damaged farm buildings and equipment 4 miles northwest of Burroak.
2. Apr. 25	11:30 a.m.	Montgomery and Adams	(a)	(a)	(a)	0	0	4	1	Damaged buildings.
3. May 13	Morning	Henry	(a)	(a)	(a)	0	0	3	1	Damaged school and farm buildings.
4. May 21	5-8:30 p.m.	Cedar, Muscatine, and Scott	NE	10	100	0	0	5	1	Damaged farm buildings.
5. May 25	3-4 p.m.	Chickasaw	(a)	(a)	(a)	0	0	4	3	Damaged farm buildings and crops in Fredericksburg area.
6. May 25	11:15 p.m.	Montgomery	SE	4	1,000	0	0	4	1	Damaged farm buildings and grandstand in Stanton area.
7. May 29	11:50 a.m.	Clay	E	(a)	(a)	0	0	3	1	Damaged farm buildings 4 miles south of Everly.
8. May 29	1:30 p.m.	Hancock	(a)	(a)	(a)	0	0	(a)	(a)	Reported near Garner.
9. May 29	4 p.m.	Webster	(a)	(a)	(a)	0	0	1	1	Funnel cloud touched ground at Barnum.
10. May 30	2:35 p.m.	Shelby	(a)	(a)	(a)	0	0	(e)	(e)	Occurred at Panama.
11. May 30	4:50 p.m.	Carroll	(a)	(a)	(a)	0	0	(a)	(a)	Occurred 12 miles northwest of Carroll.
12. May 30	4:50 p.m.	Story	(a)	(a)	(a)	0	0	4	1	Funnel cloud reported to have occasionally touched ground 15 miles north of Nevada.
13. June 10	6 p.m.	Lee	NE	(a)	(a)	0	0	4	1	Damaged farm buildings northwest of Keokuk.
14. June 11	11:33 a.m.	Lee	(a)	(a)	(a)	0	0	(a)	1	Reported by Ground Observer Corps southwest of Keokuk.
15. June 16	6:30 a.m.	Ida, Buena Vista, and Palo Alto	NNE	15	(a)	0	0	5	4	Destroyed farm buildings, trees, and utility lines.
16. July 4	2:28 a.m.	Calhoun	ESE	150	(a)	0	1	(a)	1	Possible tornado in Lake City area. Woman injured when her home collapsed.
17. July 21	11 a.m.	Decatur	(a)	(a)	(a)	0	0	(a)	(a)	Reported by Civil Aeronautics personnel.
KANSAS										
1. Apr. 18	5:55 p.m.	Comanche	NE	1-1/2	(c)	0	0	1	1	Occurred 9 miles east of Coldwater. Tremendour roar heard.
2. Apr. 18	5:55 p.m.	Comanche	NE	(b)	(c)	0	0	1	1	Occurred 7 miles east and 1 mile north of Coldwater.
3. Apr. 22	4:45 p.m.	Clay	N	4	300	0	0	4	1	2 tornadoes. A number of barns and sheds destroyed in Clay Center area.
4. Apr. 22	4:45 p.m.	Clay	N							
5. Apr. 22	5 p.m.	Pratt	N	(b)	(c)	0	0	(e)	1	Struck farmhouse 5 miles east of Sawyer.
6. Apr. 22	5:30 p.m.	Pratt	N	6-8	100	0	0	3	1	8 miles southeast of Pratt, farmhouse, large barn, and silo damaged.
7. Apr. 22	6:35 p.m.	Barton	NE	1/2	(a)	0	0	1	1	Funnel observed to hit ground, traveled across open field in southeastern part of county.
8. May 9	5:17-6 p.m.	Rice	E	1-1/2	(b)	0	0	3	1	Damaged farm plant on west side of Lyons.
9. May 9	5:17-6 p.m.	Rice	E	(b)	(c)	0	0	4	1	Damaged buildings on 2 farms 2-1/2 miles east of Little River.
10. May 13	11:30 a.m.	Thomas	NE	(b)	(c)	0	0	1	1	2 funnel clouds came to ground 6 miles northeast of Oakley.
11. May 13	11:30 a.m.	Thomas	NE	(b)	(c)					

See reference notes at end of table.

TORNADO DATA

YEAR 1957

State and date	Hour	County	Direction of advance	Length of path, miles	Width of path, yards	Number of persons: Killed	Number of persons: Injured	Estimated damage by categories †: Property (exclusive of crops)	Estimated damage by categories †: Crops	Remarks
KANSAS (Cont'd)										
12. May 13	12:14 p.m.	Graham	NE	(b)	(c)	0	0	1	1	Funnel cloud came to ground once, then disappeared.
13. May 16	12:43-12:54 p.m.	Cowley	NE	5	125	0	0	1	1	Came to ground in open field between Arkansas City and Winfield.
14. May 16	2:45 p.m.	Elk	NE	(b)	(c)	0	0	(e)	1	Damaged farm building 2-1/2 miles northeast of Grenola.
15. May 16	3:30-4:15 p.m.	Greenwood and Woodson	NE	13	440	0	0	(e)	1	Path extended from about 3 miles east of Severy, across Fall River Reservoir to a few miles southeast of Toronto. Buildings on several farms destroyed.
16. May 16	4:18-5 p.m.	Chautaugua, Montgomery, Wilson and Neosho	NE	40	100-300	0	0	5	1	Extended from 6 miles southwest of Elk City to 2-1/2 miles east of Earlton. Intermittent damage as funnel lifted and dipped to ground.
17. May 16	4:30-4:50 p.m.	Elk	NE	4	20	0	0	3	1	4 small tornadoes, 2 caused damage 2 miles north of Grenola, and the other 2 damaged buildings 4 miles east of Grenola.
18. May 16	Ditto	Elk	NE							
19. May 16	Ditto	Elk	NE							
20. May 16	Ditto	Elk	NE							
*21. May 20	11:10 a.m.-1:35 p.m.	Sherman and Rawlins	NE	100	(a)	0	0	1	1	Tornado moved from Bethune, Colo., on ground 5 miles north-northeast of Goodland and again 5 miles southwest of Atwood, disappeared near Herndon.
22. May 20	11:15a.m.-12:10 p.m.	Phillips	NE	1	300	0	0	(d)	1	Moved across southeastern Phillipsburg.
23. May 20	1:15 p.m.	Osborne	NE	(b)	(a)	0	0	(d)	1	1 farmplant damaged 3 miles north and 1/2 mile east of Downs.
24. May 20	1:25-1:45 p.m.	Mitchell	NE	(b)	(c)	0	0	(d)	1	First observed near Hunter, dipped 4 times before disappearing.
25. May 20	2:05 p.m.	Jewell	NNE	6	300	0	0	4	1	Damaged buildings 3 to 9 miles north of Burr Oak.
26. May 20	2:50-4p.m.	Cloud, Republic, and Washington	NE	60	400	0	0	5	1	Main tornado traveled from 5 miles east-northeast of Glasco to 3 miles southeast of Haddam.
27. May 20	2:50-4 p.m.	Cloud	NE	(b)	(c)	0	0			Short path 6 miles south-southeast of Concordia.
28. May 20	2:50-4 p.m.	Cloud	NE	(b)	(c)	0	0			On north side of main storm about 1-1/2 miles east of Huscher.
29. May 20	2:50-4 p.m.	Cloud	NE	(b)	(c)	0	0			South of main tornado for 2 miles about 1-1/2 miles east of Huscher.
30. May 20	2:50-4 p.m.	Cloud	NE	4	(c)	0	0			Path began 4 miles east of Concordia, joined main path 4 miles east of Hollis and 1 mile north of Canadian River. Damage listed for all 5 tornadoes.
31. May 20	5:45-5:50 p.m.	Lyon	ESE	1/2	100	0	0	2	1	Slight damage in village of Hartford.
32. May 20	6:15-6:30 p.m.	Greenwood	NE	1	100	0	0	(d)	1	Well defined elephant trunk appearance. Struck ground 1-1/2 miles west of Madison.
*33. May 20	6:15-7:37 p.m.	Franklin, Miami, and Johnson	NE	57	150-700	7	31	6	4	Traveled from 2 miles southwest of Williamsburg into Missouri.
34. May 20	6:15-7:37 p.m.	Franklin	NE	7	(c)	0	0			Second tornado adjacent to number 33 from 1 mile northeast of Williamsburg to 3 miles northeast of Homewood. Damage listed for both tornadoes.
35. May 24	5:05 p.m.	Sumner	(a)	(b)	(c)	0	0	(e)	1	Dipped once 3 miles southwest of Belle Plaine.
36. May 24	10 p.m.	Sumner	(a)	(b)	(c)	0	0	(d)	1	Damaged farmplant 2 miles southeast of Mulvane.
37. May 24	Night	Cherokee	NE	(b)	(c)	0	0	(d)	1	Struck southeastern corner of Baxter Springs.

See reference notes at end of table.

TORNADO DATA

YEAR 1957

State and date	Hour	County	Direction of advance	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Remarks
						Killed	Injured	Property (exclusive of crops)	Crops	
KANSAS (Cont'd)										
38. May 29	6-8 p.m.	Ellsworth	(a)	(b)	(c)	0	0	(e)	1	Damaged buildings 9 miles northwest of Ellsworth.
39. May 29	7-8 p.m.	Saline	NE	(b)	(c)	0	0	(d)	1	Occurred a few miles northwest of Bavaria.
40. May 30	3:35 p.m.	Thomas	N	(a)	(a)	0	0	(a)	1	Touched ground momentarily 4 miles north of Colby.
41. May 31	11:55 a.m.-12:30p.m.	Barber	NE	5	150	0	0	(a)	1	In open pasture 28 miles southwest of Medicine Lodge.
42. May 31	2:35 p.m.	Sherman	(a)	(a)	(a)	0	0	(a)	1	Touched ground briefly 10 miles west of Goodland.
43. May 31	3:44 p.m.	Sherman	(a)	(a)	(a)	0	0	(a)	1	Occurred 13 miles northwest of Goodland.
44. June 11	6 p.m.	Douglas	NE	3	(c)	0	0	(a)	1	Struck ground 5 miles south of Lawrence, damaged farm buildings.
45. June 11	7:45 p.m.	Shawnee	NW	f/ 200	60	0	0	(d)	1	Dipped to ground 6-1/2 miles southwest of Topeka.
46. June 11	8:04 p.m.	Johnson	NE	1/4	100	0	0	4	1	Destroyed large barn 3 miles north and 1/2 mile west of Olathe.
47. June 14	12:15-12:24 a.m.	Barber	NE	(a)	(a)	0	0	(a)	1	Small tornado on ground a few miles north of Aetna and 1-1/2 miles south of Medicine Lodge.
48. June 14	1:05 a.m.	Geary	NE	(a)	(a)	0	0	(e)	1	Positive account of tornado 4 miles south and 1 mile west of Junction City.
49. June 15	4:05-4:45 p.m.	Smith	NNE	14	(a)	0	0	6	1	Traveled from about 4 miles south-southwest of Kensington, through west side of Kensington, to 10 miles north-northeast of town.
50. June 15	4:05-4:45 p.m.	Smith	NNE	2	(a)	0	0			Hit ground 1 mile northwest of Athol, with intermittent damage across several miles. Damage listed for both tornadoes.
51. June 15	Evening	Gove	NNE	7	(a)	0	0	(a)	1	Damage over path from 6-1/2 miles northwest of Quinter to 10 miles north of town.
52. June 16	Midafternoon	Finney	(a)	(a)	(a)	0	0	(a)	1	2 tornadoes observed to have touched ground in open country about 20 miles northwest of Garden City.
53. June 16	Ditto	Finney	(a)	(a)	(a)					
54. June 16	9:25 p.m	Osborne	NE	(a)	(a)	0	0	(a)	1	Touched ground momentarily 4 or 5 miles north of Downs.
55. June 21	8 p.m.	Republic	(a)	(a)	(a)	0	0	(a)	1	Dipped at Norway, uprooting a long row of cottonwood trees.
56. June 21	9:14 p.m.	Reno	NE	(a)	(a)	0	0	(a)	1	West of Hutchinson.
57. June 21	10:09 p.m.	Sedgwick	NE	3	100	0	0	3	1	Damage occurred 4 miles west of Valley Center.
58. June 21-22	11:30 p.m.-12:15 a.m.	Johnson	E	8	400	0	20	5	1	Considerable building damage from near De Soto to Shawnee.
59. June 23	1-3 a.m.	Gray	(a)	(a)	(a)	0	0	(e)	1	14 power poles and windmill destroyed east of Copeland.
60. June 29	Evening	Greeley	(a)	(a)	(a)	0	0	1	1	Touched ground in open country 8 miles west of Tribune.
61. June 29	Evening	Trego	(a)	(a)	(a)	0	0	(d)	1	Occurred at Collyer.
62. June 29	11 p.m.-midnight	Dickinson	E	(b)	20	0	0	3	1	Tornado sighted and heard west of Enterprise.
63. June 30	11:05 p.m.	Harper	NE	(a)	(a)	0	0	1	(a)	On ground 12 miles southeast of Attica.
64. July 21	6:50 p.m.	Edwards	(a)	(a)	(a)	0	0	(a)	1	Touched ground 10 miles northwest of Kinsley.
KENTUCKY										
1. Jan. 22	3:30 p.m.	Logan	NE	1	880	0	0	I/ 4	C	Storm struck 4 miles northeast of

See reference notes at end of table.

TORNADO DATA

YEAR 1957

State and date	Hour	County	Direction of advance	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Remarks
						Killed	Injured	Property (exclusive of crops)	Crops	
KENTUCKY (Cont'd)										Adairville. 6 farm buildings and residence damaged. Posts, trees, and utility lines downed. Corn, hay, other feeds and some farm machinery lost.
2. Apr. 3	P.m.	Warren	(a)	(a)	(a)	0	0	(d)	(d)	Occurred south of Bowling Green.
3. May 22	A.m.	Carroll	NE	3/4	440	0	0	4	3	Damage apparently caused by tornado, although funnel cloud not observed. Noise like "a bunch of freight trains" heard. Hit 4 miles southwest of Carrollton. House, 4 barns, and other farm buildings destroyed. Trees and utility poles blown down.
4. Nov. 18	4:25-4:30 p.m.	Boyle	(a)	(a)	(a)	0	0	4	5	Hit outshirts of Danville. 1 warehouse containing tobacco destroyed and another warehouse damaged. Roofs on 12 houses damaged. Plate-glass windows, signs, trees, and smaller buildings smashed.
LOUISIANA										
1. Jan. 22	10:50 p.m.	Webster	NE	1-7/10	180	3	9	4	4	In Princeton area, heavy damage for 180 yards; path erratic.
2. Mar. 21	6 a.m.	La Fourche	NE	2	100	0	2	4	(e)	Between Montegut and Bourg, 2 homes demolished and several badly damaged.
3. Mar. 31	4 p.m.	Jefferson Davis	NE	8	300	0	0	4	1	Near Lake Arthur, several farm buildings destroyed, trees uprooted, and roofs damaged.
4. Mar. 31	6 p.m.	St. John the Baptist	N	2	1,000	0	0	3	(d)	Over open farmland between Reserve and Laplace.
5. Mar. 31	10:30 p.m.	Plaquemines	NE	1	200	0	0	4	3	Lifted several homes off foundations, unroofed packing plant, and downed power poles at Nairn.
6. Mar. 31	10:15 p.m.	Plaquemines	NE	1	100	0	3	4	1	Several homes demolished and several damaged at Boothville.
7. Apr. 3	6 p.m.	Jackson	(a)	(b)	(c)	0	0	(d)	1	Near town of Hodge.
8. Apr. 27	5:40 p.m.	Calcasieu	NE	1	200	0	0	4	1	1 home destroyed, several homes, barns, and fences damaged in village of Carlyss.
9. May 23	5 p.m.	Bossier	(a)	1/2	150	0	1	4	(d)	20 miles north of Shreveport, 1 home damaged, trees uprooted, and derrick blown over.
10. May 26	1:40 p.m.	East Baton Rouge	E	✓f 175	50	0	0	3	1	6-1/2 miles east of Baton Rouge Airport.
11. June 27	Early a.m.	Orleans	NE	(a)	25	0	0	4	1	At Michaud during passage of hurricane.
12. June 27	10:30 p.m.	St. Landry	NE	(b)	(c)	0	0	4	1	Near Arnaudville, several homes damaged and trees uprooted. Occurred during passage of hurricane.
13. July 10 14. July 10 15. July 10	2:14 p.m. 2:14 p.m. 2:14 p.m.	Plaquemines Plaquemines Plaquemines	(a) (a)	(a) (a)	(a) (a)	0	0	1	1	3 waterspouts observed near Burrwood.
16. July 13	12:50 p.m.	Orleans	(a)	(a)	(a)	0	0	2	1	Waterspout on Bayou St. John at Mirabeau moved onto land and tore roofing off house under construction.
17. Aug. 28	1:50 p.m.	St. John the Baptist	(a)	(a)	(a)	0	0	1	1	Waterspout on Lake Maurepas.
18. Oct. 15	10-11 p.m.	St. Landry and Point Coupee	NNE	45	100	1	29	4	4	Moved from near Leonville through Cypress Grove community, then through thinly settled areas to Mix. 15 houses destroyed and many damaged.
19. Oct. 16	1 a.m.	Tangipahoa	NE	(b)	50	0	0	3	(d)	Destroyed several buildings 1 mile north of Kentwood.
20. Oct. 16	1-2 a.m.	West Baton Rouge and Livingston	ESE	50	(c)	0	0	4	(d)	Destroyed several houses 5 miles west of Baton Rouge, lifted over Baton Rouge, came to earth as it moved to Walker.

See reference notes at end of table.

TORNADO DATA

State and date	Hour	County	Direction of advance	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Remarks
						Killed	Injured	Property (exclusive of crops)	Crops	
LOUISIANA (Cont'd)										
21. Oct. 23	8:15 a.m.	Rapides	NNE	18	100	1	1	4	(d)	Several houses destroyed and minor widespread damage to buildings, powerlines, and trees between Kolin and Deville.
22. Oct. 23	2:15 p.m.	Assumption	E	10	100	0	0	4	3	Moved from Elm Hall Plantation to Napoleonville and Unice Breaux, damaging many houses and destroying some others.
23. Nov. 7	2-2:30 p.m.	Caddo and Bossier	NE	15	100	0	0	T✓ 4	C	Moved through mostly wooded land from Robson to Fillmore.
24. Nov. 7	2:30-3 p.m.	Jefferson Davis and Acadia	NNE	15	50	0	0	4	(d)	Moved from Lowry to Iota; lifted over Jennings.
25. Nov. 7	4:50 p.m.	Pointe Coupee	NE	3	50	0	5	5	(d)	15 homes and farm buildings destroyed in Torras area.
26. Nov. 7	8:35 p.m.	Vernon	(a)	(a)	(a)	0	0	4	1	3 buildings destroyed 2 miles west of Leesville.
27. Nov. 7	9-9:15 p.m.	Rapides	SE	13	50-75	3	16	6	(d)	Moved from Boyce to Alexandria; through 10-block area in Alexandria. Destroyed 98 homes and 6 other buildings, damaged 458 homes and other buildings.
28. Nov. 7	11:30 p.m.	Lafayette	NE	(a)	(a)	2	13	5	(d)	Several homes and farm buildings destroyed at Carencro.
29. Nov. 7	11:30 p.m.	Acadia and St. Landry	NE	8	200	4	10	5	(d)	Destroyed 25 homes and 60 farm buildings, damaged 14 homes and 2 farm buildings from Higginbothan to Cankton.
30. Nov. 13	11:10 a.m.	Rapides	(a)	(a)	(a)	0	0	3	1	20 miles southeast of Alexandria, 2 homes destroyed.
31. Nov. 13	1:25 p.m.	Plaguemines	N	(a)	8	0	0	3	1	Occurred 1 mile south of Burrwood.
32. Nov. 13	11:25 p.m.	St. Tammany	NE	2	100	0	0	5	1	Heavy damage at St. Josephs Academy at Ramsey.
33. Nov. 16	5 a.m.	Sabine	NE	1	100	0	1	4	1	3 homes destroyed at Ft. Jessup.
34. Nov. 18	11-11:45 a.m.	Livingston and St. Helena	NNE	15	25	0	0	4	1	Began near Springville, moved to 5 miles southwest of Kentwood. Damage spotty.
MAINE										
1. Mar. 31	2:30 p.m.	Washington	SE	1/4	10	0	0	(a)	1	Waterspout crossed part of Machias Bay between Starboard and Ingalls Island. Unconfirmed report that small boat capsized by spout.
2. June 19	2 p.m.	York	(a)	(a)	(a)	0	0	1	1	Waterspout observed offshore at York Beach apparently developed from same squall that spawned Newington, N. H., tornado about 25 minutes earlier.
3. Sept. 16	2:30-3 p.m.	Arrostook	E	5	50	0	0	3	2	Evidence of skipping about a mile in each of 2 places along path at Sherman Mills. Barn wrecked and 2 homes damaged. Heavy wooden beams carried 300 to 500 feet in air.
MARYLAND (None)										
MASSACHUSETTS										
1. May 6	Noon	Suffolk	(a)	(a)	(a)	0	0	(a)	(a)	Waterspout crossed Houghton's Pond, lifting water level 2 to 3 feet with anticyclonic circulation.
2. May 10	4:35 p.m.	Franklin	ESE	f✓ 300	10	0	0	2	1	Funnel observed at North Bernardston, with no visual connection with squall clouds above wind calm only 80 feet away from twister. Storm damaged trees, utility lines, and a roof.
3. June 19	2:47 p.m.	Middlesex	NE	1	25	0	0	4	1	Funnel observed at North Sudbury, discontinuous path. Damage to orchard and farm buildings. Much debris blown to north (left) of path or to northeast in line with

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TORNADO DATA

YEAR 1957

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MASSACHUSETTS (Cont'd)										storm, but some went in other directions, even to southwest.
4. June 19	3 p.m.	Middlesex	N	1/2	100	0	0	2	1	Funnel cloud observed at Bedford. Post Office damaged.
5. June 19	Afternoon	Worcester	E	1-3/4	(a)	0	0	4	1	Storm occurred at Lancaster. Funnel cloud described as "something like a little smokestack" felled trees, snapped utility poles, and sent several trees crashing against buildings.
6. July 5	9:20 a.m.	Hampshire	SE	1	(a)	0	0	3	1	At Northampton, very narrow path of damage to trees and wires. No confirmation of funnel cloud.
7. July 5	8 p.m.	Worcester	SE	(a)	20	0	0	3	1	At Leominster; no confirmation of funnel cloud.
8. Aug. 16	2:15 p.m.	Essex	(a)	(a)	(a)	0	0	(d)	1	Waterspout on Lake Attitash. Black cloud overheard. 14-foot boat with motor picked up and overturned.
MICHIGAN										
1. Apr. 25	Afternoon	Huron and Sanilac	(a)	(b)	(a)	0	0	3	1	Several funnels reported. Some evidence that 1 or more dipped briefly in rural areas.
2. Apr. 25	Afternoon	Ditto	(a)	(b)	(a)					
3. Apr. 27	10:30 a.m.	Oakland	(a)	(b)	(a)	0	0	3	1	3 funnels reported near Pontiac, 1 dipped briefly to surface in north end of Pontiac, damaging lumberyard slightly and hurling 2 big planks through window of nearby grocery store.
4. May 14	Evening	Oceana	(a)	(b)	(a)	0	0	1	1	Waterspout reported in Lake Michigan near Oceana County
5. June 14	6 p.m.	Montmorency	NE	1	50	0	0	4	1	1 summer cottage demolished, 2 others damaged in Vienna Township.
6. June 22	4:30 p.m.	Ottawa	(a)	(b)	(c)	0	0	4	1	Onion warehouse at Hudsonville destroyed along with contents.
7. June 22	5:05 p.m.	Berrien and Cass	ENE	12	50	0	0	4	(e)	Funnel developed near Eau Claire, lifted several times; some rural buildings destroyed or damaged.
8. June 22	5:10 p.m.	Allegan	NE	1	(c)	0	0	1	1	Small funnel moved over Dumont Lake and dissipated soon after hitting shore.
9. June 22	Evening	Bay	(a)	(b)	(c)	0	0	3	1	Barn, trees, and utility lines wrecked near Bay City.
10. July 4	4 p.m.	Emmet	NE	6	35	0	0	4	3	Near western edge of Harbor Springs, 2 barns destroyed and several other rural buildings damaged.
11. July 4	5 p.m.	Presque Isle	E	5	130	0	0	4	3	Tornado just south of Lake May, destroyed 3 barns and damaged several rural buildings.
12. July 4	6:55 p.m.	Livingston and Oakland	E	32	50	0	5	5	1	Tornado began just southeast of Brighton, moved to northern suburbs of Detroit. Destroyed 2 homes and damaged 10 others. Funnel lifted several times during passage. Heaviest damage near Brighton.
13. Aug. 4	9:25 a.m.	Allegan	(a)	(a)	(a)	0	0	1	1	Waterspout 7 miles north of South Haven in Lake Michigan dissipated upon reaching land.
14. Aug. 4	10:50 a.m.	Bay	(a)	(a)	(a)	0	0	1	1	Waterspout 15 miles northeast of Saginaw in Saginaw Bay dissipated upon reaching land.
15. Sept. 21	4 p.m.	Shiawassee and Flint	ENE	26	30	0	0	✓T 3	C	Small tornado began at Owosso and ended 6 miles east of Flushing; funnel lifted and dipped several times; damage mostly from trees falling on buildings.
16. Sept. 22	1:21 p.m.	Leelanau	NE	(a)	(a)	0	0	1	1	Waterspout 5 miles southeast of South Fox Island.
17. Sept. 19	5:50 p.m.	Wayne	ENE	1-1/2	100	1	12	5	1	Suspected tornado in northeast section of Detroit; fatality and most

See reference notes at end of table.

TORNADO DATA

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						Killed	Injured	Property (exclusive of crops)	Crops	
MICHIGAN (Cont'd)										of injuries caused by falling chunks of concrete in factory building.
MINNESOTA										
1. May 14	10 a.m.	Dodge	NW	(a)	250	0	0	(e)	1	4 miles east of Blooming Prairie, suspected tornado, severe thunderstorm, with some hail. No funnel observed. Barn destroyed. Other buildings and machinery damaged. One witness described storm as making "terrible roar" following a calm.
2. May 21	Noon	Cass	N	4-1/2	100-300	0	0	4	1	Funnel cloud observed striking farm near Staples. Barn and garage demolished. Windows in house blown out. Swath 1 mile in length cut through stand of pine trees.
3. May 21	1 p.m.	Chisago	NNE	9	100	0	2	4	1	Funnel cloud observed by several persons, also photographed. Struck 9 individual farms, beginning 1 mile east of Harris and ending 1 mile north-northeast of Rush City. Child snatched from mother's arms as they tried to escape storm and hurled both through the air. 1 house destroyed, 4 others damaged. 8 barns blown over and destroyed also numerous outbuildings. Trees up to 24 inches in diameter twisted and uprooted.
4. May 25	2:38 p.m.	Wright	NE	[f] 1,400	20	0	0	4	1	Suspected tornado flattened barn and uprooted trees near Maple Lake. Roaring noise heard, but no funnel observed.
5. June 13	P.m.	Brown	(a)	(a)	(a)	0	0	(e)	1	Suspected tornado demolished barn and damaged small buildings near New Ulm.
6. June 16	(a)	Martin	NE	(a)	(a)	0	0	3	4	Funnel cloud observed 5 miles northeast of Dunnell. 1 barn demolished. Heavy rain flooded highways and farmland.
*7. June 20	6:40 p.m.	Clay	E	26	400	0	0	5	(e)	After striking Fargo, N. Dak., tornado crossed Red River into Moorhead. 2 farms, 2 country clubhouses, and other buildings, all just north of Moorhead, damaged or partially destroyed. Length of most serious damage 3 miles. Minor damage also reported at Glyndon and Dale, east of Moorhead, as tornado weakened and finally dissipated over Lake Park.
8. June 20	7:30 p.m.	Otter Tail	E	(a)	(a)	0	0	3	1	Funnel cloud observed. Demolished cottage at Long Lake near Fergus Falls.
9. June 22	A.m.	Freeborn	(a)	(a)	(a)	0	0	1	1	Cooperative observer reported small twister near Albert Lea.
10. June 25	P.m.	Norman	(a)	(a)	(a)	0	0	1	1	Trucker sighted funnel cloud. Finley radar reported tornado.
11. June 25	7 p.m.	Freeborn	SE	(a)	(a)	0	0	(e)	(e)	Trees uprooted, steel grain bin overturned, and tractor damaged at Alden. Farmer said "it sounded like a bunch of bombers going over."
12. June 27	2 p.m.	Douglas	(a)	(a)	(a)	0	0	(e)	(d)	Suspected tornado destroyed barn 20 miles north-northeast of Alexandria.
13. June 27	2 p.m.	Otter Tail	(a)	(a)	(a)	0	0	1	1	Funnel cloud reported touching ground 2 miles east of Ottertail.
14. July 3	4-5 a.m.	Rock and Nobles	SE	50	(a)	0	2	5	5	Generally straight-line winds with some local evidence of tornado blew down at least 12 barns, thousands of trees, telephone lines, outbuildings, and windmills. Livestock killed by lightning. Drive-in theater and housetrailer damaged in Luverne.

See reference notes at end of table.

TORNADO DATA

YEAR 1957

State and date	Hour	County	Direction of advance	Length of path, miles	Width of path, yards	Number of persons: Killed	Number of persons: Injured	Estimated damage by categories †: Property (exclusive of crops)	Estimated damage by categories †: Crops	Remarks
MINNESOTA (Cont'd)										Lumberyard unroofed and church destroyed at Ellsworth.
15. July 7	8 p.m.	Le Sueur	(a)	(a)	(a)	0	0	1	1	Occurred 10 miles north of Waterville; funnel observed.
16. July 19	P.m.	Freeborn	(a)	(a)	(a)	0	0	1	1	Funnel cloud touched ground in field 5 miles south of Albert Lea.
MISSISSIPPI										
1. Feb. 1	7 a.m.	Madison	NE	1	100	0	0	3	1	Funnel observed; 1 home destroyed and several damaged at Camden.
2. Feb. 1	7 a.m.	Montgomery	NE	(a)	30	0	0	2	1	Lifted roof 4 miles southeast of Winona.
3. Apr. 3	7:15 p.m.	Washington	NE	10	(a)	0	4	5	(d)	Struck Glen Allan, Arcola, and Darlove; 20 homes, church, and gin destroyed.
4. Apr. 4	Midnight - 2 a.m.	Winston, Noxabee, and Lowndes	NE	20	200	0	0	4	(d)	Struck 10 miles southeast of Louisville, then 10 miles west of Macon to 10 miles southeast of Columbus, moving over thinly settled farmland.
5. Apr. 4	1-3 a.m.	Simpson, Smith, Jasper, Newton, and Lauderdale	NE	40	175	1	75	5	(d)	Began near Sanitorium, moved 40 miles to Ted and Warren Hill. Heaviest damage and casualties at Sanitarium, remainder at Ted.
6. Apr. 8	3:10 a.m.	Lee	NE	10	200	0	0	5	(d)	Old Union to Verona; 1 home destroyed; experiment station heavily damaged.
7. Apr. 8	8 a.m.	Calhoun	NE	(b)	100	0	0	3	1	Funnel observed; 2 homes destroyed. 6 miles north of Bruce.
8. May 2	8:30 a.m.	Pearl River	(a)	(a)	(a)	0	0	1	2	Funnel observed in pecan grove in Plainview community.
9. May 2	7 p.m.	Forrest	(a)	(a)	(a)	0	0	2	2	Funnel observed at Hattiesburg, dipping down and uprooting trees and destroying TV antennas.
10. June 27	8:30 p.m.	Neshoba	NE	4	50	0	9	4	3	At Philadelphia, 3 homes destroyed and 5 damaged. Spawned by hurricane Audrey.
11. June 27	10:10 p.m.	Chickasaw	(a)	(a)	(a)	0	0	3	(d)	4 miles north of Houston, trees uprooted and some damage to roofs.
12. June 28	12:32 a.m.	Noxubee	NE	10	50	1	10	5	4	Spawned by hurricane Audrey. Touched down 2 miles southwest, then in town of Brooksville; 4 houses and cheese plant demolished; corn blown down, other crops damaged.
13. June 28	6:30 a.m.	Wayne	NE	10	50	0	0	5	3	Spawned by hurricane Audrey. Several buildings destroyed and school damaged in town of Clara.
14. July 24	6 p.m.	Harrison	SE	(a)	(a)	0	0	1	1	Waterspout observed over Mississippi Sound about 12 miles south of Biloxi.
15. Aug. 10	5:23 p.m.	Harrison	(a)	(b)	(c)	0	0	(d)	1	Touched ground briefly 15 miles north-northeast of Waveland.
16. Oct. 15-16	11:45 p.m.- 12:15 a.m.	Warren	NNE	20	50-100	0	0	4	(d)	Moved from 10 miles southeast to 10 miles northeast of Vicksburg.
17. Nov. 7	10-10:30 p.m.	Holmes, Carroll, and Grenada	NE	20	300	2	1	5	3	Moved from 3 miles south of Cruger to 10 miles east of Greenwood; 23 buildings and radio tower destroyed.
18. Nov. 7	11:05 p.m.	Claiborne	NE	3	100	0	0	5	(d)	Struck Alcorn A & M College, causing heavy damage.
19. Nov. 7	11:30 p.m.	Winston	(a)	(a)	(a)	0	0	4	1	2 buildings destroyed, 7 damaged.
20. Nov. 8	1:30-3 a.m.	Neshoba, Kemper, and Noxubee	NNE	30	200	0	3	5	1	Through Bond, 10 miles southeast of Philadelphia, Preston, and Gholson. 24 buildings destroyed and 31 damaged.
*21. Nov. 17	12:15-12:40 p.m.	Noxubee and Lowndes	NNE	15	70	2	2	5	(d)	5 miles west of Macon to Brooksville and Deerbrook; 11 buildings destroyed and 12 damaged. Moved into Alabama.

See reference notes at end of table.

TORNADO DATA

YEAR 1957

State and date	Hour	County	Direction of advance	Length of path miles	Width of path yards	Number of persons: Killed	Number of persons: Injured	Estimated damage by categories †: Property exclusive of crops	Estimated damage by categories †: Crops	Remarks
MINNESOTA (Cont'd)										
22. Nov. 17	1:30 p.m.	Montgomery	E	8	100	0	0	4	1	Kilmichael to Stewart; 3 buildings destroyed and 6 damaged
23. Nov. 18	10:30 a.m.	Claiborne	E	(a)	(a)	0	0	3	1	Mostly in wooded area.
24. Nov. 18	12:10 p.m.	Prentiss and Tishomingo	NE	10	50	0	2	5	1	Moved from Cairo to Tishomingo; 12 buildings destroyed and 21 damaged.
25. Nov. 18	1:30 p.m.	Jones	NE	5	50	0	2	4	1	Sharon to near Sandersville; 9 buildings destroyed and 19 damaged
26. Nov. 18	2:30 p.m.	Clarke	ENE	10	75	0	0	4	1	At Hale, De Soto, and Linden, 14 buildings destroyed and 27 damaged.
27. Nov. 18	3-4 p.m.	Walthall, Marion, and Jefferson Davis	NE	25	75	0	2	5	1	Heaviest damage and casualties in Walthall; 17 buildings destroyed and 95 damaged
MISSOURI										
1. Jan. 22	11:40 a.m.	Dunklin	NE	1	100	0	1	4	1	Major damage to 19 homes, minor damage to 100 homes at Kennett.
2. Apr. 3	12-12:10 p.m.	Dunklin	NE	1	100	0	0	3	1	Damage to cotton gin and buildings at Caruth.
3. Apr. 3	1:30-1:35 p.m.	Mississippi	E	(a)	(c)	0	0	3	1	Damage to farm buildings 3 miles north of East Prairie.
4. Apr. 25	1:25-1:30 a.m.	Madison	NE	1/2	500	0	0	4	1	Damage to buildings in residential area of Fredricktown. Observer heard loud "screeching" sound.
5. May 9	3:30-4:15 p.m.	St. Louis	NE-N	9	100-150	0	0	3	3	First reported point of contact was on grounds of a seminary at point about 3 miles from WBAS Lambert Field. At this spot a number of trees broken in wooded area close to point of contact. 2 farms damaged and roof of school blown off and windows broken near Florissant
6. May 13	2:15-3:15 p.m.	Howell and Oregon	NE	(a)	(a)	0	0	3	1	In Howell County, tornado at 3 p.m., hit 5-1/2 miles south of West Plains, damaging several farm buildings. Another hit in White Church community south of Mountain View, Oregon County; another 1 mile east of Couch, and another between [illegible] and Billmore.
7. May 13	Ditto	Ditto	NE	(a)	(a)					
8. May 13	Ditto	Ditto	NE	(a)	(a)					
9. May 13	Ditto	Ditto	NE	(a)	(a)					
*10. May 20	7:37-8:30 p.m.	Jackson and Ray	NE	15	200-300	37	500	6	(a)	Tornado first spotted at 6:15 p.m. near Williamsburg, Kans. It crossed Kansas-Missouri border just north of southwestern corner of Jackson County at 7:37 p.m. It then hit Martin City, Ruskin Heights, and near Knobtown. Some indications tornado lifted near Knobtown, then either came back down or another funnel formed near Sibley, then moved into Ray County across river. Considerable damage to property at Richmond about 8:30 p.m. Debris from Hickman Mills found at Ottumwa, Iowa, and at many points in central Missouri.
11. May 20	Late afternoon	De Kalb	(a)	8	200	0	0	(e)	1	Damage to buildings on 8 farms in Maysville area.
12. May 20	8:45-9 p.m.	Ray	NE	(a)	(a)	0	0	(a)	(a)	Witnesses heard "freight train roar." 40-acre field at Hardin littered with debris from Grandview-Ruskin Heights storm.
13. May 21	3 p.m.	Dent	NE	12	440-880	0	1	4	1	Storm first struck on Highway 19 north of Standing Rock. Next damage 2 miles east of Doss, where home destroyed. Storm moved on to near junction of Highways 32 and 72, hitting several farm buildings and houses along way. Child hurt by flying glass.
14. May 21	3:15-3:27 p.m.	Taney and Douglas	NE	11	500-1,000	0	0	5	3	Tornado apparently first hit in northeastern corner of Taney County near Brown Branch, passed near Squires

See reference notes at end of table.

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						Killed	Injured	Property (exclusive of crops)	Crops	
MISSOURI (Cont'd)										and lifted 2-1/2 miles northeast of Girdner.
15. May 21	3:45-4:15 p.m.	Reynolds to St. Francois	ENE	8	300-400	8	50	7	(a)	Tornado apparently hit in vicinity of Centerville, Reynolds County, damaging several buildings, came down again in vicinity of Belgrade, Washington County, where 20 buildings destroyed and several damaged. It then moved due east along Highway 8, destroying 1 house at Leadwood. Full impact of storm hit Desloge and Cantwell, St. Francois County, where several buildings and homes demolished. Storm hit again in vicinity of Fairview and French Village.
16. May 21	3:53-4:10 p.m.	Carter	ENE	(a)	400-500	7	50-75	(a)	(a)	Tornado hit Fremont just before 4 p.m., then moved to Van Buren. Fremont left devastated, with only 7 homes intact. In Van Buren, damage severe, but not as complete as in Fremont.
17. May 21	5-5:30 p.m.	Cape Girardeau	NE	5	500	0	0	4	1	Tornado began north of Highway 34, west of Jackson in Byrds Creek area, moved about 5 miles, making numerous "dips."
18. May 21	5:30 p.m.	Cape Girardeau	NE	3	440	0	0	4	(a)	House and barns in Millersville and Bufordville demolished in storm path. Trees uprooted.
19. May 21	5:30-5:31 p.m.	Lewis	NE	(a)	440	0	2	5	1	Storm hit 6 miles southwest of Monticello, damaging barn, then hit northwestern section of Monticello, then skipped to about 6 miles northeast where it destroyed buildings in Benjamin.
20. May 21	11:45 p.m.	Dunklin	NE	(a)	(a)	0	0	(a)	1	Tornado damage reported in eastern edge of Kennett, southwest of Arbyd, and in Gobler-Deering area.
21. May 22	2:30 p.m.	Washington	NE	100	8	0	0	(e)	1	7 barns and 5 houses damaged in Caledonia.
22. May 22	11:55 p.m.	Mississippi	NE	3-4	100-150	0	0	(e)	1	Suspected tornado. 25 houses and barns badly damaged in southeastern tip of Mississippi County. 8-room house lifted off its foundation, leaving 19 members of family inside unhurt.
23. June 7	4 p.m.	Andrew	NE	(a)	400	0	0	2	1	Funnel touched ground briefly at Fillmore, damaging farm building.
24. June 7	8-8:30 p.m	Clinton	NE	(a)	(a)	0	0	(d)	1	Funnel touched ground briefly in pasture near Gower.
25. June 12	1:15 p.m.	Douglas	(a)	(a)	(a)	0	0	(e)	1	Roaring noise heard, but no funnel seen. Possibly touched ground briefly. Farm building damaged near Ava.
26. June 14	4-4:15 a.m.	Livingston	NE	(a)	300	0	0	(e)	(e)	Buildings on several farms damaged and oats flattened in fields 2 miles northwest of Chillicothe.
27. June 14	9 a.m.	St. Charles	(a)	(a)	(a)	0	0	(e)	1	Funnel touched ground 1 mile north of Boschertown, damaging buildings on 1 farm.
28. June 15	6 p.m.	Shelby	(a)	(a)	(a)	0	0	(e)	1	Funnel-shaped cloud seen approaching farm near Lakenan. Debris blown in air. Several farm buildings destroyed.
29. June 22	Midnight-12:30 a.m	Clay and Jackson	NE	10-15	100	0	0	5	1	Many powerlines, telephone lines, trees, and homes damaged in Kansas City, and farm buildings in rural areas damaged.
30. Dec. 18	12:30 p.m.	Lincoln	NE	1/4	100	0	1	4	1	Occurred at Truxton.
31. Dec. 18	12:58-3:24 p.m.	St. Francois	NE	(a)	100	0	0	(a)	(a)	Occurred 2 to 3 miles east of Farmington.

See reference notes at end of table.

TORNADO DATA

YEAR 1957

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						Killed	Injured	Property (exclusive of crops)	Crops	
MISSOURI (Cont'd)										
32. Dec. 18	2 p.m.	Madison	(a)	(a)	(a)	0	2	4	1	Demolished buildings on farm 15 miles north of Fredericktown. Storm moved toward Libertyville.
33. Dec. 18	3-3:20 p.m.	Perry	(a)	(a)	(a)	0	0	5	1	15 to 20 buildings damaged, school lifted off foundation.
34. Dec. 18	4:45-4:55 p.m.	Cape Girardeau	NE	15	750	0	0	5	1	Moved from Millersville to Oak Ridge to Highway 61.
35. Dec. 18	5:35 p.m.	Scott	(a)	(a)	(a)	3	1	6	1	Storm hit in downtown Chaffee, damaging many business houses and a shoe factory.
36. Dec. 19	4:10-4:15 p.m.	Dade	NE	15	100	0	0	4	(a)	Funnel first touched ground 2-1 2 miles south and 1 mile east of Golden City, damaging several farm buildings. Lifted and dipped several times on path. Buildings on 5 farms in Golden City damaged. Witnesses report seeing several funnels.
MONTANA										
1. July 7	Afternoon	Judith Basin	(a)	(a)	(a)	0	1	2	1	Small tornado destroyed machine shed 3 miles east of Utica.
NEBRASKA										
1. Apr. 18	4:45 p.m.	Sheridan	(a)	8-10	880	0	0	5	1	Occurred 28 miles south of Clinton. Funnel observed.
2. Apr. 18	Late evening	Box Butte	(a)	(b)	(c)	0	0	3	1	Destroyed 1/2 mile of powerlines over sparsely settled terrain 20 miles northeast of Alliance.
3. Apr. 19	4:30 p.m.	Hitchcock	NE	(b)	50	0	0	(e)	1	Set of farm buildings damaged 6 miles southwest of Culbertson.
4. Apr. 19	7 p.m.	Madison	NE	8	65	0	0	3	1	Moved from 6 miles southwest of Tilden to north of Meadow Grove.
5. Apr. 19	8:30 p.m.	Madison	NE	2	17	0	0	2	1	Occurred 2 to 4 miles southwest of Norfolk. Funnel observed.
6. Apr. 22	11:30 a.m.	Perkins	(a)	(b)	(c)	0	0	4	1	Occurred at Grant.
7. Apr. 22	1:30 p.m.	Hitchcock	(a)	(b)	(c)	0	0	(d)	1	Small granary upset near Palisade. Funnel observed.
8. Apr. 25	6-8:45 p.m.	Seward to Douglas	ENE	80	200-400	1	18	6	(d)	Most damage from near Beaver Crossing to south of Omaha. Most damage at Milford.
9. Apr. 25	6:40-7:35 p.m.	Clay and Fillmore	ENE	35	100-220	0	0	5	(d)	Destroyed several sets of farm buildings from near Edgar to east of Exeter.
10. May 9	3:30-3:45 p.m.	Otoe	NE	10	100	0	0	4	1	Several sets of farm buildings damaged in path from Burr to Syracuse.
11. May 13	1:45 p.m.	Red Willow	NE	(b)	(c)	0	0	1	1	Touched ground only in open field 5 miles southwest of Lebanon.
12. May 13	6:45 p.m.	Sarpy	E	2	(c)	0	0	3	1	Occurred south of Papillion.
13. May 13	7 p.m.	Douglas	(a)	(b)	(c)	0	0	(d)	1	Occurred south of Omaha.
14. May 16	Noon	Sarpy	W	(b)	(c)	0	0	3	1	Occurred southwest of Gretna.
15. May 19	6:30 p.m.	Scotts Bluff	NE	(b)	(c)	0	0	1	1	Observed over open range 7 miles east of Minatare.
16. May 19	9 p.m.	Cheyenne	NE	2	(c)	0	0	4	1	Farm buildings destroyed 1 mile west of Gurley.
17. May 19	9:30-10 p.m.	Scotts Bluff	(a)	(b)	(c)	0	0	4	1	Occurred 6-1/2 miles west of Bayard.
18. May 20	1:30 p.m.	Webster	N	(b)	(c)	0	0	(d)	1	Struck little of value northeast of Red Cloud.
19. May 20	2:13-2:20 p.m.	Custer	NE	(b)	(c)	0	0	(d)	1	Struck little of value northeast of Broken Bow.
20. May 20	2:20 p.m.	Nuckolls	NE	(b)	(c)	0	0	1	1	Observed over open field east of Guide Rock.

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TORNADO DATA

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						Killed	Injured	Property (exclusive of crops)	Crops	
NEBRASKA (Cont'd)										
21. May 20	Afternoon	Custer	(a)	(a)	(c)	0	0	3	1	Most of path over sparsely settled country 3-1/2 miles west of Anselmo.
22. May 20	3-5 p.m.	Thayer to Lancaster	NE	70	(c)	0	0	5	(d)	15 sets of farm buildings destroyed or damaged in path south of Hebron to Malcolm.
23. May 20	5 p.m.	Gage	NNE	7	(c)	0	0	4	(d)	Property damaged in area 2 miles west of to 6 miles north of Adams.
24. May 20	5:08 p.m.	Hall and Hamilton	NNE	12	(c)	0	0	4	1	Occurred in area from Doniphan to Phillips.
25. May 24	7:30 p.m.	Perkins	(a)	(b)	(c)	0	0	3	1	Occurred 11 miles west-northwest of Grant.
26. June 6	9:30 p.m.	York	NNE	5	(c)	0	0	3	(d)	Moved from Waco to Gresham.
27. June 10	5 p.m.	Scotts Bluff	(a)	(b)	(c)	0	0	3	1	Occurred 3 miles south of Gering.
28. June 13	6:20 p.m.	Platte	NE	(b)	(c)	0	0	3	(d)	Occurred north and east of Monroe.
29. June 13	6:25 p.m.	Butler	(a)	(b)	(c)	0	0	3	1	Property damaged 9 miles south of David City.
30. June 15	12:15 p.m.	Adams	(a)	(b)	(c)	0	0	2	1	Garage demolished southwest of Hastings.
31. June 15	2 p.m.	Pawnee	E	(b)	(c)	0	0	(e)	(d)	Large barn destroyed 6 miles northeast of Burchard.
32. June 15	8-8:30 p.m.	Seward	NE	15	(c)	0	0	4	1	Moved from Beaver Crossing to Seward.
33. June 15	8:30-9:30 p.m.	Saunders and Douglas	NE	21	(c)	0	0	4	(d)	Moved from Ithaca to Bennington.
34. June 15	Evening	Lancaster	(a)	(b)	(c)	0	0	(e)	1	Large barn demolished 1 mile north of Agnew.
35. June 16	Midnight-2 a.m.	Furnas	ENE	15	(c)	0	0	4	1	A few farm buildings destroyed south and east of Beaver City.
36. June 21	6:15 p.m.	York	ENE	6	(c)	0	0	5	(d)	Buildings on 1 farm destroyed and damaged on 15 other farms from Waco to Utica.
37. June 21	6:30 p.m.	Butler	NE	1	120	0	0	2	1	7 turkey houses destroyed 4 miles west of Bellwood.
38. June 21	6:52 p.m.	Saunders	NE	(b)	(c)	0	0	1	(d)	Observed over open fields north of Valparaiso.
39. June 27	7 p.m.	Nuckolls and Thayer	ENE	10	(c)	0	0	4	(d)	2 sets of farm buildings badly damaged.
40. June 27	7:05 p.m.	Thayer and Fillmore	NE	(b)	(c)	0	0	1	1	Tornado touched ground briefly.
41. July 2	5:15-5:30 p.m.	Frontier	NW	5	880	0	0	4	(e)	Property and ripening wheat destroyed 9 miles southwest of Curtis.
42. July 2	8:30 p.m.	Cuming	(a)	(b)	(c)	0	0	(d)	1	Hog house moved 50 feet, turned around and set down, near Wisner.
43. July 3	8 p.m.	Keith	N	(b)	(c)	0	0	3	(d)	Occurred 6 miles south-southeast of Roscoe.
44. July 3	8:30 p.m.	Custer	NNE	(b)	(c)	0	0	(e)	1	Occurred near Callaway.
45. July 4	5-5:30 p.m.	Frontier	(a)	(b)	33	0	0	4	(e)	Occurred 2 miles east of Maywood.
46. July 7	5:30-7:30 p.m.	Dundy	E	36	(c)	0	1	5	1	Tornado with hailstorm. Property damaged by tornado.
47. July 12	6:38 p.m.	Frontier	(a)	(b)	(c)	0	0	1	1	Struck nothing of value 32 miles northeast of McCook.
48. July 19	1:30 p.m.	Platte	(a)	(b)	(c)	0	0	(d)	(d)	Occurred at Duncan.
49. July 19	5-6 p.m.	Hamilton	N	12	(c)	0	0	4	4	3 funnels touched ground southwest of Aurora.
50. July 19	5-6 p.m.	Hamilton	N	12	(c)					
51. July 19	5-6 p.m.	Hamilton	N	12	(c)					
52. Aug. 15	Night	Madison	(a)	(a)	(a)	0	0	2	1	Property damaged south of Battle Creek.

See reference notes at end of table.

TORNADO DATA

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						Killed	Injured	Property (exclusive of crops)	Crops	
NEBRASKA (Cont'd)										
53. Aug. 16	(a)	Nuckolls	(a)	(b)	(c)	0	0	(d)	(d)	Observed over open field near Superior.
NEVADA (None)										
NEW HAMPSHIRE										
1. May 10	5-6 p.m.	Hillsboro	SE	(a)	(a)	0	0	3	1	Several small, short-lived funnels seen at Milford, 1 dipped much of way to ground.
2. June 19	1:35-1:37 p.m.	Rockingham	E	1/4	75	0	1	4	1	Funnel cloud observed at Newington. Steel screen of drive-in theatre destroyed and 100 speaker posts (set in cement blocks) downed. Boy carried 40 feet not seriously hurt.
3. June 19	2 p.m.	Rockingham	(a)	(a)	(a)	0	0	1	1	Waterspout observed off shore along coast. Apparently developed from some squall that spawned Newington, N.H., tornado about 25 minutes earlier.
NEW JERSEY										
1. Nov. 19	3:03 p.m.	Warren	ENE	[f] 1,300	150	0	0	5	1	Small twister dipped through 2-block area in business district of Borough of Washington, moved aloft, and then struck 1-block area in housing development 1/2 mile away. Severe damage to framework of 1 store, roofs blown off, and many windows out, mainly in business area.
NEW MEXICO										
1. Apr. 21	3 p.m.	Roosevelt	E	1/4	40	0	0	4	2	At Causey, 4 separate funnels reported. General storm moved eastward, but tornado that caused damage moved almost in circle.
2. Apr. 21	3 p.m.	Roosevelt	E	1/4						
3. Apr. 21	3 p.m.	Roosevelt	E	1/4						
4. Apr. 21	3 p.m.	Roosevelt	E	1/4						
5. May 10	6:20 p.m.	San Juan	SE	(a)	(a)	1	0	4	1	Damage in Farmington confined to 1/2 block. Death occurred about 17 miles northwest of city where oil rig blown over.
6. May 24	4 a.m.	Curry	NE	40	35	0	0	5	5	Funnel aloft much of time. Struck ground at intervals between Grier and Hellene, damaging or destroying farm buildings.
7. May 27	5:30 p.m.	Quay	E	(a)	(a)	0	0	1	1	Funnel sighted 12 miles north of Ragland, on ground short time in open country.
8. May 30	12:20 p.m.	Santa Fe	SE	(a)	(a)	0	0	1	1	In open country 20 miles south of Santa Fe.
9. May 30	1:45 p.m.	Torrance	SE	(a)	(a)	0	0	1	1	In open country 7 miles northwest of Corona.
10. May 30	2 p.m.	Lincoln	NW	(a)	(a)	0	0	1	1	In open country 8 miles southeast of Corona.
11. May 30	4:39 p.m.	Lea	ESE	(a)	(a)	0	0	1	1	At Eunice, 3 separate funnels observed at 4:39 p.m., 7 p.m., and 7:30 p.m., all over open country.
12. May 30	7 p.m.	Lea	ESE	(a)	(a)					
13. May 30	7:30 p.m.	Lea	ESE	(a)	(a)					
14. May 31	2:15 p.m.	Valencia	E	(a)	(a)	0	0	1	1	In open country 20 miles south-southwest of Albuquerque.
15. Oct. 12	4 a.m.	Grant	ENE	8	50	0	0	5	1	Major damage at Silver City Airport.
16. Oct. 19	3:30 p.m.	Sandoval	(a)	(a)	(a)	0	0	1	1	8 miles northwest of Corrales over open country. On ground only short time.
17. Oct. 20	1:30 p.m.	Sandoval	(a)	(a)	(a)	0	0	1	1	20 miles south of Cabezon over open country. On ground only about 5 minutes.

See reference notes at end of table.

TORNADO DATA

YEAR 1957

State and date	Hour	County	Direction of advance	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Remarks
						Killed	Injured	Property (exclusive of crops)	Crops	
NEW YORK										
1. Apr. 25	6:15 p.m.	Erie	NE	1/2	15	0	0	3	1	2 funnel clouds oberved, 1 hit ground in Cheektowaga and South Newstead areas.
NORTH CAROLINA										
1. Jan. 29	5:15 p.m.	Iredell	E	[f]1,000	150	0	0	3	1	Statesville Airport hangar damaged, trees up to 10 inches in diameter broken off.
2. Apr. 5	4:30 p.m.	Camden and Pasquotank	ENE	6	35	0	0	4	1	Crossed lower Pasquotank and Camden Counties. 1 farmhouse unroofed and several buildings demolished.
3. Apr. 5	6:10 p.m.	Yadkin	E	5	50	0	0	4	1	Path from western part of county to western edge of Yadkinville, blowing down trees, breaking power- and telephone lines, and demolishing a number of outbuildings.
4. Apr. 5	8:35 p.m.	Guilford	ENE	5	50	0	1	5	1	Destroyed or damaged about 12 houses, numerous outbuildings, trees, antennas, roofs, and chimneys in High Point area.
*5. Apr. 8	7:30-9 p.m.	Bladen, Cumberland, Duplin, Hoke, Robeson, Sampson, and Scotland	ENE	100	25-300	4	114	6	4	Group of 3 tornadoes. First crossed from South Carolina into Scotland County near Johns; did considerable damage northeast of Maxton. Touched ground at St. Pauls, moved to near Roseboro where deaths occurred and 40 of the injuries. Second tornado in Pembroke vicinity where 21 persons injured. Third tornado struck with greatest intensity in rural community west of Rosehill.
6. Apr. 8	Ditto	Ditto	ENE							
7. Apr. 8	Ditto	Ditto	ENE							
8. Nov. 8	6:30-7 p.m.	Bertie, Edgecombe, and Wilson	NE	40	100-200	0	5	5	4	Large school and 37 other buildings destroyed and many damaged.
NORTH DAKOTA										
1. Apr. 22	5:20 p.m.	Stark	NW	1/2	800	0	0	3	(d)	10 miles south of Belfield, garage, granary, and barn completely demolished.
2. May 1	5:20 p.m.	Burleigh	E	(a)	(a)	0	0	1	1	8 miles north of Wing, tornado observed to have touched ground 4 times.
3. May 1	5:45 p.m.	Burleigh	E	(a)	(a)	0	0	(a)	(a)	Occurred 10 miles northeast of Wing.
4. June 5	(a)	Ransom	(a)	(a)	(a)	0	0	3	4	House and barn damaged 11 miles southeast of Verona.
5. June 20	6:15 p.m.	Dickey	E	2	30	0	0	4	1	Near Oakes, 2 funnels seen. Airplane and hangar destroyed. Roof of lumber company ripped off. Houses and garages damaged. 25 to 30 trees uprooted.
6. June 20	6:30 p.m.	Cass	S	(a)	(a)	0	0	(a)	(a)	Occurred 10 miles southwest of Fargo.
*7. June 20	6:40 p.m.	Cass	ENE	30	500	10	103	7	1	Tornado first seen 30 miles west of Fargo at Wheatland, than at Casselton. Tornado struck in northwestern Fargo, destroying nearly all property in area of 5 city blocks wide and 20 blocks long. 1,364 homes damaged or completely destroyed. No damage reported west of Fargo, but damage occurred after crossing State line into Minnesota. Many lives saved by Weather Bureau warnings.
8. July 11	3:56 p.m.	Grand Forks	(a)	(a)	(a)	0	0	1	1	2 miles west of Grand Forks, tornado apparently touched ground several times.
9. July 16	4:34 p.m.	Williams	(a)	(a)	(a)	0	0	(a)	(a)	Occurred 15 miles northwest of Williston; funnel seen.
10. July 16	8 p.m.	Burleigh	(a)	(a)	(a)	0	0	3	1	2 miles north of Wing, several small sheds damaged or destroyed.

See reference notes at end of table.

TORNADO DATA

YEAR 1957

State and date	Hour	County	Direction of advance	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Remarks
						Killed	Injured	Property (exclusive of crops)	Crops	
NORTH DAKOTA (Cont'd)										
11. July 16	9:45 p.m.	Griggs	(a)	(a)	(a)	0	0	4	3	Near Walum, house sucked up and dropped with heavy damage. Several barns, garages, and granary destroyed.
12. Aug. 12	8 p.m.	Ransom	SE	1/2	34	0	0	4	2	Destroyed warehouse and several other buildings, and grain bins blown down. Touched southeast corner of Englevale.
13. Aug. 14	7:15 a.m.	Wells	(a)	(a)	(a)	0	0	4	3	7 miles northeast of Fessenden, barn, garage, granary, and brooder house destroyed all on 1 farm.
OHIO										
1. May 14	2:40 p.m.	Wayne	NE	(b)	(c)	0	3	5	(e)	In Wooster area, major damage in business section. Bank building unroofed, 3 persons injured when roof crashed into building.
2. June 11	3:20 p.m.	Champaign	(a)	(a)	(a)	0	0	(a)	(a)	At north Lewisburg, score of trees damaged and 1 residence unroofed.
3. June 11	4:20 p.m.	Knox	ENE	1/2	100	0	0	4	1	At Centerburg, buildings unroofed, trees broken, and structural damage from explosive effect.
4. July 4	6:55 p.m.	Williams	ESE	4	100	0	5	5	(e)	Southeast of Bryan, 2 homes destroyed, 10 others damaged. Buildings, trees, and powerlines damaged at many points along path.
OKLAHOMA										
1. Jan. 21	6:55 p.m.	Muskogee	NE	5	400	0	0	4	1	Suspected tornado destroyed service station, farmstead, and outbuildings in Warner. Loud roar heard.
2. Jan. 22	3:30-4:15 a.m.	Pottawatomie, Seminole, Hughes, Okfuskee, and McIntosh	NE	60	450	0	0	4	1	Tornado skipped along path from St. Louis through Wewoka, Wetumka, and Weleetka to Ryal. Rapid passage of terrible roar reported. Considerable damage resulted along path.
3. Jan. 22	6 a.m.	Haskell and Sequoyah	NE	5	50	10	21	5	1	Suspected tornado struck Hoyt, Haskell County, damaging 9 homes. Complete destruction along narrow path. 8 homes destroyed, 15 damaged, 12 buildings destroyed, and 6 damaged. 37 families suffered losses. Probably same tornado which struck Gans where 8 persons killed and 21 injured.
4. Apr. 2	3:30 p.m.	Jefferson	N	2	(a)	0	0	3	1	Suspected tornado damaged several homesteads 2 miles north of Ringling.
5. Apr. 2	4:50 p.m.	Murray, Garvin, Pontotoc, and Seminole	NNE	60	400	0	1	4	(d)	Tornado formed southeast of Davis, moved on ground 12 miles from 4 miles northwest of Sulphur to south of Stratford. Same tornado believed sighted aloft between Asher and Konawa. At least 18 homes and 10 barns damaged or destroyed. Injury resulted from flying debris.
6. Apr. 2	4:55 p.m.	Murray	NNE	2	600	1	2	5	1	Tornado struck on Highway 77, 15 miles north of Ardmore. Cars and trucks overturned, 340-foot TV tower destroyed, transmitter building unroofed, and utility poles broken off. Man killed when pickup truck blown from highway and destroyed. Transport truck picked up and whirled around.
7. Apr. 2	5:29 p.m.	Marshall	N	5	200	2	6	6	1	Tornado moved from over Lake Texhoma. Destroyed fishing camp at Cumberland then moved through 2 oil refinery camps near Little City. 15 homes destroyed and both refineries severely damaged.

See reference notes at end of table.

TORNADO DATA

State and date	Hour	County	Direction of advance	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Remarks
						Killed	Injured	Property (exclusive of crops)	Crops	
OKLAHOMA (Cont'd)										
8. Apr. 2	5:58 p.m.	Bryan	NNE	7	200	3	3	5	1	In Calera and Durant areas, large drive-in theater and large stock barn destroyed. In southern Durant, 9 blocks received near total destruction and 20 blocks received damage. 135 homes and 25 business buildings destroyed or damaged. 2 persons killed and 3 injured when service station collapsed. All buildings at Southeastern State College damaged, with loss estimated at $100,000. Another person killed at northern edge of town where house was lifted and exploded.
9. Apr. 2	6:30-8 p.m.	Jackson and Kiowa	NE	45	150	0	1	5	4	Tornado moved from 2-1/2 miles east of Altus, 1 mile west of Friendship, to near Roosevelt, and last reported just west of Mountain View. Numerous farmsteads destroyed or damaged near Friendship. Injury resulted when truck demolished.
10. Apr. 2	6:40 p.m.	Pottawatomie	(a)	(a)	(a)	0	0	1	1	Tornado reported on ground 3 miles west of Asher.
11. Apr. 2	7:05 p.m.	Jackson	NNE	8	100	0	0	4	(d)	Tornado formed southwest of Altus Air Force Base, moved over eastern portion of base, then over mostly open and uninhabited area.
12. Apr. 2	7:15 p.m.	Choctaw	NNE	16	(a)	0	0	(e)	(d)	Tornado moved from near Grant to 4 miles east of Hugo to 10 miles northeast of Hugo. Many homes, outbuildings, and utilities damaged or destroyed.
13. Apr. 2	8:37 p.m.	Love	N	(a)	(a)	0	0	1	1	Ground Observer Corps reported tornado at Thackerville.
14. Apr. 2	9 p.m.	Latimer and Haskell	N	25	880	0	2	4	4	Tornado moved from near Bengal to 1/2 mile east of Red Oak to McCurtain. Many homes and outbuildings destroyed or damaged. 2 injuries resulted at McCurtain where 26 homes and 6 barns destroyed or damaged.
15. Apr. 2	9:05 p.m.	Pittsburg	NE	10	440	0	0	4	3	Tornado demolished 2 homes and damaged business buildings, homes, and outbuildings in Haileyville. TV antennas and trees received heavy damage.
16. Apr. 2	9:30 p.m.	McCurtain	NE	9	880	0	0	4	1	Tornado cut path through forest 8 miles northeast of Broken Bow.
17. Apr. 2	9:50 p.m.	Le Flore	(a)	(a)	(a)	0	0	1	1	Tornado reported at Poteau.
18. Apr. 2	10:30 p.m.	Oklahoma	NE	(a)	(a)	0	0	1	1	Tornado touched ground momentarily in wheat field on northern edge of Oklahoma City.
19. Apr. 2	P.m.	Love	(a)	(a)	(a)	0	0	(a)	1	House swept away, indicating possible tornado at Courtney.
20. Apr. 3	12:15 a.m.	Lincoln	NNE	(a)	(a)	0	0	1	1	Ground Observer Corps reported funnel on ground at Davenport.
21. Apr. 18	7:45 p.m.	Woods	NNE	(a)	(a)	0	0	1	1	Observer reported tornado on ground south of Waynoka.
22. Apr. 18	9:30 p.m.	Harmon	NE	1-1/2	200	0	0	4	(d)	Suspected tornado at Hollis sucked out windows, damaged buildings, etc.
23. Apr. 19	1:40 a.m.	Tulsa	NE	(a)	(a)	0	0	3	1	Tornado touched ground on northern edge of Tulsa where home damaged and 20-foot diving tower, TV antennas, and wooden fence destroyed.
24. Apr. 19	1:45 a.m.	Washington	NE	8	400	0	0	4	1	Tornado destroyed several farmsteads in rural area 4 miles south of Ramona.
25. Apr. 19	P.m.	Sequoyah	NE	(a)	(a)	0	0	(e)	1	Suspected tornado destroyed 2 farmsteads near Sallisaw.

See reference notes at end of table.

TORNADO DATA

State and date	Hour	County	Direction of advance	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Remarks
						Killed	Injured	Property (exclusive of crops)	Crops	
OKLAHOMA (Cont'd)										
26. Apr. 20	1:40 a.m.	Ellis	SE	(b)	(c)	0	0	2	1	Tornado dipped down momentarily on farm 3 miles northwest of Arnet.
27. Apr. 20	6:30 p.m.	Stephens	SE	(a)	(a)	0	1	3	1	Tornado touched ground 6 miles west of Duncan. Farmstead damaged. 1 person injured when house trailer blown over.
28. Apr. 22	6 p.m.	Jackson and Greer	NE	(a)	(a)	0	0	(a)	(a)	Suspected tornado caused spotted damage from 6 miles south of Duke, at Fairview, and 9 miles east of Mangum. Outbuildings destroyed and houses twisted on foundations.
29. Apr. 22	7:01 p.m.	Washita	(a)	(a)	(a)	0	0	(a)	1	Barn and shed destroyed as tornado dipped momentarily southwest of Sentinel.
30. Apr. 22	8 p.m.	Alfalfa	NE	(b)	50	0	0	3	1	Suspected tornado damaged 2 farmsteads near Aline.
31. Apr. 22	8 p.m.	Caddo	NE	1	200	0	1	5	1	Tornado moved across Carnegie, causing extensive damage. 1 injury resulted when pickup truck lifted in air and smashed to ground on its top.
32. Apr. 22	8-10 p.m.	Caddo, Blaine, Canadian, Kingfisher, and Logan	NE	80	(a)	0	0	5	5	Suspected tornado caused irregular damage and destruction over parts of 5-county area. Heavy damage between Binger and Eakly, near Lookeba, and north and west of Calumet.
33. Apr. 22	9 p.m.	Kingfisher	NE	4	200	0	0	5	1	Tornado believed to have passed over Kingfisher just above ground. Destruction spotty along path. At least 6 homes in Kingfisher and barn northeast of Kingfisher heavily damaged.
34. Apr. 22	10 p.m.	Kay	ENE	(a)	(a)	0	0	4	1	Tornado believed to have touched ground 3 miles northeast of Ponca City where trailer park and farmstead damaged.
35. Apr. 22	11:04 p.m.	Creek	(a)	(a)	(a)	0	0	1	1	Ground Observer Corps reported tornado on ground at Drumright.
36. Apr. 22	11:30 p.m.	Tulsa	(a)	(a)	(a)	0	0	1	1	Reported near Bixby.
37. Apr. 22	11:40 p.m.	Carter	(a)	(a)	(a)	0	0	(e)	1	Boathouse destroyed on Lake Murray.
38. Apr. 22	P.m.	Lincoln	NE	(a)	800	0	0	(e)	1	Trees and farmsteads damaged 12 miles southwest of Stroud.
39. Apr. 23	1:05 a.m.	Sequoyah	NE	18	(a)	0	0	(e)	1	Suspected tornado blew out plate-glass window in Gore. Farmstead damaged 8 miles north of Vian and 3 buildings heavily damaged at Rocky Point near Marble City.
40. Apr. 25	10 p.m.	Creek	NNE	(a)	(a)	0	0	1	1	Tornado sighted on ground at Kiefer.
41. Apr. 25	10:05 p.m.	Hughes	NE	2	200	0	0	5	1	First sighted 25 miles southwest of Holdenville, next as it passed just above ground over Holdenville. Over 40 homes damaged and two-thirds of business district received heavy damage.
42. Apr. 25	10:35 p.m.	Okfuskee	NNE	9	100	0	0	4	1	Hit and miss damage noted along path 2 miles east of Okemah.
43. Apr. 25	11:12 p.m.	Rogers	NE	(b)	50	0	0	3	1	Suspected tornado damaged 2 farmsteads near Claremore.
44. May 10	2:16 a.m.	Tillman	SE	(a)	(a)	0	0	1	1	Highway Patrol reported tornado momentarily on ground southwest of Frederick.
45. May 12	Night	Caddo	(a)	(a)	(a)	0	0	(d)	1	12 miles south of Carnegie funnel reached down to roof-top level, taking off part of barn roof.
46. May 15	5:10 p.m.	Kingfisher	(a)	(a)	(a)	0	0	1	1	Sheriff reported tornado 6 miles southwest of Dover. Evidently hit in open country.

See reference notes at end of table.

State and date	Hour	County	Direction of advance	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Remarks
						Killed	Injured	Property (exclusive of crops)	Crops	
OKLAHOMA (Cont'd)										
47. May 15	5:30 p.m.	Kingfisher	W	(b)	500	0	0	3	1	Barn destroyed and house damaged near Dover.
48. May 16	12:32 a.m.	Ellis	N	6	200	0	0	3	1	House and machinery damaged, outbuildings destroyed, and car wrecked 7 miles west of Arnett.
49. May 20	5 p.m.	Pawnee	NE	1/2	100	0	0	(d)	1	Small tornado damaged roof of house north of Pawnee.
50. May 20	5:45 p.m.	Osage	NE	(a)	(a)	0	0	4	1	Warehouse destroyed and equipment inside damaged. Iron girders twisted. Occurred at Hominy.
51. May 20	6 p.m.	Lincoln	NE	(a)	(a)	0	0	(e)	(e)	Extensive damage to at least 8 farmsteads near Prague.
52. May 20	7 p.m.	Creek	(a)	(a)	(a)	0	0	(e)	1	Tornado moved south and east of Sapulpa. Outbuildings destroyed and a cow killed.
53. May 20	7 p.m.	Nowata	(a)	(a)	(a)	0	0	(e)	1	500 yards of fence ripped up and oil tank blown into gully 7 miles west of Nowata.
54. May 20	7:30 p.m.	Tulsa	NE	3	500	0	0	5	1	Tornado formed over Broken Arrow and bounced across city. About 200 homes received variable damage. Outbuildings destroyed and cars and trees blown over.
55. May 20	8:04 p.m.	Okmulgee	NE	(a)	(a)	0	0	1	1	Ground Observer Corps reported tornado on ground 3 miles southwest of Beggs.
56. May 20	10:30 p.m.	Rogers	NE	(a)	(a)	0	0	(e)	1	Suspected tornado caused extensive damage to several farmsteads and buildings in and near Chelsea.
57. May 20	11 p.m.	Mayes	NE	(a)	200	0	1	(e)	(d)	Tornado passed aloft over Pryor, struck farmstead 3 miles southwest of Spavinaw, moved through city and struck several farmsteads to northeast. Injury occurred in Spavinaw when house collapsed.
58. May 20	P.m.	Craig	(a)	(a)	(a)	0	0	(e)	1	Suspected tornado caused extensive damage on ranch west of Centralia.
59. May 20	P.m.	Craig	(a)	(a)	(a)	0	0	(e)	(e)	Suspected tornado damaged 3 barns northeast of Vinita.
60. May 22	6 a.m.	Comanche	(a)	(a)	(a)	0	0	1	1	Tornado reported at Chattanooga.
61. May 22	6:15 a.m.	Kiowa, Washita, and Caddo	NE	15	(a)	0	0	4	4	Tornado believed to have passed aloft over Mountain View, sucking out several plate-glass windows. First reported on ground 5 miles northeast of Mountain View. Considerable damage to farmsteads in path. Home nearly destroyed in Eakly.
62. May 22	6:38 a.m.	Kay	E	2	25	0	0	2	1	Tornado traveled through mostly open country. Light damage on 1 farm at Ponca City.
63. May 22	8 a.m.	Oklahoma	NE	2	50	0	0	4	1	All buildings damaged on 1 farm southwest of Luther. Outbuildings, trees, and utilities damaged in Luther.
64. May 22	8 a.m.	Noble	NE	(b)	100	0	0	3	1	Tornado dipped momentarily in Perry, damaging 1-block area.
65. May 22	8:58 a.m.	Payne	NE	(a)	(a)	0	0	(a)	1	Civil Defense reported tornado 6 miles north of Yale.
66. May 22	A.m.	Kiowa	(a)	(a)	(a)	0	0	(e)	1	Farmstead 6 miles west of Mountain Park damaged.
67. May 22	A.m.	Canadian	(a)	(a)	(a)	0	0	3	1	Farmstead damaged 5 miles southeast of Yukon.
68. May 22	A.m.	Lincoln	(a)	(a)	(a)	0	0	(e)	1	Suspected tornado lifted and demolished garage and unroofed barn near Tryon.

See reference notes at end of table.

TORNADO DATA

State and date	Hour	County	Direction of advance	Length of path, miles	Width of path, yards	Number of persons: Killed	Number of persons: Injured	Estimated damage by categories †: Property (exclusive of crops)	Estimated damage by categories †: Crops	Remarks
OKLAHOMA (Cont'd)										
69. May 22	8:30 p.m.	Sequoyah	(a)	(a)	(a)	0	0	1	1	Ground Observer Corps reported 2 tornadoes, 1 and 2 miles south of Muldrow.
70. May 22	8:30 p.m.	Sequoyah	(a)	(a)	(a)					
71. May 24	10:40 a.m.	Bryan	(a)	(a)	(a)	0	0	4	1	Suspected tornado struck boat dock at Willow Springs on Lake Texoma.
72. May 24	4:30 p.m.	Tillman	NNE	12	(a)	0	0	4	(e)	Tornado moved from 3 miles south of Davidson to 3 miles south of Frederick. Several farmsteads damaged and utility lines and poles knocked down.
73. May 24	5:30 p.m.	Cotton and Comanche	NE	22	880	4	5	(e)	(e)	Tornado moved from near Apheatone to south of Lawton. At least 12 homes destroyed and many farmsteads damaged or destroyed. 4 persons killed when 2 homes destroyed. Up to 70 head of cattle and a number of chickens killed. 5 cars completely demolished.
74. May 24	6-7:45 p.m.	Garvin and Pottawatomie	NNE	48	440	0	0	5	(e)	Tornado formed and dipped down southwest of Wynne Wood and destroyed barn, moved over Wynne Wood at treetop level and caused heavy damage to oil refinery. Next hit was Walker School area southeast of Pauls Valley where school, 5 houses, and many outbuildings damaged or destroyed. Tornado then moved mostly aloft through open country until it touched down south of Wanette. Hit Wanette at 7:10 p.m., then turned northward to 6 miles northwest of McComb. Heavy damage to complete destruction noted in and north of Wanette.
75. May 24	8 p.m.	Comanche	(a)	(a)	(a)	0	0	1	1	Tornado sighted in mountains of Wild Life Refuge.
76. May 24	10 p.m.	Ottawa	NE	1	1,000	0	0	4	1	Tornado caused damage in Quapaw and east of Picher.
77. May 24	10:20 p.m.	Stephens	NE	(a)	(a)	0	0	(e)	1	Tornado hit 1-1/2 miles southwest of Duncan, moved through 12-block-long path of city, causing general damage. $5,700 trailer house near total loss.
78. May 24	10:25-11:10 p.m.	Okmulgee and Muskogee	(a)	(a)	(a)	0	0	1	1	Ground Observer Corps at 10:25 p.m., reported tornado near Morris and at Boynton at 11:10 p.m.
79. May 24	11:43 p.m.	Okmulgee	(a)	(a)	(a)	0	0	1	1	Highway Patrol reported tornado 12 miles southeast of Henryetta.
80. May 24	11:45 p.m.	McIntosh	(a)	(a)	(a)	0	0	1	1	Tornado reported 9 miles north of Eufaula.
81. May 24	P.m.	Stephens	(a)	(a)	(a)	0	0	(e)	(e)	Tornado hit in Denton community just west of Marlow where destruction extensive to residences, barns, and outbuildings on several farms. Bus picked up off highway and blown into ditch.
82. May 24	P.m.	McClain	(a)	(a)	(a)	0	0	(e)	(e)	Suspected tornado damaged farmstead southwest of Purcell and another north of city.
83. May 25	12:05 a.m.	Johnston	NE	1	200	0	0	4	1	Roof of new school blown off and homes, outbuildings, and trees damaged at Coleman.
84. May 25	12:10 a.m.	Coal	(a)	(a)	(a)	0	0	(e)	1	Suspected tornado caused damage to farmstead near Lehigh.
85. May 25	12:15 a.m.	Pontotoc and Hughes	NE	12	150	0	0	3	1	Tornado moved from 5 miles southeast of Allen to Atwood. Damage resulted to homes, business buildings, and farms.
86. May 29	8:15 p.m.	Ellis	NE	(a)	(a)	0	0	1	1	Highway Patrol reported tornado 14 miles west of Arnett. Evidently traveled over open country.

See reference notes at end of table.

TORNADO DATA

State and date	Hour	County	Direction of advance	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Remarks
						Killed	Injured	Property (exclusive of crops)	Crops	
OKLAHOMA (Cont'd)										
87. May 29	11:37 p.m.	Kay	N	(a)	(a)	0	0	1	1	Filter Center reported tornado on ground 6 miles west of Ponca City.
88. May 30	4:15 p.m.	Garvin	E	(a)	(a)	0	0	1	1	Ground Observer Corps reported tornado 3 miles east of Elmore City.
89. June 12	12:30 a.m.	Washington	NE	(b)	(c)	0	0	1	1	Tornado dipped down momentarily at Dewey.
90. June 12	4:45 a.m.	Lincoln	NE	6	440	0	0	3	1	Tornado destroyed 20 outbuildings and damaged homes, utilities, etc., in Agra.
91. June 12	4:55 a.m.	Payne	NE	7	(a)	0	0	(e)	1	Tornado damaged several farmsteads 4 miles southwest of Stillwater, lifted and traveled aloft over southern edge of Stillwater, and came down again 3 miles east, damaging several more farmsteads.
92. June 12	7:40 a.m.	Mayes	ENE	(a)	(a)	0	1	4	1	Suspected tornado damaged 2 trailer houses and several farmsteads from Adair to Pensacola. Injury resulted when trailer house blown over.
93. June 12	A.m.	Canadian	(a)	(a)	(a)	0	0	(e)	1	Western half of concrete-block house blown away 6 miles west of Calumet.
94. July 1	2 a.m.	Tulsa	(a)	(a)	(a)	0	0	(e)	1	Tornado dipped down, destroyed revival tent and broke many of the 2,000 chairs at Sand Springs.
95. July 1	2:20 a.m.	Tulsa	NE	(a)	(a)	0	0	4	1	Tornado dipped down to tree-top level and moved across southern edge of Tulsa. Considerable damage resulted in shopping center and surrounding area.
96. July 1	A.m.	Creek	E	(a)	(a)	0	0	1	1	Suspected tornado lifted automobile off highway into ditch 8 miles east of Drumright.
97. July 20	P.m.	Carter	(a)	(a)	(a)	0	0	(e)	1	Possible tornado damaged house and outbuildings at Healdton.
98. Aug. 14	4 p.m.	Sequoyah	NE	5	(a)	0	0	(e)	1	Tornado moved about 20 feet above ground over Hanson, causing damage to homes, buildings, trees, utilities, etc.
99. Aug. 14	5:30 p.m.	Mayes	(a)	(a)	(a)	0	0	(e)	1	Tornado struck farmstead 7 miles southeast of Pryor.
100. Aug. 14	6 p.m.	Delaware	NW	3	880	0	0	3	1	Tornado moved off of Grand Lake and damaged properties near Ketchum.
101. Sept. 14	5:30-8 p.m.	McClain, Cleveland, Pottawatomie, Seminole, and Hughes	ENE	70	800	2	6	5	4	Tornado formed in vicinity of Wayne. First evidence on ground in southern Cleveland County where 3 barns destroyed and crops flattened. Worst hit was 7-mile path near Sacred Heart at 6:55 p.m. 2 persons killed and 6 injured in 3 homes completely destroyed. Extensive heavy damage reported throughout area. Last damage noted at Butner School and in Wetumka.
102. Sept. 14	5:56 p.m.	Pottawatomie	E	5	400	0	3	5	4	Tornado reported to have twin funnels struck Bethel community, 5 miles west of Shawnee. School buildings, 15 to 20 homes, and numerous outbuildings destroyed or damaged. 3 persons severely injured in destroyed homes.
103. Sept. 14	P.m.	Hughes	(a)	(a)	(a)	0	0	1	1	Highway Patrol reported tornado on ground 10 miles east of Wewoka.
104. Sept. 20	5:30 p.m.	Custer	NNE	(a)	(a)	0	0	(e)	(e)	Tornado dipped to ground just west of Clinton.
105. Sept. 20	10 p.m.	Stephens	E	(a)	(a)	0	0	1	1	Funnel aloft sighted west of Marlow, moved aloft over city, and dipped to ground momentarily 2 miles east.
106. Oct. 13	5:20 p.m.	Beaver	(a)	(a)	(a)	0	0	1	1	Ground Observer Corps reported tornado just north of Gate.

See reference notes at end of table.

TORNADO DATA

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OREGON										
1. Apr. 12	Noon	Clackamas	NW	2-3	50	0	0	3	2	Near Clackamas, fir trees 18 to 36 inches in diameter twisted off 30 to 40 feet above ground. Large barn carried considerable distance and a number of farm buildings blown away.
2. Apr. 12	12:30 p.m.	Gilliam and Morrow	E	15-20	100-400	0	0	2	(d)	Moved from southeastern Gilliam County to south-central Morrow County over mostly range land and large wheat fields.
PENNSYLVANIA										
1. Apr. 28	8 p.m.	Lancaster	(a)	(b)	(c)	0	0	4	1	Near Lancaster, tornado dipped to earth momentarily, but leveled large, cinder-block farm building.
2. July 8	11:59 p.m.	Westmoreland	E	(b)	(c)	0	0	4	1	In Rostraver Township, several small buildings destroyed and others considerably damaged.
3. Aug. 7	Afternoon	Lehigh	(a)	f 1,600	5	0	0	3	1	Near Allentown, large carnival tent ripped.
4. Aug. 21	2:30 p.m.	Cumberland	(a)	(b)	(c)	0	0	2	1	Near Harrisburg, small pavilion lifted about 20 feet into air, carried about 30 feet, and completely destroyed as it hit ground.
5. Sept. 15	4 p.m.	Potter	NE	2	30	0	0	4	1	At Germania, numerous windows blown out, barn destroyed, and trees and utility poles sheared off at ground level.
6. Sept. 15	7 p.m.	Snyder	SE	(b)	(c)	0	2	4	1	Struck hangar at Penn Valley Airport near Selinsgrove, injuring 2 men and damaging 4 airplanes.
7. Sept. 21	6 p.m.	Erie	S	1/4	200	0	3	4	1	At Erie, widespread property damage. 3 persons injured by flying glass.
8. Nov. 19	12:20 p.m.	Lebanon	NE	2	14	0	0	4	1	In Palmyra area, barn and garage destroyed, automobile damaged extensively, roofs ripped off, and many TV antennas and utility poles twisted.
9. Nov. 19	12:45 p.m.	Schuylkill	NE	(b)	(c)	0	0	5	1	At Pottsville, windows smashed, billboards leveled, and roof ripped from restaurant. Factory roof blown off, resulting in $5,000 damage.
RHODE ISLAND (none)										
SOUTH CAROLINA										
1. Apr. 5	7:45-8:30 a.m.	Lexington	NNE	25	40	0	1	4	1	Part of squall system which crossed from Georgia, developing tornadoes. Tornado moved from south of Batesburg to near Gilbert to northeastern edge of Lake Murray. 1 home destroyed, several damaged; large recreation hall damaged.
2. Apr. 5	8:14 a.m.	Newberry	NE	3	100	0	0	3	3	Part of squall system from Georgia. Tornado struck town of Prosperity.
3. Apr. 5	8:10 p.m.	Lancaster	NE	1	30	0	0	5	1	Severe damage to school at Lancaster.
4. Apr. 8	4-4:30 p.m.	Union	E	20	(a)	0	2	4	3	From Cross Keys to Santuc, 3 homes destroyed, 57 damaged; 67 other buildings destroyed.
*5. Apr. 8	5:50-7:30 p.m.	Lancaster, Chesterfield, and Marlboro	E	15	(a)	0	16	6	3	Struck near Flat Creek School, with more or less continuous path through Jefferson, north of Cheraw and Wallace and into North Carolina near Johns. 33 homes destroyed, 108 damaged, and 156 other buildings damaged or destroyed.
6. May 22	8:58 a.m.	Charleston	(a)	(a)	(a)	0	0	1	1	Waterspout moved inland near Charleston.
7. June 30	6 p.m.	Marion	NE	(a)	(a)	0	0	3	3	At Gapway community, barn destroyed, another barn damaged, and tobacco in fields damaged.

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SOUTH CAROLINA (Cont'd)										
8. July 6	11 a.m.	Charleston	(a)	(a)	(a)	0	0	1	1	Waterspout observed on Cooper River.
9. July 11	9 p.m.	Beaufort	NW	(a)	(a)	0	0	1	1	Waterspout apparently moved inland near Hiltonhead.
SOUTH DAKOTA										
1. Apr. 18	4:20 p.m.	Beadle	NE	(a)	(a)	0	0	4	(d)	South of Wolsey, 11 grain bins destroyed and 2 house trailers overturned. Funnel indistinct.
2. Apr. 18	10:30 p.m.	Tripp	(a)	(a)	(a)	0	0	3	1	2 farms damaged 10 miles southeast and 7 miles east-southeast of Winner.
3. May 20	3 p.m.	Pennington	(a)	(b)	(c)	0	0	3	1	Barn destroyed near Rockerville.
4. May 25	2:45 p.m.	Codington	(a)	(b)	(c)	0	0	1	1	Occurred near Grover.
5. June 3	Evening	Perkins	SE	(a)	400	0	0	2	1	Telephone poles downed west of Bison.
6. June 8	Night	Harding	(a)	(a)	(a)	0	0	3	1	2 farm buildings demolished 3 miles east of Ludlow.
7. June 9	Afternoon	Bennett	(a)	(b)	(c)	0	0	1	1	Touched ground in pasture.
8. June 9	5:30 p.m.	Faulk	NE	1	(c)	0	0	4	1	Destroyed house and barn near Faulkton
9. June 10	1:40 p.m.	Lake	(a)	(a)	(a)	0	0	1	1	Funnel touched ground.
10. June 12	8:30 p.m.	Brown	SE	(a)	(a)	0	0	1	1	Touched ground only briefly 1 mile north of Aberdeen Airport.
11. June 13	1 p.m.	Marshall	SE	(b)	(c)	0	0	1	1	Touched ground briefly 6 miles southeast of Britton.
12. June 13	3:30 p.m.	Brown	ESE	(b)	(c)	0	0	1	1	2 funnels touched ground briefly.
13. June 13	3:30 p.m.	Brown	ESE	(b)	(c)					
14. June 20	10 p.m.	Faulk and Spink	ENE	(a)	(a)	1	0	4	1	Near Athol, woman fatally injured when house trailer blew over near Rockham; several barns destroyed and other buildings damaged.
15. June 30	5 p.m.	Tripp	SE	(a)	(a)	0	0	4	1	Farm buildings demolished 4 miles west of Winner.
16. July 3	9:25 p.m.	Brule	ESE	(a)	(a)	0	0	5	4	Buildings in and near Kimball damaged.
17. July 14	12:40 p.m.	Pennington	(a)	(b)	(c)	0	0	4	1	Struck in wooded area near Rochford.
18. July 14	7:30 p.m.	Butte	(a)	(b)	(c)	0	1	3	3	Woman bruised by flying debris. Shed and granary destroyed at Vale.
19. Aug. 14	5:20 p.m.	Marshall	SE	(a)	(a)	0	0	1	1	Touched ground twice.
20. Sept. 1	5:30 p.m.	Spink	NE	35	(c)	0	0	1	1	Touched ground in field east of Mellette. Straw could be seen around fringe of funnel.
TENNESSEE										
1. Jan. 22	4:30 p.m.	Davidson	ENE	15	20-100	0	4	6	1	Moved from Belle Meade suburb to Donelson. 1 house and 1 church destroyed, 10 houses heavily damaged and numerous houses with minor damage.
2. Jan. 22	5 p.m.	Wilson	(a)	(a)	(a)	0	0	(d)	1	Suspected tornado at Oakland School. 2 houses and barn deroofed, garage blown away, outbuildings damaged, and timber destroyed.
3. Jan. 22	6:30 p.m.	Rutherford	NE	(a)	10	0	0	(d)	1	Suspected tornado in Bethel community. Barn demolished, roof blown from 1 house, 2 porches and roof damaged on second house.
4. Jan. 22	8:30 p.m.	Warren and Coffee	NE	5	30	0	0	5	1	At New Union, Fredonia, and Verville, 20 to 25 homes, a school, and barn damaged, chicken-coop factory leveled, and several head of livestock crushed.

See reference notes at end of table.

TORNADO DATA

YEAR 1957

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TENNESSEE (Cont'd)										
5. Apr. 1	9:30 a.m.	Madison	(a)	(a)	(a)	0	0	3	1	Near Medon, part of walls felled and roof blown off cement-block farmhouse.
6. Apr. 4	1:10 a.m.	Henderson	(a)	(a)	(a)	0	0	(e)	1	Suspected tornado in Middle Fork community. 2 houses demolished, and 4 houses, several barns, and outbuildings damaged.
7. Apr. 4	1:15-2 a.m.	McNairy	NE	8	50	0	11	5	1	6 miles south of East View community, 9 houses, 9 farm buildings, and 4 other buildings including cotton gin, service station, and grocery store destroyed; 13 houses and 5 farm buildings damaged.
8. Apr. 8	6 a.m.	Cumberland	E	3	(a)	0	0	3	1	Suspected tornado near Isoline. 3 barns, 5 houses, and many outbuildings damaged and many trees uprooted.
9. Apr. 8	P.m.	Washington	(a)	(a)	(a)	0	0	3	1	Near Leesburg, roof blown from grain storage house, barn moved about 3 feet off foundation, house damaged by flying debris.
10. June 27	P.m.	Dyer	NW	3	30	0	0	3	1	Near Dyersburg, sawmill, barn, and several small outbuildings destroyed. Funnel seen.
11. July 4	10:30-10:45 p.m.	Weakley	E	2	1,320	0	0	4	1	At Martin, 2 paths of damage about 1/4 mile apart across city. Carnival ferris wheel felled, storehouse demolished, much roof and tree damage. Funnel observed.
12. Nov. 8	2-4 a.m.	Giles	NE	4	100	0	0	3	1	In Pulaski and vicinity, barn and garage destroyed, wall blown from 1 house and roof and porch from another; much damage to roofs and TV antennas.
13. Nov. 18	4 a.m.	Montgomery	(a)	(a)	(a)	0	0	3	1	In Needmore community, 4-room house wrecked, porch blown off second house, many trees and utility poles sheared off or downed.
14. Nov. 18	4:30-4:35 p.m.	Fentress	NE	15	220	0	2	4	1	At Shirley, Armathwaite, and Mt. Helen, 2 barns demolished, 2 houses unroofed, another partly blown away, 2 broiler houses demolished, and building blown 20 feet from foundation.
15. Dec. 19	9:15 p.m.	Gibson	(a)	(a)	(a)	0	0	(e)	1	Suspected tornado at Humbolt. Warehouse demolished, most of hotel roof and part of city hall roof blown off, cotton gin severely damaged, and damage to several other buildings.
16. Dec. 19	9:20 p.m.	Gibson	(a)	(a)	(a)	0	2	4	1	Suspected tornado at Milan. Concrete-block garage destroyed, several other buildings damaged. Possible continuation of Humbolt storm.
17. Dec. 19	P.m.	Gibson	(a)	(a)	(a)	0	0	(e)	1	Suspected tornado in Sitka community, 4 miles north of Milan. 4 tenant farmhouses wrecked. Possible continuation of Humbolt-Milan storm.
TEXAS										
1. Feb. 16	1:30 p.m.	Cameron	NW	1-1/2	200	0	0	2	1	Small column extended from ground to cloud base, had appearance of very strong dust devil. 3 service poles damaged and 1 demolished 5 miles west of Harlingen.
2. Mar. 11	9 p.m.	Karnes	(a)	(a)	(a)	0	0	1	1	Hit in open country west of Zunkerville.
3. Mar. 17	1:30-5 p.m.	Galveston	(a)	(a)	(a)	1	7	(a)	(a)	Small twisters imbedded in thunderstorm activity. At Arcadia at 1:30 and 2 p.m.; Texas City about 1:55 p.m.; San Leon about 3 p.m.; Boyd Ranch, Crystal Beach, and Gilchrist areas between 4:30 and 5 p.m.

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TEXAS (Cont'd)										
4. Mar. 17	1:30-5 p.m.	Galveston	(a)	(a)	(a)					
5. Mar. 17	1:30-5 p.m.	Galveston	(a)	(a)	(a)					
6. Mar. 17	1:30-5 p.m.	Galveston	(a)	(a)	(a)					
7. Mar. 17	1:30-5 p.m.	Galveston	(a)	(a)	(a)					
8. Mar. 17	1:30-5 p.m.	Galveston	(a)	(a)	(a)					
9. Mar. 17	3:18 p.m.	Brazoria	E	5	400	0	0	5	3	Occurred at Alvin.
10. Mar. 17	5:50 p.m.	Jefferson	NNW	[f] 300	100	0	0	3	1	4 miles east of Jefferson County Airport, 1 house deroofed and 2 garages damaged. 1 lifted and turned 60° cyclonically.
11. Mar. 20	7:10 p.m.	Lee	NE	14	(a)	0	2	4	1	In Lincoln, Loebau, and Mahaw communities, church destroyed and roofs damaged.
12. Mar. 20	7:45 p.m.	Lee	NE	15	300	0	2	4	2	Occurred 5 miles south of Dime Box.
13. Mar. 20	7:45 p.m.	Lee	NE	10	(a)	0	0	5	1	Destroyed homes and outhouses and damaged roofs, windows, etc., at Giddings.
14. Mar. 20	Evening	Kendall	(a)	(a)	(a)	0	0	3	(a)	Unroofed 100-foot chickenhouse, twisted windmill, caved in sidewall of rock dwelling at Sisterdale.
15. Mar. 31	7:55-8 a.m.	Kendall	NE	15	880	0	0	3	1	Trees uprooted, roofs torn off barns and sheds, TV antennas and phone lines damaged 2 miles northwest of Boerne.
16. Mar. 31	9:05 a.m.	Travis	NNE	1/2	100	0	0	5	1	Over small area, extensive roof damage and broken windows on northern edge of Austin.
17. Mar. 31	10:30 a.m.	Travis	NNE	(a)	(a)	0	0	4	1	Tore 40-foot wide gap in wall of all-brick school and downed trees and antennas at Pflugerville.
18. Mar. 31	12:30 p.m.	Walker	NE	2	100	0	2	4	(a)	Occurred at Huntsville and in portions of Walker County.
19. Mar. 31	1:30 p.m.	Matagorda	E	1-1/2	30	0	0	3	(a)	Medium-size trees broken off 2 or 3 feet above ground and roofs blown off at Blessing.
20. Mar. 31	4:10 p.m.	Brazos	ENE	1	200	0	0	3	1	Minor surface damage as funnel touched ground intermittently in Bryan area and eastward. Funnel ill-defined.
21. Mar. 31	9:15 p.m.	Travis	(a)	(a)	(a)	0	0	2	1	Windmill, chickenhouse, and sheds damaged at McNeil.
22. Mar. 31	(a)	Harris	(a)	(a)	(a)	0	0	4	1	Damaged at least 3 houses and knocked down 295-foot radio tower at Baytown.
23. Apr. 2	Midafternoon	Grayson	NW	(a)	(a)	0	2	4	(a)	2 houses blown down and 1 damaged, 2 barns destroyed and garages damaged 3 miles north of Van Alstyne.
24. Apr. 2	3:25 p.m.	Montague	NE	2	30	0	1	4	1	At Hines City, 9 miles north of Nocoma, 1 house and 1 business establishment blown away, church destroyed, 3 houses, warehouse, and garage of oil company damaged.
25. Apr. 2	3:50 p.m.	Tarrant	N	1/4	50-65	0	0	3	1	Occurred 3 miles northeast of Grapevine.
26. Apr. 2	4 p.m.	Grayson	NNE	(a)	(a)	0	0	4	1	8 miles west of Denison, 2 homes destroyed, 1 damaged, and several barns damaged.
27. Apr. 2	4:20 p.m.	Collin and Grayson	NE	15	35	0	4	5	1	Barn shattered, contents scattered over 3-mile area. 2 homes destroyed, a number of homes, 1 church, and other buildings damaged, 1 warehouse blown away, trees mowed down, and hundreds of chickens killed. Occurred in Melissa, Anna, Howe, and McKinney areas.

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TEXAS (Cont'd)										
28. Apr. 2	4:30-5:10 p.m.	Dallas	N	21	100	10	200	6	1	Struck western portion of Dallas. Moved at about 25 m.p.h., from southwest outskirts of city to just west of Love Field Airport, northwest of Dallas, accompanied by heavy obscuring rain, loud roaring noise. Structures exploded when struck, debris carried aloft several hundred feet before falling. Estimated some 574 buildings damaged or destroyed, electricity knocked out in 75,000 homes, and 4,000 phones out.
29. Apr. 2	6:05 p.m.	Wheeler	SE	1/4	50-65	0	0	4	(a)	Farmhouse demolished, farm buildings destroyed, and livestock killed 1-1/2 miles north of Wheeler.
30. Apr. 2	6:15-6:40 p.m.	Wise	NNE	(a)	(a)	0	2	5	(a)	Damaged 11 houses, business establishments, and National Guard canteen. House lifted from foundation and slammed down on school. Roof of masonry building torn off. Occurred in Newark, Dido, and Boyd areas.
31. Apr. 2	6:30 p.m.	Denton	N	10-15	75	0	0	4	1	In Stony-Plainview area, dipped 3 times, damaged 2 barns and outhouses and removed part of house roof.
32. Apr. 2	6:30 p.m.	Lamar	(a)	(a)	(a)	0	0	4	(a)	In K-Bar Ranch area, 1 house destroyed, house and outbuildings badly damaged, also store and farm equipment.
33. Apr. 2	6:30 p.m.	Lamar	(a)	(a)	(a)	0	0	4	1	2 houses shattered at Ambia, 10 miles southwest of Paris.
34. Apr. 2	(a)	Cooke and Denton	(a)	(a)	(a)	0	0	(d)	1	Tornado observed.
35. Apr. 2	(a)	Delta	(a)	(a)	(a)	1	2	4	1	At Ben Franklin, 6 houses leveled and many damaged.
36. Apr. 3	10:28 a.m.	Harrison	(a)	(a)	(a)	0	0	1	1	Touched ground briefly 4 miles north of Marshall.
37. Apr. 3	10:30 a.m.	Denton	N	(a)	(a)	0	0	1	1	Struck in open field 10 to 12 miles east of Denton.
38. Apr. 3	11:30 a.m.	Harrison	(a)	(a)	(a)	0	0	3	1	Damaged house roof, wrecked shed, uprooted trees, damaged 2 outbuildings, and tore off garage roof 4 miles north of Marshall.
39. Apr. 3	Late a.m.	Morris	(a)	(a)	(a)	0	0	2	1	6 small farm buildings damaged and 1 building destroyed 6 miles south of Daingerfield.
40. Apr. 3	12:45 p.m.	Orange	(a)	(a)	(a)	0	0	2	1	Ripped 50x40-foot section of roof off school 6 miles north of Orange.
41. Apr. 3	1:30 p.m.	Shelby	(a)	2	(a)	0	0	3	1	1 house, 2 barns destroyed, and many outbuildings damaged at Hurston, 13 miles southeast of Center.
42. Apr. 3	(a)	Tarrant	(a)	(a)	(a)	0	0	1	1	No damage reported.
43. Apr. 3	(a)	Dallas	(a)	(a)	(a)	0	0	2	1	Damaged home south of Duncanville.
44. Apr. 3	(a)	Kaufman	E	(a)	(a)	0	0	(a)	(a)	Occurred between Forney and Terrell.
45. Apr. 18	4:20 p.m.	Grayson	NE	10	20	0	0	3	(a)	Moved house from foundation, demolished or damaged chickenhouses, barns, TV antennas, windmill, house, garage, and roofs. Knocked out powerlines, hit boat docks on lake. Residents in area said several funnels dipped to ground, cavorted about area for about 10 minutes. Hit 2 communities, Southmayd and Pottsboro.
46. Apr. 19	4 a.m.	Johnson	E	1/8	25	0	0	2	1	Carport and chicken coop destroyed, fence posts and fencing downed 2 miles east of Rio Vista.

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TEXAS (Cont'd)										
47. Apr. 19	5:30 a.m.	Eastland	E	1/4	300	0	0	3	1	Unroofed business buildings and homes, demolished or damaged small barns and garages, and smashed windows and TV antennas at Eastland.
48. Apr. 19	8:30 p.m.	Hill	(a)	(b)	(c)	0	0	(d)	1	Touched ground at Covington.
49. Apr. 19	11:15 p.m.	Henderson	NE	(a)	200	0	0	3	1	Damaged home, church, orchards, and outbuildings and tore up trees in Athens area.
50. Apr. 19	Midnight	Wood	(a)	(a)	(a)	0	0	3	1	Damaged home, store, and trees 3 miles south of Mineola.
51. Apr. 20	12:20 a.m.	Dallas and Ellis	NW	(a)	(a)	0	0	1	1	Touched ground northwest of Dallas, having been sighted near Midlothian and veering to northwest of Irving.
52. Apr. 20	10:30 a.m.	Terry	NE	15	300	0	0	3	1	2 miles southwest of Brownfield, damage to phone lines and poles torn up.
53. Apr. 20	12:15 p.m.	Cottle	NNE	f 500	100	0	0	3	1	Destroyed farm residence and outbuildings 4 miles south of Delwin.
54. Apr. 21	5:44-7:25 p.m.	Lamb and Hockley	NNW	26	500-1,000	0	7	6	3	3 funnels converged into 1, causing savage destruction between Levelland and Amherst. Path from a point 5-1/2 miles east of Levelland to point 1-1/2 miles east of Amherst, Lamb County, including Littlefield area. Property destroyed, mostly farm dwellings and equipment; 1 cage layer house with 2,400 hens destroyed; 1 cotton gin destroyed. Damage to automobiles high.
55. Apr. 21	6-6:30 p.m.	Gaines	NE	1	300	0	0	3	1	Smashed 2 small sheds 15 miles west of Seminole.
56. Apr. 21-22	6 p.m.	Lubbock	NW	75	(a)	0	29			4 funnels touched ground. Moved from Slaton to Lubbock on ground, lifted and dipped at Shallowater and moved to southeast of Olton. Damage included in Lamb and Hockley Counties' tornado.
57. Apr. 21-22	6 p.m.	Lubbock	NW	75	(a)					
58. Apr. 21-22	6 p.m.	Lubbock	NW	75	(a)					
59. Apr. 21-22	6 p.m.	Lubbock	NW	75	(a)					
60. Apr. 22	2:25 a.m.	Travis	E	(a)	(a)	0	0	2	1	Roofs damaged on 3 houses and windows broken in Volente community.
61. Apr. 22	7:25 a.m.	Cherokee	NE	1/2	25	0	0	3	1	Hit downtown Jacksonville. Much broken glass. Showroom, new car, and a roof damaged.
62. Apr. 22	12:15 p.m.	Gaines	(a)	(a)	(a)	0	0	1	1	Occurred between Seminole and Higginbotham.
63. Apr. 22	2:40-3 p.m.	Hall	NE	8	200	0	0	4	1	4 houses demolished near Lesley.
64. Apr. 22	3:30 p.m.	Ector	NE	(a)	(c)	0	0	1	1	Dipped to ground, pulled right up again at Odessa.
65. Apr. 22	4:20 p.m.	Briscoe	NE	1/2	50	0	0	3	1	Destroyed chickenhouses, damaged garage roof and scattered feed stacks 7-1/2 miles southeast of Quitaque.
66. Apr. 22	(a)	Floyd	NE	5-8	10	0	0	1	1	Across pasture and fields west of Lockney.
67. Apr. 22	(a)	Panola	SE	(a)	(a)	0	0	2	1	Destroyed barn and damaged another building 4 miles south of Carthage.
68. Apr. 24	2 p.m.	Travis	NE	(a)	(a)	0	0	1	1	Reported by pilot to have hit ground near Webberville.
69. Apr. 24	2:20 p.m.	Bastrop	NE	13	800	0	2	5	(a)	4 houses destroyed, 3 badly damaged, 2 brooder houses, 2 barns, and trailer house destroyed, and 2 cars damaged from 5 miles south to 8 miles northeast of Elgin.
70. Apr. 24	3:45 p.m.	Navarro	NE	5	100	0	0	3	1	Razed 2 houses, barn, and outbuilding, and unroofed home in Shiloh community, southeast of Dawson.

See reference notes at end of table.

TORNADO DATA

YEAR 1957

State and date	Hour	County	Direction of advance	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Remarks
						Killed	Injured	Property (exclusive of crops)	Crops	
TEXAS (Cont'd)										
71. Apr. 24	(a)	Grayson	(a)	(a)	(a)	0	0	1	1	Touched ground at Pottsboro.
72. Apr. 24	(a)	Bell	(a)	(a)	(a)	0	0	3	1	Tore up barns and outhouses, moved houses from foundations, and damaged commercial buildings in Oscar, Seaton, and Zabciville areas.
73. Apr. 24	(a)	Freestone	(a)	(a)	(a)	0	0	2	1	Uprooted trees and damaged property on 1 farm and barn on another 7 miles northwest of Fairfield.
74. Apr. 24	(a)	Freestone	(a)	(a)	(a)	0	0	1	1	Hit ground 8 miles east of Fairfield.
75. Apr. 24	(a)	Freestone	(a)	(a)	(a)	0	0	3	(a)	Dipped several times, damaged power lines, tore down barn, blew down trees, blew off roof, and damaged another home northwest of Teague.
76. Apr. 24	(a)	Milam	(a)	(a)	(a)	0	0	5	1	Hangar and 2 planes damaged 2 miles south of Rockdale.
77. Apr. 24	(a)	Williamson	(a)	(a)	(a)	0	0	3	(a)	Unroofed 2 homes and destroyed 2 barns 5 miles northwest of Liberty Hill.
78. Apr. 25	3:30 p.m.	Taylor	(a)	(a)	(a)	0	0	1	(a)	Hit on hilltop between Buffalo Gap and View. Uprooted some shrubs.
79. Apr. 25	4:05 p.m.	Wichita	(a)	(a)	(a)	0	0	1	1	Dipped for an instant, kicking up dust, 10 miles south of Wichita Falls.
80. Apr. 25	6:30 p.m.	Montague	NE	3	(a)	0	0	3	1	Barn and car damaged 1 mile south of Ringgold.
81. Apr. 26	12:30 a.m.	Reagan	NW	3/4	150	0	0	1	1	Tore up some brush in Big Lake area.
82. Apr. 26	2 a.m.	Caldwell	NE	35-40	(a)	0	0	3	1	Barns, garages, and powerlines damaged and furniture scattered for 50 feet near Luling.
83. Apr. 26	2:30 a.m.	Bastrop	NE	35-40	(a)	0	0	3	1	Uprooted large trees, unroofed barns and oil mill, broke windows, smashed highway signs, unroofed sheds, outhouses and garages; and damaged drive-in theater at Smithville and Kovar.
84. Apr. 26	8 a.m.	Smith	NE	5	100	0	6	g/ 6	(a)	In residential area of Tyler, 400 homes, 3 schools, and 1 church damaged.
85. Apr. 26	9:15 a.m.	Gregg and Rusk	(a)	1/2	(a)	0	0	4	(a)	A number of oil derricks and 1 tank overturned, 5 houses damaged, 2 barns and poultry house demolished, trees uprooted, roofs damaged, lake property wrecked, church and home destroyed, and 1 barn damaged in Kilgore area.
86. Apr. 26	9:30 a.m.	Gregg	W	1	50-60	0	0	4	1	Unroofed 2 houses, moved another off foundation 1-1/2 miles east of Longview.
87. Apr. 26	9:30 a.m.	Gregg	N and E	1/4	50	0	0			Destroyed 1 garage 2 miles south of Longview. Damage estimate included with above storm.
88. Apr. 26	A.m.	Upshur	(a)	(a)	(a)	0	0	4	1	Destroyed church, damaged school, and destroyed garage and 2 homes east of Gilmer.
89. Apr. 26	2:10 p.m.	Eastland	NE	(a)	(a)	0	0	1	1	Reported by Ground Observer Corps 3 to 5 miles north of Ranger.
90. Apr. 29	2:15 a.m.	Willacy	(a)	(a)	(a)	0	0	(d)	1	Powerlines damaged at Raymondville.
91. Apr. 30	2:25 p.m.	Orange	SW	2-1/2	100	0	0	3	1	Timber twisted and broken. Minor damage to 3 houses northwest of Vidor.
92. May 8	10:38 p.m.	Taylor	E	(a)	(a)	0	0	1	1	Occurred in rural area near Trent.
93. May 11	5:15 p.m.	Hartley	NE	(b)	30	0	0	1	1	Hit 7 or 8 times in open country 1 mile south of Channing.

See reference notes at end of table.

TORNADO DATA

State and date	Hour	County	Direction of advance	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Remarks
						Killed	Injured	Property (exclusive of crops)	Crops	
TEXAS (Cont'd)										
94. May 12	4:43 p.m.	McLennan	NE	(b)	(c)	0	0	3	3	4 homes badly damaged and 150 acres of oats destroyed 4 miles north of Crawford.
95. May 13	11:30 a.m.	Harrison	NE	(a)	200	0	0	✓T 3	C	A few outbuildings destroyed, others damaged; trees and signs downed; corn crop damaged in Sulphur Park and Oak Grove sections.
96. May 14	5:30 p.m.	Briscoe	NE	(a)	(a)	0	0	1	1	Hit lake then dissipated 12 miles southwest of Silverton.
97. May 15	3:15-4 p.m.	Carson	N	7	(a)	0	0	3	1	Crossed farm and pasture lands. Damaged barns, outbuildings, and home 4 miles east of Groom.
98. May 15	5:20 p.m.	Gray	NE	(a)	(a)	0	0	3	(a)	Damaged grain elevators at Pampa.
99. May 15	5:30-6:30 p.m.	Donley	NE	10	(a)	0	1	✓T 5	C	School blown away, several houses, barns, and outbuildings damaged or destroyed, farm equipment damaged, trees and crops ruined in Ashtola, Martin, and Goldston communities.
100. May 15	7:25 p.m.	Swisher	NE	(a)	(a)	0	0	4	1	At Vigo Park, home blown away, several houses blown down, outbuildings and windmills damaged nearby.
101. May 15	7:40 p.m.	Yoakum	NW	(a)	(a)	0	0	2	1	Blew away windmill and outhouses and damaged house roof in Plains area.
102. May 15	7:45 p.m.	Yoakum	NW	(a)	(a)	0	0	4	1	Dipped from low cloud, almost obscured by dust; destroyed house roof and laundry building and damaged automobile company building and school roof in Plains area. Did not remain continuously on ground, dipped 3 times.
103. May 15	10:35 p.m.	Briscoe	NE	17	300	21	80	5	(a)	Leveled most of new residential area homes of $20,000 and up. At least 25 homes totally destroyed, estimated 15 homes with major damage and 15 others with minor damage. At least 4 granaries, cotton gin, wholesale petroleum products warehouse, and many other buildings leveled. Tore down power- and phone lines, smashed and twisted cars, destroyed or damaged barns, garages, outbuildings, buses and trucks in Silverton area.
104. May 15	11:10 p.m.	Hale	(a)	2	20	0	0	4	1	Farmhouse, barn, and well machinery destroyed at Prairie View.
105. May 15	Late evening	Floyd	NNE	(a)	(a)	1	0			1 person killed near Lone Star. Damage estimates included in above storm.
106. May 15	(a)	Jim Wells	(a)	(b)	(c)	0	0	1	1	Touched ground only briefly at Orange Grove. Whipped trees, pieces of lumber, debris, etc.
107. May 16	5 p.m.	Roberts	(a)	(a)	(a)	0	0	3	1	Destroyed garage and outhouses 12 miles northwest of Miami.
108. May 17	3:50 p.m.	Crosby	E	(a)	(a)	0	0	1	1	Hit in country 10 miles south of Crosbyton.
109. May 22	9 p.m.	Hill	NE	4	200	0	4	5	(a)	Immediately following heavy rainstorm, tornado severely damaged 3 farm homes, destroyed 4 others, damaged outbuildings, truck, and farm equipment and tore down all phone poles in path 5 miles west of Malone.
110. May 22	10:15 p.m.	Ellis	NE	2	200	0	0	4	(a)	Occurred 14 miles southwest of Ennis.
111. May 23	3:30 p.m.	Titus	E	(a)	60	0	0	3	1	At Mt. Pleasant, powerlines and trees uprooted and TV antennas damaged.

See reference notes at end of table.

TORNADO DATA

YEAR 1957

State and date	Hour	County	Direction of advance	Length of path, miles	Width of path, yards	Number of persons: Killed	Number of persons: Injured	Estimated damage by categories †: Property (exclusive of crops)	Estimated damage by categories †: Crops	Remarks
TEXAS (Cont'd)										
112. May 24	10:45 a.m.	Parmer, Deaf Smith, and Potter	NE	(a)	33	0	0	T/ 3	C	First touched ground about 5 miles south of Bovina, damaged farm property and orchard. Lifted west of Hubb, came down northeast of Hubb, crossed fields past Friona and into Black community. Passed through Deaf Smith County and on past Bushland, Potter County.
113. May 24	11:20 a.m.	Bailey	NE	(a)	500	0	0	3	1	Hit in open country 4 miles north of Enochs. Damage only to Rural Electric Association poles and wires.
114. May 24	11:30 a.m.	Deaf Smith	NE	(a)	(a)	0	0	1	1	Struck in Hereford area.
115. May 24	12:35 p.m.	Lamb	NE	(a)	200	0	10	T/ 5	C	Estimated 77 homes in Olton area destroyed, grain company building badly damaged. Touched ground in cemetary at Sudan, lifted and came down at Olton.
116. May 24	1-2 p.m.	Hale	NE	(a)	(a)	0	0	(a)	(a)	5 miles northwest of Halfway, houses, barns, and trailers damaged or destroyed and livestock killed.
117. May 24	1-2 p.m.	Lynn, Lubbock, and Crosby	NE	(a)	200	0	1	T/ 5	C	Many homes destroyed or badly damaged at Tahoka, Slaton, Wilson, Robertson Ralls, and Savage. Public buildings, warehouses, farm equipment, church, fences, trees, and power- and phone lines damaged. Livestock killed.
118. May 24	1:20 p.m.	Potter	NE	1/4	50	0	0	4	(a)	Damage on 1 farm in Bushland area. Tornado lifted and came down in open country west of Cliffside, lifted and came down again 7 miles north of Amarillo Airport in open country.
119. May 24	2 p.m.	Hale	(a)	(a)	(a)	0	0	4	(a)	3 homes destroyed and others damaged southwest of Plainview.
120. May 24	2:45 p.m.	Martin	ENE	(a)	(a)	0	0	3	1	5 houses and several farm buildings damaged at Lenorah.
121. May 24	6:28 p.m.	Midland	E	2	(a)	0	0	1	1	Tornado moved through pasture land 10 miles north-northwest of Midland.
122. May 24	8:30 p.m.	Baylor	SW	(a)	(a)	0	0	3	3	Occurred 10 miles southwest of Seymour.
123. May 25	2 p.m.	Hood	E	(b)	(c)	0	0	1	(a)	Touched ground briefly 9 miles east of Lipan.
124. May 25	6:15 p.m.	Lampasas	E	1/2	50	0	0	2	1	Garage roof blown off at Lometa.
125. June 2	8 a.m.-7 p.m.	Galveston	(a)	(a)	(a)	0	0	(d)	1	Six or 7 waterspouts observed, 3 a short distance offshore over Gulf of Mexico, 4 over Galveston Bay. 1 over Galveston Bay appeared to be unusually large, about 300 feet in diameter. Negligible damage in northern part of Texas City.
126. June 2	Ditto	Galveston	(a)	(a)	(a)					
127. June 2	Ditto	Galveston	(a)	(a)	(a)					
128. June 2	Ditto	Galveston	(a)	(a)	(a)					
129. June 2	Ditto	Galveston	(a)	(a)	(a)					
130. June 2	Ditto	Galveston	(a)	(a)	(a)					
131. June 2	Ditto	Galveston	(a)	(a)	(a)					
132. June 4	12:25 p.m.	Brazoria	NNE	(a)	(a)	0	0	1	1	6 to 10 miles south of Freeport, waterspout observed over Gulf of Mexico, touched water surface.
133. June 5	11 a.m.	Matagorda	(a)	(a)	(a)	0	0	1	1	5 waterspouts all touching water, observed on Matagorda Peninsula.
134. June 5	11 a.m.	Matagorda	(a)	(a)	(a)					
135. June 5	11 a.m.	Matagorda	(a)	(a)	(a)					
136. June 5	11 a.m.	Matagorda	(a)	(a)	(a)					
137. June 5	11 a.m.	Matagorda	(a)	(a)	(a)					
138. June 10	5:15 p.m.	Ochiltree	(a)	(b)	(c)	0	0	3	1	1 barn and garage damaged, 1 grain bin destroyed, and phone lines and fences downed 7 miles southwest of Perryton.
139. June 12	8:10 a.m.	Dallas	SE	(b)	(c)	0	0	3	1	At Redbird Airport, tornado struck steel hangar, pulled concrete piers from ground, and damaged 3 aircraft. Hangar built to withstand winds up to 120 m.p.h.
140. June 22	9:47 p.m.	Yoakum	NE	(a)	(a)	0	0	(a)	(a)	Occurred 7 miles south of Plains.

See reference notes at end of table.

TORNADO DATA

YEAR 1957

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						Killed	Injured	Property (exclusive of crops)	Crops	
TEXAS (Cont'd)										
141. June 22	10:18 p.m.	Hale	(a)	1/2	(c)	0	0	3	1	Smashed truck and car in rural area 5 miles north of Plainview.
142. June 24	8 p.m.	Galveston	W	(a)	(a)	0	0	1	1	Waterspout reported offshore 11 miles east of High Island.
143. Aug. 1	2 p.m.	Harris	NE	(a)	(a)	0	0	1	1	Waterspout sighted 10 miles east-northeast of Baytown.
144. Aug. 5	7 p.m.	Jefferson	NE	(a)	(a)	0	0	1	1	Waterspout sighted over Trinity Bay.
145. Aug. 12	3:50 p.m.	Baylor and Throckmorton	NE	[f]700	(c)	0	0	4	(e)	Smashed 1 barn, unroofed another, and downed phone poles and wires 15 miles southwest of Seymour.
146. Aug. 12	5:30-6 p.m.	Jones	(a)	(a)	7	0	0	3	1	Damaged cabin at Lake Fort Phantom Hill.
147. Aug. 17	5:45 p.m.	Navarro	SE	3-4	1,300	0	0	4	(a)	Destroyed drive-in theater screen at Corsicana. Some livestock killed.
148. Aug. 30	6:45 p.m.	Nueces	WSW	(a)	(a)	0	0	1	1	Waterspout sighted 18 miles east-southeast of Port Aransas.
149. Sept. 6	9:25 a.m.	Nueces	W	(a)	(a)	0	0	1	1	Waterspout sighted 8 miles east of Port Aransas.
150. Sept. 20	6 p.m.	Wilbarger	S and SE	1/2	100-200	0	0	4	(a)	6 miles north of Vernon, 2 funnels touched ground. End torn off hangar at airport, house and garage damaged, light posts downed, 2 barns damaged, and feed scattered.
151. Sept. 20	6 p.m.	Wilbarger	Ditto							
152. Oct. 7	7:15 p.m.	Baylor	SE	(b)	(c)	0	0	3	1	Destroyed garage and storage room, damaged home and several roofs and barn, uprooted trees, and damaged others west of Seymour.
153. Oct. 14	3 p.m.	Waller	NE	(a)	(a)	0	0	[T]4	C	3 separate tornadoes in Waller and Brookshire areas ripped drive-in theater screen, damaged home, demolished church, uprooted trees and graveyard monuments. Crop damage to rice and peanuts. Severely damaged dairy barn, destroyed feed contents. Other buildings damaged between Waller and Hempstead.
154. Oct. 14	3 p.m.	Waller	NE	(a)	(a)					
155. Oct. 14	3 p.m.	Waller	NE	(a)	(a)					
156. Oct. 14	5:45 p.m.	Liberty	(a)	(a)	(a)	0	3	4	(a)	9 miles north of Dayton, 2 farm homes 1/4 mile apart destroyed with contents. Several barns and outbuildings destroyed, other homes damaged, trees uprooted, and power- and phone lines downed.
157. Oct. 22	6:30 a.m.	Liberty	(a)	4	100	0	1	4	(a)	Barns and outbuildings destroyed, 6 houses and powerlines damaged 8 miles southeast of Cleveland.
158. Nov. 1	9:23 p.m.	Jefferson	ENE	(a)	(a)	0	1	5	1	At Port Acres, about 20 houses badly damaged or destroyed.
159. Nov. 7	8:45 p.m.	Jefferson	SE	(a)	(a)	0	0	4	1	Slight to moderate dwelling damage at China and Nome.
160. Nov. 7	9:15 p.m.	Jefferson	ENE	3	200	2	59	6	(a)	160 homes, several business buildings, and many outbuildings completely demolished or extensively damaged in area of 15 to 20 blocks in center of town of Groves. Several hundred buildings damaged to lesser extend. 1 school building badly damaged. Winds estimated over 100 m.p.h., where tornado struck. Storm lasted only about 5 minutes.
161. Nov. 7	11:10 p.m.	Orange	ENE	(a)	(a)	1	81	6	(a)	At Orange, several business houses destroyed, 130 homes demolished, 250 others heavily damaged, 100 families homeless. 9 ships and 3 barges torn from moorings. Thousands of phones cut off, power disrupted.
162. Nov. 17	4:35 p.m.	Tarrant	NE	(a)	50-75	0	2	3	(a)	5 miles west of Ft. Worth, outbuilding destroyed, 2 house trailers moved, 1 blown over and 2 occupants slightly

See reference notes at end of table.

TORNADO DATA

YEAR 1957

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						Killed	Injured	Property (exclusive of crops)	Crops	
TEXAS (Cont'd)										injured. Mainly roof, window, sign, and TV antenna damage otherwise.
UTAH										
1. Aug. 7	5:30 p.m.	Sevier	N	1-1/2	50	0	0	4	1	Small tornado hit western edge of Salina, blowing roofs off turkey-processing plant and service station; automobile damaged and small shed demolished.
VERMONT										
1. June 18	6:05-6:10 p.m.	Franklin	NE	4	500	0	0	5	1	Funnel described by some persons as having "two tails". Destroyed 1 home and damaged many others from East Franklin to West Berkshire.
2. July 5	7:30 p.m.	Windham	SE	(a)	(a)	0	0	3	3	Unconfirmed reports of funnel cloud at Brattleboro accompanied by weird, yellow and red sky and hail. Damage to trees and utilities.
VIRGINIA										
1. Apr. 5	1:40 p.m.	Wise	NE	(a)	(a)	0	3	4	1	Damage to buildings, trees, and overhead utilities at Big Stone Gap and Norton.
2. Apr. 8	5:20 p.m.	Norfolk	NE	1	(a)	0	2	5	1	Principal damage to overhead utilities, trees, and buildings in north Norfolk.
3. May 27	8:20 a.m.	Charlotte	NE	8	800	0	0	3	(a)	Occurred in area from Old Well to Madisonville.
4. May 27	10 a.m.	Lunenburg	E	1	200	0	0	✓T 4	C	Damage mainly to farm buildings in Dundas area.
WASHINGTON										
1. Apr. 30	6:40 p.m.	Yakima	NW	1	(c)	0	0	3	1	Some doubt regarding this being a tornado. Garage roof damaged. Occurred in Yakima area.
2. May 6	9 p.m.	Spokane	E	(a)	(a)	0	0	2	1	Very small tornado or possibly large dust devil reported 10 miles south of Spokane. 1 barn roof damaged.
WEST VIRGINIA										
1. June 29	7:30 p.m.	Randolph	SSW	1/2-3/4	30	0	0	5	1	At Elkins, houses and business buildings unroofed, trees uprooted and limbs blown off, electrical services disrupted. Funnel cloud and greenish cloud formation reported. Tornado believed associated with intensification of hurricane Audrey as it moved up Ohio Valley.
WISCONSIN										
1. Apr. 19	2:30 p.m.	La Crosse	NNW	2-3	150	0	0	4	1	Skipping path. Occurred at Holmen.
2. Apr. 19	4 p.m.	Juneau	NNE	20	300	1	0	4	1	Path from New Lisbon to north of Necedah. Uprooted trees and damaged buildings on 1 farm.
3. Apr. 19	4 p.m.	Walworth and Racine	NE	6	200	0	2	✓g 5	1	Occurred in Burlington area.
4. Apr. 19	4:05 p.m.	Portage	NE	5	30	0	0	4	1	Occurred in Coddington and Bancroft areas.
5. Apr. 19	4:15 p.m.	Waushara	NE	12	150	0	1	4	1	Occurred in Wautoma and Saxeville areas.
6. Apr. 19	8:30 p.m.	Monroe	NE	8	400	0	0	5	1	Occurred at Kendall.
7. May 25	4:30 p.m.	Grant	NE	20	400	0	0	4	1	Tornado moved northwestward then curved to northeast along skipping path. A few reports of 2 or 3 funnels. Occurred in Bloomington and Fennimore areas.
8. June 14	5:30 p.m.	Florence	NE	7	100	0	0	4	1	Skipping path. Intermittant destruction in Florence area.

See reference notes at end of table.

TORNADO DATA

State and date	Hour	County	Direction of advance	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Remarks
						Killed	Injured	Property (exclusive of crops)	Crops	
WISCONSIN (Cont'd)										
9. July 4	6:30 a.m.	Barron	NE	4	150	0	4	5	1	Reported in Brill area.
10. July 11	1:30 p.m.	Brown	ENE	(a)	(a)	0	0	3	1	Occurred in Denmark area.
11. July 11	2 p.m.	Manitowoc	NE	(a)	(a)	0	0	3	1	Small tornado at Whitelaw.
12. Sept. 19	12:30 p.m.	Vernon	NE	10	165	0	0	4	4	Occurred 6 miles northwest of Hillsboro.
WYOMING										
1. May 24	Afternoon-evening	Goshen	NE	(a)	(a)	0	0	4	1	Farm buildings damaged near Yoder and house trailer destroyed south of Torrington.
2. June 16	2:30 p.m.	Laramie	E	(a)	(a)	0	0	(a)	(a)	Formed about 10 miles north of Albin near State line.
3. July 20	4 p.m.	Goshen	SE	(a)	(a)	0	0	1	1	Moved over open country and on ground for brief period 11 miles north-northwest of Fort Laramie.
TERRITORY of HAWAII										
1. Jan. 21	9:10-9:30 a.m.	Honolulu	N	2-3	6	0	0	4	(d)	Occurred in Wahiawa Valley.
PUERTO RICO (None)										
VIRGIN ISLANDS (None)										

*	Denotes a state boundary-crossing tornado
T	Includes damage to crops
C	Damage to crops
(a)	Datum not obtained
(b)	Short
(c)	Narrow
(d)	Amount of damage reported as small; no monetary estimate.
(e)	Losses occurred; amount not reported
(f)	Yards instead of miles
(g)	Additional losses occurred

† Storm damages are placed in categories varying from 1 to 9 as follows:

1	Less than $50
2	$50 to $500
3	$500 to $5,000
4	$5,000 to $50,000
5	$50,000 to $500,000
6	$500,000 to $5,000,000
7	$5,000,000 to $50,000,000
8	$50,000,000 to $500,000,000
9	$500,000,000 to $5,000,000,000

TORNADO SUMMARY

YEAR 1957

State	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Total
ALA.													
Number	1	1	2	4	1	15		2	1		20	4	51
Days	1	1	1	2	1	1		1	1		3	2	14
Deaths	0	0	0	2	0	0		0	0		8	0	10
Injuries	0	0	4	95	0	15		0	0		76	7	197
Damage†	3	2	4	6	3	a/6		4	4		a/6	5	a/6
ARIZ.													
Number				1				4					5
Days				1				4					5
Deaths				0				0					0
Injuries				0				0					0
Damage†				(b)				4					a/4
ARK.													
Number	4			7	12	2						2	27
Days	1			5	4	1						1	12
Deaths	0			0	1	0						2	3
Injuries	0			0	21	0						9	30
Damage†	a/4			4	a/6	a/3						4	a/6
CALIF.													
Number	1				1					2			4
Days	1				1					1			3
Deaths	0				0					0			0
Injuries	0				0					0			0
Damage†	1				(b)					1			a/1
COLO.													
Number				2	12	7	2	1					24
Days				2	4	5	2	1					14
Deaths				0	0	0	0	0					0
Injuries				0	0	0	0	0					0
Damage†				(c)	a/4	a/3	a/2	(c)					a/4
CONN.													
Number						1							1
Days						1							1
Deaths						0							0
Injuries						0							0
Damage†						5							5
DEL.													
Number							1		1				2
Days							1		1				2
Deaths							0		0				0
Injuries							0		0				0
Damage†							3		(c)				a/3
D. C.													
(None)													
FLA.													
Number		1	1	1	5	7	12	7	4	4	5	2	49
Days		1	1	1	5	2	9	6	4	2	2	1	34
Deaths		0	0	0	0	0	0	0	0	0	0	0	0
Injuries		1	0	0	0	0	0	0	0	0	0	0	1
Damaged†		(b)	(b)	1	a/3	a/5	(c)	(c)	(c)	a/3	a/3	(c)	a/5
GA.													
Number				10	1	3					4		18
Days				2	1	3					3		8
Deaths				3	0	0					0		3
Injuries				32	1	0					8		41
Damage†				a/6	4	4					5		a/6
IDAHO													
Number						1							1
Days						1							1
Deaths						0							0
Injuries						0							0
Damage†						1							1
ILL.													
Number			5	4	6	6						21	42
Days			1	4	3	3						2	13
Deaths			0	0	0	2						13	15
Injuries			0	2	0	56						259	317
Damage†			a/5	a/5	a/6	a/6						6	a/7
IND.													
Number			4	12	2	6	3						27
Days			1	3	2	4	2						12
Deaths			0	0	0	0	0						0
Injuries			0	1	2	0	0						3
Damage†			4	5	4	5	5						5
IOWA													
Number				2	10	3	2						17
Days				2	5	3	2						12
Deaths				0	0	0	0						0
Injuries				0	0	0	1						1
Damage†				4	a/5	a/5	(c)						a/5
KANS.													
Number				7	36	20	1						64
Days				2	8	9	1						20
Deaths				0	7	0	0						7
Injuries				0	31	20	0						51
Damage†				a/4	a/6	a/6	(c)						a/6
KY.													
Number	1			1	1						1		4
Days	1			1	1						1		4
Deaths	0			0	0						0		0
Injuries	0			0	0						0		0
Damage†	4			(b)	4						5		a/5
LA.													
Number	1		5	2	2	2	4	1		5	12		34
Days	1		2	2	2	1	2	1		3	4		18
Deaths	3		0	0	0	0	0	0		2	9		14
Injuries	9		5	0	1	0	0	0		30	45		90
Damage†	5		a/5	a/4	a/4	4	2	1		a/5	a/6		a/6
MAINE													
Number			1			1			1				3
Days			1			1			1				3
Deaths			0			0			0				0
Injuries			0			0			0				0
Damage†			(c)			1			3				a/3
MD.													
(None)													
MASS.													
Number					2	3	2	1					8
Days					2	1	1	1					5
Deaths					0	0	0	0					0
Injuries					0	0	0	0					0
Damage†					a/2	4	3	(b)					a/4
MICH.													
Number				3	1	5	3	2	2		1		17
Days				2	1	2	1	1	2		1		10
Deaths				0	0	0	0	0	0		1		1
Injuries				0	0	0	5	0	0		12		17
Damage†				3	1	a/5	5	1	3		5		a/6
MINN.													
Number					4	9	3						16
Days					3	6	3						12
Deaths					0	0	0						0
Injuries					2	0	2						4
Damage†					a/4	a/5	5						a/6
MISS.													
Number		2		5	2	4	1	1		1	11		27
Days		1		3	1	2	1	1		2	4		15
Deaths		0		1	0	1	0	0		0	4		6
Injuries		0		79	0	19	0	0		0	12		110
Damage†		3		a/6	3	a/6	1	(b)		a/4	a/6		a/6
MO.													
Number	1			3	18	7						7	36
Days	1			2	5	5						2	15
Deaths	0			0	52	0						3	55
Injuries	1			0	603	0						4	608
Damage†	4			4	a/7	a/5						a/6	a/7
MONT.													
Number							1						1
Days							1						1
Deaths							0						0
Injuries							1						1
Damage†							2						2
NEBR.													
Number				9	16	15	11	2					53
Days				4	6	7	6	2					25
Deaths				1	0	0	0	0					1
Injuries				18	0	0	1	0					19
Damage†				a/6	a/5	a/5	a/5	a/2					a/6
NEV.													
(None)													
N. H.													
Number					1	2							3
Days					1	1							2
Deaths					0	0							0
Injuries					0	1							1
Damage†					3	4							4
N. J.													
Number											1		1
Days											1		1
Deaths											0		0
Injuries											0		0
Damage†											5		5
N. M.													
Number				4	10					3			17
Days				1	5					3			9
Deaths				0	1					0			1
Injuries				0	0					0			0
Damage†				4	5					5			6

See reference notes at end of table.

TORNADO SUMMARY

YEAR 1957

State	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Total
N. Y.													
Number				1									1
Days				1									1
Deaths				0									0
Injuries				0									0
Damage†				3									3
N. C.													
Number	1			6							1		8
Days	1			2							1		4
Deaths	0			4							0		4
Injuries	0			115							5		120
Damage†	3			6							6		6
N. DAK.													
Number				1	2	4	4	2					13
Days				1	1	2	2	2					8
Deaths				0	0	10	0	0					10
Injuries				0	0	103	0	0					103
Damage†				a/3	(c)	a/7	a/4	4					a/7
OHIO													
Number					1	2	1						4
Days					1	1	1						3
Deaths					0	0	0						0
Injuries					3	0	5						8
Damage†					a/6	a/4	a/6						a/6
OKLA.													
Number	3			40	45	5	4	3	5	1			106
Days	2			8	10	1	2	1	2	1			27
Deaths	10			6	4	0	0	0	2	0			22
Injuries	21			17	6	1	0	0	9	0			54
Damage†	5			a/6	a/5	a/4	a/4	a/3	a/6	1			a/6
OREG.													
Number				2									2
Days				1									1
Deaths				0									0
Injuries				0									0
Damage†				a/3									a/3
PA.													
Number				1			1	2	3		2		9
Days				1			1	2	2		1		7
Deaths				0			0	0	0		0		0
Injuries				0			0	0	5		0		5
Damage†				4			4	3	4		5		5
R. I.													
(None)													
S. C.													
Number				5	1	1	2						9
Days				2	1	1	2						6
Deaths				0	0	0	0						0
Injuries				19	0	0	0						19
Damage†				6	1	3	1						6
S. DAK.													
Number				2	2	11	3	1	1				20
Days				1	2	8	2	1	1				15
Deaths				0	0	1	0	0	0				1
Injuries				0	0	0	1	0	0				1
Damage†				a/4	3	4	5	1	1				a/5
TENN.													
Number	4			5		1	1				3	3	17
Days	1			3		1	1				2	1	9
Deaths	0			0		0	0				0	0	0
Injuries	4			11		0	0				2	2	19
Damage†	a/6			a/5		3	4				4	a/4	a/6
TEX.													
Number		1	21	69	33	18		6	3	6	5		162
Days		1	4	12	13	7		5	2	3	3		50
Deaths		0	1	11	22	0		0	0	0	3		37
Injuries		0	13	255	96	0		0	0	4	143		511
Damage†		2	a/5	a/7	a/6	a/4		a/4	a/4	a/5	a/6		a/7
UTAH													
Number								1					1
Days								1					1
Deaths								0					0
Injuries								0					0
Damage†								4					4
VT.													
Number						1	1						2
Days						1	1						2
Deaths						0	0						0
Injuries						0	0						0
Damage†						5	3						5
VA.													
Number				2	2								4
Days				2	1								3
Deaths				0	0								0
Injuries				5	0								5
Damage†				5	a/4								a/5
WASH.													
Number				1	1								2
Days				1	1								2
Deaths				0	0								0
Injuries				0	0								0
Damage†				3	2								3
W. VA.													
Number						1							1
Days						1							1
Deaths						0							0
Injuries						0							0
Damage†						5							5
WIS.													
Number				6	1	1	3		1				12
Days				1	1	1	2		1				6
Deaths				1	0	0	0		0				1
Injuries				3	0	0	4		0				7
Damage†				a/5	4	4	5		5				a/5
WYO.													
Number					1	1	1						3
Days					1	1	1						3
Deaths					0	0	0						0
Injuries					0	0	0						0
Damage†					4	(c)	1						a/4
ALASKA													
(None)													
HAWAII													
Number	1												1
Days	1												1
Deaths	0												0
Injuries	0												0
Damage†	a/4												a/4
W. INDIES													
(None)													
TOTALS													
Number	18	5	39	218 *217	232 *230	165 *164	67	36	22	22	66 *65	39	929 *924
Days	‡ 3	‡ 3	‡ 7	‡21	‡27	‡27	‡25	‡20	‡14	‡12	‡12	‡ 4	‡175
Deaths	13	0	1	29	87	14	0	0	2	2	25	18	191
Injuries	35	1	22	652	766	215	20	0	14	34	303	281	2343
Damage‡	a/6	a/3	a/6	a/7	a/7	a/7	a/6	a/5	a/6	a/5	a/7	a/7	a/8

* Corrected for boundary-crossing tornadoes.
‡ Tornado days for country as a whole.
(a) Additional losses occurred.
(b) Slight damage.
(c) Losses occurred; amount not reported.

† Storm damages are placed in categories varying from 1 to 9 as follows:

1	Less than $50	6	$500,000 to $5,000,000
2	$50 to $500	7	$5,000,000 to $50,000,000
3	$500 to $5,000	8	$50,000,000 to $500,000,000
4	$5,000 to $50,000	9	$500,000,000 to $5,000,000,000
5	$50,000 to $500,000		

NUMBER OF TORNADOES, TORNADO DAYS, AND RESULTING LOSSES BY YEARS 1916-1957

Year	Number tornadoes	Number tornado days	Total deaths	Most deaths in a single tornado	Total property losses†	Number of tornadoes causing losses of	
						$100,000 to $1,000,000	$1,000,000 and over
1916	90	36	150	30	6	6	1
1917	121	38	509	101	7	22	5
1918	81	45	135	36	7	19	1
1919	64	35	206	59	7	9	2
1920	87	50	498	87	7	24	7
1921	105	55	202	61	7	13	1
1922	108	64	135	16	7	20	0
1923	102	59	109	23	6	8	0
1924	130	57	376	85	7	25	6
1925	119	65	794	589	7	29	1
1926	111	57	144	23	6	16	0
1927	163	62	540	92	7	28	7
1928	203	79	92	14	7	25	4
1929	197	74	274	40	7	30	1
1930	192	72	179	41	7	28	3
1931	94	57	36	6	6	7	1
1932	151	67	394	37	7	11	1
1933	258	96	362	34	7	31	5
1934	147	77	47	6	6	9	0
1935	180	77	70	11	6	15	0
1936	151	71	552	216	7	17	6
1937	147	75	29	5	6	11	0
1938	213	76	183	32	7	18	3
1939	152	75	87	27	7	10	2
1940	124	62	65	18	7	9	1
1941	118	57	53	25	6	15	0
1942	167	66	384	65	7	32	3
1943	152	61	58	5	7	25	4
1944	169	68	275	100	7	34	7
1945	121	66	210	69	7	25	8
1946	106	65	78	15	7	31	3
1947	165	78	313	169	7	42	5
1948	186	70	140	33	7	53	6
1949	249	80	212	58	7	45	7
1950	200	88	70	18	7	31	1
1951	274	114	34	6	7	27	7
1952	242	99	230	57	7	48	10
1953	450	139	516	116	8	43	15
1954	583	165	35	6	7	41	3
1955	624	161	125	80	7	54	4
1956	548	158	83	25	7	61	13
1957	924	175	191	44	8	75	19
Total	8,768	3,291	9,175	---	-	1,122	173
Avg.	208.8	78.4	218.4	---	-	-----	---
Median	152	68	150	---	-	-----	---

NOTE.--The above estimated losses are based on values at time of occurrence.

† Storm damages are placed in categories varying from 1 to 9 as follows:

1 Less than $50
2 $50 to $500
3 $500 to $5,000
4 $5,000 to $50,000
5 $50,000 to $500,000
6 $500,000 to $5,000,000
7 $5,000,000 to $50,000,000
8 $50,000,000 to $500,000,000
9 $500,000,000 to $5,000,000,000

DUST DEVIL DATA

YEAR 1957

State and date	Hour	County	Direction of advance	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Remarks
						Killed	Injured	Property (exclusive of crops)	Crops	
ARIZONA										
1. Mar. 23	Afternoon	Maricopa	(a)	(a)	(a)	0	0	2	1	Damaged roofs and cinder-block wall in residential section of Phoenix.
2. May 15	12:30 p.m.	Maricopa	N	(a)	(a)	0	0	3	1	Ripped roof off small house at Phoenix.
3. June 20	Afternoon	Pima	(a)	(a)	(a)	0	0	3	1	Unroofed house at Tucson.
4. June 27	Afternoon	Cochise	(a)	(a)	(a)	0	0	5	1	Aircraft blown off runway on take-off and then destroyed by fire at Douglas.
5. July 15	2:30 p.m.	Maricopa	(a)	(a)	(a)	0	0	(b)	1	Unroofed ranch house near Wickenburg.
6. July 20	2:30 p.m.	Pima	E	1	(a)	0	0	3	1	Damaged house and furnishings at Tucson.
CONNECTICUT										
1. June 17	Afternoon	Hartford	(a)	Short	(a)	0	0	(b)	(b)	Blew over lawn furniture and lifted lids off garbage cans at Windsor Locks. Weather at time sunny, with scattered clouds, and very warm.
DELAWARE										
1. July	Afternoon	New Castle	(a)	(a)	(a)	0	0	3	1	Tore much of roof off house and pulled some shingles off neighboring house, knocked over TV aerial, and blew clothes off clothes lines. Appeared suddenly on calm, sunny afternoon when temperatures 86°.
MAINE										
1. Apr. 24	12:30 p.m.	Somerset	E	(a)	1	0	0	1	1	Strong rumbling noise as black funnel damaged clothes reel and a bush, and tore storm window from house at Pittsfield.
2. June 10	Afternoon	Cumberland	(a)	Short	(a)	0	0	1	1	Lifted chicken shelter into air and carried it 25 feet. Shelter weighted between 600 and 1,000 pounds. Landed upright with only slight damage. Occurred at north Yarmouth.
MASSACHUSETTS										
1. Mar. 28	12:50 p.m.	Franklin	E	1/2	12	0	0	3	1	Demolished garage and damaged barn and farm trailer at East Shelburne.
2. Apr. 18	1:30 p.m.	Middlesex	W	200	(a)	0	0	1	1	At Dracut, small child lifted into air 3 feet and 2 other children rolled on ground by funnel, but none injured. Funnel accompanied by loud whistling sound.
3. Apr. 18	P.m.	Middlesex	NE	(a)	2	0	0	1	1	Man spun around and child bowled over at Sherborn by funnel which made humming and buzzing sound. It extended 200 feet high.
4. Apr. 23	(a)	Berkshire	(a)	(a)	(a)	0	0	1	1	Funnel rattled house and frightened occupant at North Adams.
5. Apr. 29	P.m.	Worcester	(a)	(a)	5	0	0	2	1	Funnel extended 200 feet in air at Westboro. Moved 10x10-foot chicken shelters, tossing one over 3-foot fence. It carried smaller shelter away. Sky clear and wind otherwise calm.
6. May 4	10:30 a.m.	Essex	NW	(a)	3	0	0	1	1	Narrow funnel extending 500 feet up into clear sky jostled automobile with surprising force and carried twigs and leaves aloft at Salisbury.
7. May 4	10:50 a.m.	Worcester	S	900	7	0	0	1	1	Accompanied by sound like freight train, funnel lifted 110-gallon oil drum about 75 feet into air at Fitchburg. Lumber and debris also lifted and dropped over area.
8. May 6	Noon-2 p.m.	Norfolk	(a)	(a)	(a)	0	0	1	1	Blue Hill Observatory reported

See reference notes at end of table.

DUST DEVIL DATA

YEAR 1957

State and date	Hour	County	Direction of advance	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Remarks
						Killed	Injured	Property (exclusive of crops)	Crops	
MASSACHUSETTS (Cont'd)										numerous funnels associated with sea-breeze front (15 to 20 in all). One thin column extended to height of 600 feet. Thick column carried much sand and dust.
9. May 8	Noon	Hampshire	E	(a)	(a)	0	0	3	1	Felled large part of elm tree onto house with considerable damage at Hatfield. Accompanied by high whistle, like a siren.
10. May 25 11. May 25	1:45 p.m. 1:45 p.m.	Suffolk Suffolk	(a)	(a)	10	0	0	2	1	Funnel at South Weymouth damaged construction shed and clothes on line. Another dust devil, with no damage, reported at Waltham.
12. July 17 13. July 17 14. July 17	1:45-2:25 p.m. Ditto Ditto	Norfolk and Plymouth Ditto Ditto	(a)	(a)	(a)	0	0	1	1	Picked up dirt and tore leaves from trees at Medfield at 1:45 p.m. 2 other dust devils seen at Rockland at 2:25 p.m., no damage. Height "as tall as the tree tops."
15. July 18	Midmorning	Essex	(a)	(a)	2	0	0	1	1	Occurred at North Andover at tree-top height; no damage reported.
16. July 18	1 p.m.	Middlesex	(a)	(a)	(a)	0	0	1	1	At Marlboro, lifted shelter house and carried it 20 feet with but little damage.
17. July 22	3 p.m.	Hampden	SE	2	300	0	3	4	1	Severe thunderstorm preceded by whirling column of dust and debris which twisted many branches from trees at Westfield. Tree fell against home, another onto an automobile, injuring 1 person. Many wires downed. Other injuries in automobile accident, due to storm.
18. Aug. 9	2:20 p.m.	Middlesex	(a)	(a)	(a)	0	0	1	1	Sent people scurrying to cover, but no serious damage done at Saxonville.
19. Aug. 17	1 p.m.	Worcester	E	(a)	(a)	0	0	3	1	Sucked out plate-glass window from service station and cracked windshields on 6 automobiles at Worcester. Other minor damage.
20. Aug. 17	2:30 p.m.	Worcester	(a)	(a)	(a)	0	0	1	1	Interrupted proceedings at Rutland Fair, but damage slight.
21. Aug. 20	2 p.m.	Plymouth	SE	(a)	(a)	0	0	1	1	Funnel picked up small trailer and ripped clothes from line at Rockland.
22. Sept. 1	3:40 p.m.	Worcester	(a)	(a)	(a)	0	0	1	1	Struck large open-air tent at Petersham. Lifted tarpaulin into air with stakes, cables, and ropes flying about. None of a dozen women and children sitting on benches injured.
23. Sept. 13	3:30 p.m.	Middlesex	E	(a)	(a)	0	0	1	1	Occurred in Pinefield development of Saxonville. No damage.
24. Sept. 25	11 a.m.	Middlesex	(a)	(a)	(a)	0	0	1	1	Spiraling dust cloud carrying leaves and debris observed by several persons at Framingham. Caused no damage.
NEW HAMPSHIRE										
1. Apr. 16	2:05 p.m.	Strafford	NE	100	2	0	0	3	1	Occurred at Dover. Small row boat lifted 100 feet into air and demolished. Lumber also lifted and a fence damaged. Funnel black, darkening momentarily clear sky as it passed, and violently shook house.
2. Apr. 29	2:30 p.m.	Rockingham	(a)	1	(a)	0	0	1	1	Funnel ripped away canvas roof and blew clothes from line at Salem.
3. Sept. 1	Late afternoon	Hillsboro	SE	(a)	(a)	0	0	3	1	Occurred at Nashua. Lifted asbestos slates from shed and carried them 60 feet to house roof. Twister funnel-shaped and was carrying papers, sticks, wood, etc., when it struck.
NEW MEXICO										
1. June 9	1 p.m.	Chaves	(a)	(a)	(a)	0	0	2	1	Occurred at Roswell.

See reference notes at end of table.

DUST DEVIL DATA

YEAR 1957

State and date	Hour	County	Direction of advance	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Remarks
						Killed	Injured	Property (exclusive of crops)	Crops	
NEW MEXICO (Cont'd)										
2. June 21	10:30 a.m.	San Miguel	(a)	(a)	(a)	0	0	(b)	1	Store damaged at Las Vegas.
3. June 21	P.m.	Sandoval	(a)	(a)	(a)	0	0	2	1	House unroofed at Placitas.
4. June 21	P.m.	Valencia	(a)	(a)	(a)	0	0	2	1	Damage to partially finished building at Grants.
OREGON										
1. Mar. 25	3:45 p.m.	Multnomah	(a)	[c] 80	20	0	0	3	2	Occurred on otherwise comparatively calm day, moved through cold frames of commercial greenhouses in southeastern Portland, picking up, then dropping about 60 glass sashes.
RHODE ISLAND										
1. Apr. 22	(a)	Prividence	(a)	(a)	(a)	0	0	1	1	Moved 100-pound tub about 10 feet at Woonsocket.
2. Apr. 29	Afternoon	Providence	(a)	(a)	(a)	0	0	1	1	Ripped shingles off house, tossed porch chair 50 feet, and blew clothes off line at Greenville.
3. Aug. 7	3 p.m.	Providence	(a)	(a)	(a)	0	0	1	1	Small but strong dust devil ripped shingles and tore awnings from house at Rumford, east of Providence. Disturbance moved to nearby house where wind swept through window and knocked over lamp 15 feet inside room.
TEXAS										
1. Sept. 3	(a)	Ector	(a)	(a)	(a)	0	0	4	1	10 miles west of Odessa, metal roofing lifted off 100-foot long building and siding torn off.

† Storm damages are placed in categories varying from 1 to 5 as follows:
1 Less than $50
2 $50 to $500
3 $500 to $5,000
4 $5,000 to $50,000
5 $50,000 to $500,000

a Datum not obtained
b Losses occurred, amount not reported
c Yards instead of miles

FUNNEL CLOUDS ALOFT

YEAR 1957

State and date	Hour	County	Direction of advance
ALABAMA			
1. June 28	9:51 a.m.	Monroe	NE
2. June 28	10:03 a.m.	Autauga and Montgomery	(1)
3. June 28	12:30 p.m.	Barbour	NE
4. Sept. 16	12:50 p.m.	Houston	NE
5. Nov. 8	4:22 a.m.	Dallas	NE
ARIZONA			
1. Jan. 10	3 p.m.	Maricopa	E
2. Aug. 5	11:05 a.m.	Coconino	(1)
3. Oct. 31	3:05 p.m.	Coconino	ENE
ARKANSAS			
1. May 25	1:30 a.m.	Sebastian	NE
2-3. June 13	6:25 p.m.	Faulkner	NE
4. Aug. 12	1:48 a.m.	Mississippi	NE
CALIFORNIA			
1. May 10	(1)	Marin	(1)
2. Oct. 31	12:50 p.m.	Riverside	NE
COLORADO			
1. May 20	1:40 p.m.	Bent	(1)
2-6. June 23	8 a.m.	Kit Carson	(1)
7. June 29	5:35 p.m.	Otero	(1)
8. July 23	Afternoon	Adams	(1)
9-11. July 23	Afternoon	Weld	(1)
12-13. July 25	1:18-2 p.m.	Elbert or Douglas	(1)
14. Aug. 27	12:55 p.m.	Washington	(1)
FLORIDA			
1. Mar. 15	10:35 a.m.	Palm Beach	(1)
2. Apr. 11	10 a.m.	Palm Beach	(1)
3. Apr. 19	Noon	Highlands	(1)
4. May 5	Afternoon	Collier	(1)
5. May 29	3 p.m.	Sarasota	(1)
6. June 1	Afternoon	Palm Beach	(1)
7. June 5	Afternoon	Palm Beach	(1)
8. July 11	Afternoon	Dade	(1)
FLORIDA (Cont'd)			
9. July 18	9:55 a.m.	Dade	(1)
10. July 24	Afternoon	Monroe	(1)
11. July 25	Afternoon	Orange	(1)
12. July 25	1:50 p.m.	Dade	(1)
13. July 25	7:15 p.m.	Monroe	(1)
14-15. Aug. 7	5-6 p.m.	Duval	(1)
16. Aug. 18	3 p.m.	St. Lucie	(1)
17-18. Aug. 23	5 p.m.	Pinellas	(1)
19-20. Aug. 28	Evening	Dade and Broward	(1)
21-26. Nov. 25	5 p.m.	Monroe	(1)
27. Dec. 11	2:30 p.m.	Collier	(1)
28-29. Dec. 11	3:55 p.m.	Palm Beach	(1)
GEORGIA			
1. May 30	6:40 p.m.	Thomas	(1)
ILLINOIS			
1. Mar. 14	5:32 p.m.	Will	(1)
2-3. Mar. 14	5:50 p.m.	Vermilion	NE
4. Apr. 14	6 p.m.	Lake	NE
5. Apr. 21	11:50 a.m.	Washington	(1)
6-8. May 12	5-6 p.m.	Morgan, Christain, & Edgar	(1)
9. June 10	11 p.m.	Sangamon	NE
10-11. Dec. 18	4 p.m.	Fayette	ENE
INDIANA			
1. Apr. 22	7:12 a.m.	Putnam	(1)
2. Apr. 26	Afternoon	Wabash	(1)
3. Apr. 26	Afternoon	Marshall	NE
4. Apr. 26	Afternoon	Noble	(1)
5. Apr. 26	5:20 p.m.	Kosciusko	(1)
6. Apr. 26	5:20 p.m.	Whitley	(1)
7. Apr. 26	6:15 p.m.	Madison	(1)
8. May 13	6:08 p.m.	Grant	NE
9. May 22	11:02 p.m.	La Porte	NE
10-11. May 22	11:18-11:20 p.m.	St. Joseph	E
INDIANA (Cont'd)			
12. May 23	12:25 a.m.	La Grange	(1)
13. June 7	12:40 p.m.	Clay	(1)
14. June 11	8:35 p.m.	Carroll	(1)
15-16. June 12	4:20 a.m.	Vanderburg	(1)
17. June 14	7:15 p.m.	Kosciusko	(1)
18. July 14	5:51 p.m.	Ripley	SE
19. Aug. 3	7 p.m.	Bartholomew	E
20. Aug. 4	3:25 p.m.	Vanderburg	(1)
21. Aug. 15	9:09 p.m.	Vigo	(1)
22. Dec. 18	6:45 p.m.	Parke	NE
IOWA			
1. Apr. 26	4:20 p.m.	Benton	(1)
2. May 12	Evening	Washington	(1)
3. May 14	5:50 a.m.	Lyon	(1)
4. May 14	11:35 a.m.	Jackson	(1)
5. May 30	3:36 p.m.	Greene	(1)
6. May 30	4:37 p.m.	Shelby	(1)
7. May 31	1:19 p.m.	Greene	(1)
8. June 4	8 p.m.	Clay	SSE
9. June 5	5 p.m.	Clinton	SE
10. June 11	8:15 a.m.	Union	(1)
11. June 12	4:30 p.m.	Cass	(1)
12. June 25	3:09 p.m.	Calhoun	NE
13. Aug. 18	4:05 p.m.	Linn	(1)
KANSAS			
1. Apr. 19	3:30 a.m.	Crawford	NE
2. Apr. 19	7:30 p.m.	Saline	NE
3. Apr. 20	6:15 p.m.	Sedgwick	(1)
4. Apr. 21	5-5:05 p.m.	Neosho	NE
5. Apr. 21	5:10-5:25 p.m.	Neosho	N
6. Apr. 22	2:15 p.m.	Crawford	NE
7. Apr. 22	8:30 p.m.	Cloud	(1)
8. Apr. 30	Afternoon	Greenwood	(1)
9. May 1	5-5:05 p.m.	Rice	NE

(1) Unknown.

FUNNEL CLOUDS ALOFT

YEAR 1957

State and date	Hour	County	Direction of advance
KANSAS (Cont'd)			
10. May 1	6 p.m.	Meade	NE
11-13. May 9	5:17-6 p.m.	Rice	E
14-16. May 13	11:30 a.m.	Thomas	NE
17. May 16	2:45-2:54 p.m.	Cowley	NE
18-23. May 16	3:06-3:35 p.m.	Graham	N
24. May 16	12:50 p.m.	Greenwood	E
25-28. May 16	3:30-4:15 p.m.	Greenwood & Woodson	NE
29-32. May 16	4:18-5 p.m.	Neosho	NE
33. May 16	7:20 p.m.	Labette	ENE
34. May 20	1:25-1:45 p.m.	Mitchell	E
35. May 20	6 p.m.	Osage	(1)
36-39. May 20	6:15-7:37 p.m.	Franklin & Johnson	NE
40. May 22	9:30-11:30 p.m.	Cherokee	(1)
41. May 29	10 p.m.	Sedgwick	(1)
42-45. May 28	9:30 p.m.	Barton and Ellsworth	(1)
46. May 30	10:50 a.m.	Osage	E
47. May 30	3:35 p.m.	Thomas	E
48. May 30	6:42 p.m.	Butler	(1)
49-50. May 31	11:35 a.m.	Ottawa	(1)
51. May 31	2:06 p.m.	Cloud	(1)
52. May 31	2:55 p.m.	Sherman	(1)
53. May 31	3:06 p.m.	Wallace	(1)
54. May 31	3:15 p.m.	Kingman	(1)
55-57. May 31	3:35 p.m.	Sumner	(1)
58. May 31	4:03 p.m.	Doniphan	(1)
59. May 31	5:15 p.m.	Chase	NE
60. May 31	5:42 p.m.	Franklin	N
61-62. June 7	5-8 p.m.	Brown	(1)
63. June 8	5:50 p.m.	Chase	(1)
64-65. June 9	6:50-7:40 p.m.	Russell	NE
KANSAS (Cont'd)			
66. June 9	7:54-8 p.m.	Barber	NE
67-68. June 9	9-9:20 p.m.	Pratt	NE
69. June 9	10 p.m.	Meade	(1)
70. June 9	10 p.m.	Harvey	(1)
71-72. June 9	11:10 p.m.	Dickinson	(1)
73. June 11	7:45 p.m.	Jefferson	NE
74. June 11	7:45 p.m.	Johnson	NE
75. June 11	6:15 p.m.	Lyon	NE
76. June 11	7:30 p.m.	Anderson	NE
77. June 11	9:15 p.m.	Atchison	NW
78. June 11	5 p.m.	Sedgwick	(1)
79. June 11	8:43 p.m.	Sedgwick	(1)
80. June 11	9:30 p.m.	Reno	(1)
81. June 11	11:20 p.m.	Ford	(1)
82. June 12	12:15 a.m.	Montgomery	(1)
83. June 12	12:50 a.m.	Montgomery	(1)
84. June 12	11:50 a.m.	Chase	(1)
85. June 12	3:05-3:30 p.m.	Geary & Riley	NNE
86. June 12	6:55 p.m.	Dickinson	NE
87. June 13	11:30 p.m.	Chase	(1)
88. June 16	9:25 p.m.	Osborne	NE
89. June 21	7:40 p.m.	Mitchell & Jewell	N
90. June 25	9:12 p.m.	Coffey	(1)
91-93. June 29	2:15 a.m.	Seward	(1)
94. June 29	7:20 a.m.	Shawnee	(1)
95. June 30	7:45 a.m.	Seward	NE
96. July 21	6:50 p.m.	Kinsley	(1)
97. Aug. 13	3:50 p.m.	Jewell	NE
98-100. Aug. 16	2:45-3 p.m.	Stevens	SW
101. Sept. 4	4:30 p.m.	Rawlins	SSE
102-104. Sept. 13	1-3 p.m.	Thomas	SE
105. Sept. 13	6:39 p.m.	Clay	(1)
106. Sept. 20	Early a.m.	Franklin & Johnson	NE
KENTUCKY			
1. July 14	6:15 p.m.	Jefferson	(1)
2. Dec. 18	8:05 p.m.	Daviess	SSE
LOUISIANA			
1-3. Mar. 23	5:07-6:30 p.m.	East Baton Rouge	(1)
4. Apr. 30	5:40 p.m.	St. John the Baptist	WSW
5. May 1	7:10 a.m.	Plaquemines	(1)
6. May 1	11:19 a.m.	Ascension	(1)
7. May 2	11:57 a.m.	Calcasieu	(1)
8. May 18	2 p.m.	Iberia	SE
9. May 26	1:40 p.m.	East Baton Rouge	E
10. May 29	5:35 p.m.	La Fourche	(1)
11. June 20	2:56 p.m.	Calcasieu	(1)
12. June 20	3:28 p.m.	Lake Pontchartrian	(1)
13-14. June 21	11:40 a.m.	Calcasieu	(1)
15. June 21	2:50 p.m.	Livingston	(1)
16. June 25	3 p.m.	Orleans	SSW
17. July 27	3 p.m.	Calcasieu	(1)
18. Aug. 9	12:45 p.m.	Plaquemines	(1)
19. Aug. 30	10:15 p.m.	Plaquemines	(1)
20-21. Oct. 16	4:30 p.m.	West Baton Rouge	(1)
22. Nov. 7	2:30 p.m.	Jefferson Davis	NNE
MICHIGAN			
1. Apr. 25	9:40 a.m.	Jackson	(1)
2-3. Apr. 27	10:30 a.m.	Oakland	(1)
4-5. May 14	Evening	Berrien & Kent	(1)
6-8. June 13	6-10 p.m.	Washtenaw, Mc Comb, & Oakland	(1)
9. June 14	6:30 p.m.	Cheboygan	NE
10-11. June 17	Evening	Livingston	(1)
12. June 27	4:30 p.m.	Saginaw	(1)
13-14. July 7	Evening	Allegan & Kalamazoo	(1)

(1) Unknown.

FUNNEL CLOUDS ALOFT

YEAR 1957

State and date	Hour	County	Direction of advance
MINNESOTA			
1. May 25	(1)	Cottonwood	(1)
2. May 31	P.m.	Mille Lacs	(1)
3. June 10	12:30 p.m.	Winona	(1)
4. June 10	4:45 p.m.	Mille Lacs	(1)
5. June 16	(1)	Martin	(1)
6. June 20	7:30 p.m.	Otter Tail	E
7-12. June 27	1 p.m.	Kittson	(1)
13. July 1	3 p.m.	Lac qui Parle	E
14-15. July 3	P.m.	Houston	S
16. July 7	10 p.m.	Steele	(1)
17-20. Aug. 1	6 p.m.	Lac qui Parle	SE
MISSISSIPPI			
1. Apr. 8	Early afternoon	Pike	NE
2. May 14	1 p.m.	Warren	(1)
3. Nov. 17	8:30 p.m.	Tippah	(1)
MISSOURI			
1. Apr. 3	12:45 p.m.	Dunklin	ENE
2. Apr. 3-4.	Late evening	Stoddard	(1)
3. Apr. 27	3:46 p.m.	Dunklin	NNE
4. May 11	5:30 p.m.	New Madrid	NE
5. May 13	6:10 p.m.	Nodaway	(1)
6. May 18	7:30 p.m.	Phelps	(1)
7. May 22	1:59 p.m.	Crawford	(1)
8. May 22	3:25 p.m.	St. Francois	ENE
9. May 22	6:30 p.m.	Greene	(1)
10. May 22	10:55 p.m.	Cape Girardeau	(1)
11-14. May 31	3:30-4:30 p.m.	Lafayette & Jackson	(1)
15. May 31	4:01 p.m.	Holt	(1)
16. June 7	5:35 p.m.	Boone	(1)
17. June 7	7 p.m.	Bates	(1)
18-19. June 7	7 p.m.	Audrain	E
20. June 8	9:15 a.m.	St. Francois	(1)
MISSOURI (Cont'd)			
21-22. June 8	11:40 a.m.	Calloway	(1)
23. June 8	Noon	Boone	(1)
24. June 9	4:45 p.m.	Clay	(1)
25-26. June 11	10:30-10:55 p.m.	Camden	NE, E
27. June 11	10:45 p.m.	Miller	NE
28. June 11	11 p.m.	Greene	(1)
29. June 11	Evening	Clay	(1)
30-31. June 12	1-1:15 a.m.	St. Francois	(1)
32. June 12	8:17 p.m.	Gasconade	(1)
33. June 13	4 a.m.	Jasper	SE
34. June 14	8:10 p.m.	Cole	(1)
35. June 14	10:05 p.m.	Calloway	(1)
36. June 26	1 a.m.	Johnson	(1)
37. June 29	12:30 p.m.	Boone	(1)
38. July 1	1:15 p.m.	Cass	(1)
39. July 10	3:50 a.m.	Camden	(1)
40. July 23	11:25 a.m.	Scott	NE
41. July 29	3:55 a.m.	St. Francois	S
42. Dec. 18	3 p.m.	Mississippi	(1)
NEBRASKA			
1. Apr. 19	5:50 p.m.	Dawson	N
2. Apr. 19	7:46 p.m.	Antelope	(1)
3. May 13	2:23 p.m.	Cheyenne	E
4. May 19	5 p.m.	Sioux	(1)
5. May 20	5:10 p.m.	Hall	(1)
6. May 20	5:45 p.m.	Lancaster	NNE
7. May 20	Afternoon	Adams	(1)
8. May 29	1:55 p.m.	Lincoln	NE
9. May 29	3:40 p.m.	Fillmore	(1)
10. June 9	3 p.m.	Cherry	NE
11. June 15	8:08 p.m.	Dodge	(1)
12. June 16	8:15 p.m.	Dawson	(1)
13-16. June 16	8:18 p.m.	Hall	NE
17. June 21	12:53 p.m.	Dawes	(1)
NEBRASKA (Cont'd)			
18. June 21	6:30 p.m.	Saline	(1)
19. June 21	8:39 p.m.	Lancaster	(1)
20. June 21	9:13 p.m.	Douglas	(1)
21. June 27	2:55 p.m.	Furnas	(1)
22. June 27	7:46 p.m.	Saline	(1)
23. July 2	9 p.m.	Nuckolls	NE
24. July 2	9:40 p.m.	Clay	(1)
25. July 2	10:02 p.m.	Dawson	(1)
26. July 12	1 p.m.	Holt	(1)
27. July 12	5:30 p.m.	Hall	(1)
28-29. July 12	8:50 p.m.	Lincoln	(1)
30. July 14	1:37 p.m.	Holt	(1)
31. July 19	9:05 p.m.	Lincoln	(1)
32. July 21	3 p.m.	Polk	(1)
33. July 24	3:05 p.m.	Cherry	(1)
34. July 24	3:07 p.m.	Cherry	(1)
35. July 24	3:27 p.m.	Cherry	(1)
36. Aug. 2	4 p.m.	Polk	(1)
37. Aug. 15	7:46 p.m.	Hall	(1)
NEW HAMPSHIRE			
1-2. May 10	5 p.m.	Hillsboro	SE
NEW MEXICO			
1. Apr. 21	3:30 p.m.	Lea	(1)
2-3. Apr. 22	10:54 a.m.	Lea	NE
4. May 26	6:45 p.m.	Curry	N
5. May 29	4:45 p.m.	Lea	N
6. Sept. 13	P.m.	Lea	(1)
NEW YORK			
1. Apr. 25	6:15 p.m.	Erie	NE
NORTH CAROLINA			
1. Sept. 4	5 p.m.	Anson	(1)
NORTH DAKOTA			
1. June 13	12:43 p.m.	La Moure	(1)
2. June 20	8:10 p.m.	Stark	(1)

(1) Unknown.

FUNNEL CLOUDS ALOFT

YEAR 1957

State and date	Hour	County	Direction of advance
NORTH DAKOTA (Cont'd)			
3. June 22	1:15 p.m.	Mountrail	S
4. June 27	12:30 p.m.	Grand Forks	NW
5. June 27	2 p.m.	Pembina	(1)
6. June 30	3 p.m.	Williams	ENE
7. June 30	7:57 p.m.	Slope	(1)
8. July 27	7 p.m.	Wells	(1)
9. Aug. 1	5 p.m.	Towner	SE
10. Aug. 24	(1)	Dunn	SW
OHIO			
1. July 4	6:55 p.m.	Williams	ESE
OKLAHOMA			
1. Mar. 31	4:25 p.m.	Jefferson	(1)
2. Apr. 2	6:22 p.m.	Pontotoc	(1)
3. Apr. 2	P.m.	Atoka	(1)
4. Apr. 2	8:45 p.m.	Washington	(1)
5. Apr. 2	10:15 p.m.	Pittsburg	(1)
6. Apr. 2	Night	Okmulgee	(1)
7-8. Apr. 2	11:45 p.m.	Sequoyah	(1)
9. Apr. 2	11:45 p.m.	Kay	NNE
10. Apr. 2	11:55 p.m.	Le Flore	N
11. Apr. 18	11 p.m.	Logan	(1)
12. Apr. 18	11:11 p.m.	Grady	(1)
13. Apr. 20	9:20 p.m.	Garvin	(1)
14. Apr. 21	7:46 p.m.	Texas	NW
15. Apr. 22	8:30 p.m.	Kay	NE
16. Apr. 22	9:40 p.m.	Noble	NE
17. Apr. 22	9:55 p.m.	Pawnee	(1)
18. Apr. 22	10:20 p.m.	Pawnee	NE
19-20. Apr. 22	10:45 p.m.	Okmulgee	E
21. Apr. 22	11:30 p.m.	Creek	(1)
22. Apr. 22	11:30 p.m.	Tulsa	(1)
23. Apr. 23	12:30 a.m.	Nowata	NE
24. Apr. 24	5 p.m.	Delaware	(1)
OKLAHOMA (Cont'd)			
25. Apr. 25	8:30 p.m.	Johnson	N
26-30. Apr. 25	8:30-9:35 p.m.	Pittsburg	(1)
31. Apr. 25	11:47 p.m.	Tulsa	NE
32-33. Apr. 26	12:05 a.m.	Tulsa	(1)
34. Apr. 26	1:30 a.m.	Tillman	(1)
35. Apr. 26	7:54 a.m.	Pittsburg	(1)
36. Apr. 26	5:50 p.m.	Okmulgee	(1)
37. Apr. 27	3 p.m.	Muskogee	(1)
38. Apr. 27	4 p.m.	Cherokee	(1)
39. Apr. 27	4:09 p.m.	Pittsburg	NE
40. Apr. 29	1 p.m.	Pittsburg	(1)
41. Apr. 29	2:40 p.m.	Marshall	(1)
42. May 2	4:30 p.m.	Okmulgee	SE
43. May 2	4:34 p.m.	Carter	(1)
44. May 3	10:54 a.m.	Marshall	NW
45-46. May 3	11:32 a.m. -1:10 p.m.	Jackson	W
47. May 3	1:20 p.m.	Greer	SW
48. May 3	2:42 p.m.	Love	(1)
49. May 12	Night	Caddo	NE
50. May 15	3:03 p.m.	Kingfisher	(1)
51-52. May 15	5:30 p.m.	Kingfisher	W
53-55. May 15	5:45-7:50 p.m.	Logan	NNE
56. May 15	8:37 p.m.	Garfield	(1)
57. May 16	12:30 a.m.	Logan	NE
58. May 16	3:30 p.m.	Carter	NE
59. May 16	6:35 p.m.	Nowata	NE
60. May 16	8:55 p.m.	Tulsa	(1)
61. May 16	9:08 p.m.	Osage	(1)
62. May 17	2:45 p.m.	Garvin	NE
63. May 17	5:25 p.m.	Pittsburg	(1)
64. May 20	4:30 p.m.	Oklahoma	NE
65. May 20	6 p.m.	Cleveland	(1)
OKLAHOMA (Cont'd)			
66-70. May 20	P.m.	Tulsa	(1)
71-72. May 20	P.m.	Osage	(1)
73. May 20	11:30 p.m.	Nowata	(1)
74-76. May 22	9:30-9:50 a.m.	Cleveland	NE
77. May 22	10 a.m.	Muskogee	(1)
78-79. May 22	10 a.m.	Wagoner	(1)
80. May 22	12:05 p.m.	Creek	(1)
81. May 22	2:01 p.m.	Ottawa	(1)
82. May 22	2:30 p.m.	Okfuskee & Okmulgee	NE
83. May 24	8 p.m.	Okmulgee	NE
84. May 24	9:25 p.m.	Cleveland	(1)
85. May 24	P.m.	Tulsa	NE
86-87. May 24	P.m.	Caddo	(1)
88. May 24	10:57 p.m.	Oklahoma	(1)
89. May 25	5:30 a.m.	Johnston	(1)
90-91. May 30	3 p.m.	Tillman	(1)
92. June 9	5:30 p.m.	Tulsa	SE
93-94. June 9	10 p.m.	Harper & Ellis	(1)
95-96. June 9	P.m.	Woods	(1)
97. June 11	9:45 p.m.	Grant	E
98. June 11	10:43 p.m.	Kay	ENE
99. June 12	A.m.	Logan	(1)
100. June 12	6:10 p.m.	Woodward	NE
101. June 14	1 p.m.	Nowata	E
102. June 14	P.m.	Craig	(1)
103. June 22	5 a.m.	Osage	E
104. June 22	P.m.	Texas	(1)
105. June 23	7:20 a.m.	Jackson	(1)
106. July 1	2:20 a.m.	Tulsa	(1)
107. July 1	5 a.m.	Wagoner	NE
108. July 25	12:38 p.m.	McClain	NW
OREGON			
1. May 10	2 p.m.	Benton	(1)

(1) Unknown.

FUNNEL CLOUDS ALOFT

YEAR 1957

State and date	Hour	County	Direction of advance
SOUTH CAROLINA			
1. Oct. 25	4:05 p.m.	Charleston	(1)
SOUTH DAKOTA			
1-2. Apr. 22	5:30 p.m.	Gregory	(1)
3. June 5	3:50 p.m.	Brown	(1)
4-5. June 10	1:40 p.m.	Lake	(1)
6-7. June 13	3:30 p.m.	Brown	ESE
TENNESSEE			
1. Aug. 13	9:38 p.m.	Madison	(1)
2. Nov. 17	9:15 p.m.	Shelby	(1)
TEXAS			
1-3. Mar. 6	6-6:30 p.m.	Aransas	(1)
4-9. Mar. 12	Afternoon	Victoria	NE
10. Mar. 14	5 p.m.	Victoria	(1)
11. Mar. 17	11:30 a.m.	Haskell	(1)
12. Mar. 17	11:40 a.m.	Runnels	(1)
13. Mar. 20	11:30 a.m.	Gaines	(1)
14. Mar. 20	12:45 p.m.	Howard	(1)
15. Mar. 20	12:50 p.m.	Midland	(1)
16. Mar. 20	2:35 p.m.	Taylor	(1)
17. Mar. 20	6 p.m.	Bee	SW
18. Mar. 20	8:12 p.m.	Travis	(1)
19. Apr. 2	5:40 p.m.	Grayson	NW
20. Apr. 2	7:45 p.m.	Denton	NE
21. Apr. 3	3:45 a.m.	Stephens	(1)
22. Apr. 3	5 a.m.	Tarrant	(1)
23. Apr. 3	9:30-10:30 a.m.	Ellis	(1)
24-26. Apr. 3	A.m.	Dallas	(1)
27. Apr. 3	(1)	Harrison	(1)
28. Apr. 3	(1)	Dallas	(1)
29. Apr. 4	4:37 p.m.	Brazos	(1)
30. Apr. 4	(1)	Bosque	(1)
31. Apr. 4	(1)	Bosque	(1)
32-33. Apr. 19	Afternoon	Bell	(1)
34-35. Apr. 19	(1)	McLennan	(1)
36. Apr. 19	(1)	Tarrant & Dallas	(1)
37. Apr. 19	(1)	Hill	(1)
38-39. Apr. 19	(1)	Johnson	(1)
40. Apr. 20	10:45 a.m.	Lubbock	NE
41. Apr. 20	(1)	Parmer	(1)
42. Apr. 20	(1)	Johnson	(1)
43-44. Apr. 20	(1)	Tarrant	(1)
45. Apr. 20	(1)	Dallas	(1)
46. Apr. 22	(1)	Carson	(1)
47. Apr. 22	(1)	Lubbock	(1)
48. Apr. 22	(1)	Hale	(1)
49-50. Apr. 22	(1)	Floyd	(1)
51-52. Apr. 22	(1)	McLennan	(1)
53. Apr. 23	12:30-1:30 p.m.	Brazos	NW
54. Apr. 23	4 p.m.	Walker	NE
55-59. Apr. 23	4:12 p.m.	Brazos	(1)
60. Apr. 24	11:35 a.m.	Bell	(1)
61. Apr. 24	12:35 p.m.	Dallas	NW
62-63. Apr. 24	4 p.m.	Tarrant	(1)
64. Apr. 24	4:20 p.m.	Brazos	NE
65. Apr. 25	4:22 p.m.	Howard	NE
66. Apr. 25	10:36 p.m.	Palo Pinto	(1)
67. Apr. 26	10:10 a.m.	Gregg	(1)
68. Apr. 26	1:30 p.m.	Upton	NE
69. Apr. 26	2:21 p.m.	Dallas	NNE
70. Apr. 26	4 p.m.	San Saba	(1)
71-72. Apr. 26	4:02-4:45 p.m.	Hood	NE
73. Apr. 26	4:12 p.m.	Mills	(1)
74. Apr. 26	4:45 p.m.	Coryell	NE
75. Apr. 26	6:30-7 p.m.	Gregg	(1)
76. Apr. 26	11:35 p.m.	Hood	(1)
77. Apr. 27	5:55 p.m.	Navarro	(1)
TEXAS (Cont'd)			
78. Apr. 27	6:50 p.m.	Freestone	SSE
79. Apr. 27	(1)	Sterling	(1)
80. Apr. 28	6:20 a.m.	Brazoria	(1)
81. Apr. 28	3:25 p.m.	Hill	NNE
82-83. Apr. 29	12:08 p.m.	Matagorda	(1)
84. Apr. 29	12:32 p.m.	Newton	(1)
85-86. Apr. 29	12:45 p.m.	McLennan	(1)
87. Apr. 29	1:32 p.m.	Tom Green	(1)
88-90. Apr. 29	1:55 p.m.	Jefferson	(1)
91. Apr. 29	3:02 p.m.	McLennan	(1)
92-93. Apr. 29	3:05-3:38 p.m.	Limestone	(1)
94. Apr. 29	3:38 p.m.	Runnels	SW
95. Apr. 29	4:05 p.m.	Johnson	NNE
96-97. Apr. 29	4:45-4:50 p.m.	Tom Green	(1)
98. Apr. 29	5:10 p.m.	Coryell	(1)
99-100. Apr. 29	5:10 p.m.	Wharton	(1)
101. Apr. 29	5:15 p.m.	Burnet	(1)
102-103. Apr. 29	6:25 p.m.	Willacy	SE
104. Apr. 30	12:32 p.m.	Hays	(1)
105. Apr. 30	4:25 p.m.	Dickens	NNE
106. Apr. 30	5:08 p.m.	Harrison	N
107. May 1	1:46 p.m.	Atascosa	(1)
108. May 2	11:05 a.m.	McLennan	SE
109-110. May 2	11:48 a.m.	Hill	E
111. May 2	1:12 p.m.	McLennan	(1)
112. May 2	1:15 p.m.	Coryell	(1)
113. May 3	Noon	McLennan	(1)
114-115. May 3	1 p.m.	Clay	(1)
116. May 3	1:30 p.m.	Wilbarger	NE
117. May 3	4 p.m.	Palo Pinto	E
118-119. May 8	11:15 p.m.	Taylor	(1)
120. May 9	9:15 a.m.	Limestone	(1)
121. May 9	5:30 p.m.	Taylor	E

(1) Unknown.

FUNNEL CLOUDS ALOFT

YEAR 1957

State and date	Hour	County	Direction of advance
TEXAS (Cont'd)			
122. May 9	7:20 p.m.	Cass	(1)
123-124. May 10	4:43-5:30 p.m.	Reeves	(1)
125. May 10	6:30 p.m.	Hunt	(1)
126. May 10	8:45 p.m.	Coke	(1)
127. May 11	3:35 a.m.	Andrews	(1)
128. May 11	3:41 a.m.	Lamb	NE
129. May 11	3:55 a.m.	Howard	E
130-132. May 11	4:15 a.m.	Denton	NE
133. May 11	1:50 p.m.	Deaf Smith	(1)
134-136. May 12	4:05 p.m.	Cherokee	(1)
137. May 12	5:48 p.m.	Scurry	(1)
138. May 12	6:15 p.m.	Dallas	NE
139. May 12	7:40 p.m.	Bosque	NE
140. May 12	7:50 p.m.	Hunt	NE
141. May 13	10 a.m.	Morris	E
142. May 13	11:55 a.m.	Gregg	N
143-144. May 15	5:10 p.m.	Roberts	NE
145-147. May 15	6:14-8:45 p.m.	Donley	NE
148. May 15	7:30 p.m.	Gray	NE
149. May 15	(1)	Dallas	NW
150. May 22	5:40 a.m.	Wilbarger	(1)
151. May 22	A.m.	Hopkins	(1)
152. May 22	Afternoon	Wilbarger	(1)
153-154. May 22	6:45-6:50 p.m.	McLennan	NE
155. May 22	7:23 p.m.	Hill	(1)
156. May 23	12:50 p.m.	San Saba	(1)
157. May 23	2:30 p.m.	Hunt	(1)
158. May 23	3:15-3:30 p.m.	Smith	(1)
159. May 23	3:45 p.m.	Gregg	(1)
160. May 24	11 a.m.	Bailey	(1)
161-162. May 24	11:15 a.m.	Parmer	(1)
163. May 24	11:17 a.m.	Oldham	NE
TEXAS (Cont'd)			
164. May 24	1:18 p.m.	Castro	(1)
165. May 24	1:25 p.m.	Randall	(1)
166. May 24	1:46 p.m.	Swisher	(1)
167. May 24	1:57 p.m.	Potter	(1)
168-174. May 24	2:10 p.m.	Hale & Midland	(1)
175-177. May 24	2:35 p.m.	Lubbock	(1)
178. May 24	3:52 p.m.	Wilbarger	(1)
179. May 24	Afternoon	Deaf Smith	(1)
180. May 24	5:41 p.m.	Midland	NE
181. May 24	8:14 p.m.	Taylor	(1)
182. May 24	8:15 p.m.	Baylor	(1)
183. May 24	8:27 p.m.	Jones	E
184. May 24	(1)	Lubbock	(1)
185. May 24	(1)	Crosby	(1)
186. May 30	8:10 p.m.	Wise	(1)
187. June 1	6 a.m.	Grayson	NE
188-189. June 1	10:45 a.m.	Karnes	ESE
190. June 1	2:50 p.m.	Uvalde	(1)
191-192. June 1	3-3:45 p.m.	Knox	(1)
193. June 1	5:05 p.m.	Mitchell	S
194. June 1	5:10 p.m.	El Paso	NE
195. June 1	7:10 p.m.	Wharton	NE
196. June 1	7:12 p.m.	Bosque	NE
197-198. June 1	7:30 p.m.	Nolan	(1)
199. June 2	11:57 a.m.	Palo Pinto	W
200. June 2	12:40 p.m.	Tarrant	(1)
201. June 2	1:45 p.m.	Grayson	(1)
202. June 2	2 p.m.	Medina	(1)
203. June 2	2:55 p.m.	McLennan	(1)
204. June 2	4:58 p.m.	Harris	(1)
205. June 3	3:16 p.m.	Kendall	N
206. June 3	4:40 p.m.	Johnson	NW
207. June 3	6:02 p.m.	Wharton	(1)
TEXAS (Cont'd)			
208. June 4	11:36 a.m.	Liberty	(1)
209. June 4	11:40 a.m.	Jefferson	(1)
210-211. June 4	12:45 p.m.	Brazoria	NE
212. June 4	2:05 p.m.	Dallas	(1)
213. June 4	2:40 p.m.	McLennan	(1)
214-215. June 4	4:05 p.m.	Limestone	(1)
216. June 4	5:30 p.m.	Cherokee	(1)
217. June 4	5:44 p.m.	Tarrant	(1)
218-220. June 4	6 p.m.	Lavaca	(1)
221. June 4	6:07 p.m.	Orange	N
222. June 4	6:15 p.m.	Harris	(1)
223. June 5	11:40 a.m.	Nueces	(1)
224. June 5	12:17 p.m.	Burnet	(1)
225. June 7	10:05 a.m.	Liberty	NW
226. June 7	3:30-3:38 p.m.	Harris	(1)
227. June 7	(1)	Liberty	(1)
228. June 8	12:30 p.m.	Galveston	(1)
229. June 12	2:25 p.m.	Carson	(1)
230-232. June 12	(1)	Williamson	(1)
233. June 17	1:29 p.m.	Orange	(1)
234-235. June 17	5:45 p.m.	Bailey	(1)
236. June 17	(1)	Lamb	(1)
237. June 17	(1)	Cochran	(1)
238. June 19	6:27 p.m.	Milam	(1)
239. June 19	7:03-7:12 p.m.	Williamson	E
240. June 22	9:42 p.m.	Sherman	(1)
241-242. June 22	10:02 p.m.	Lamb	(1)
243. June 22	(1)	Potter	(1)
244. June 23	1:12 p.m.	Midland	W
245-247. June 23	2-3 p.m.	Winkler	E
248. June 23	3:20 p.m.	Reeves	(1)
249. June 23	4-5 p.m.	Pecos	(1)
250. June 23	7:10 p.m.	Kendall	(1)

(1) Unknown.

FUNNEL CLOUDS ALOFT

State and date	Hour	County	Direction of advance
TEXAS (Cont'd)			
251-253. June 23	7:50 p.m.	Bexar	(1)
254. June 23	(1)	Ellis	(1)
255. June 23	(1)	Hansford	(1)
256. June 30	5 p.m.	Hartley	(1)
257. July 24	12:30 p.m.	Crosby	NW
258. July 30	9 p.m.	Taylor	(1)
259. Sept. 2	P.m.	Falls	(1)
260. Sept. 14	2:15 p.m.	Colorado	NE
261. Sept. 14	8:25 p.m.	Wise	(1)
262. Sept. 14	6:15 p.m.	Wichita	(1)
263. Sept. 20	5:20 p.m.	Midland	(1)
TEXAS (Cont'd)			
264. Oct. 1	9:20 a.m.	Galveston	(1)
265. Oct. 14	9:25 a.m.	Victoria	(1)
266. Oct. 14	12:15 p.m.	Wharton	NE
267. Oct. 14	6:23 p.m.	Angelina	N
268. Oct. 15	2:25 p.m.	Brazos	(1)
269. Oct. 22	7:30 p.m.	Taylor	(1)
270. Oct. 22	9:10 p.m.	Eastland	(1)
271. Nov. 1	5:28 p.m.	Bosque	(1)
UTAH			
1. May 24	12:15 p.m.	Salt Lake	NE
2. June 16	Noon	Davis	N
WASHINGTON			
1. May 20	12:45 p.m.	Spokane	E
2. May 20	1:58 p.m.	Lincoln	E
WISCONSIN			
1. May 31	1:30 p.m.	Vernon	(1)
2. May 31	4:29 p.m.	Jackson	(1)
3. July 7	12:36 p.m.	Dane	NE
4. July 11	1 p.m.	Brown	ENE
5. July 12	9:20 a.m.	Dane	NE
6. July 12	4:02 p.m.	Dane	NE
WYOMING			
1. May 30.	Afternoon	Big Horn	(1)

(1) Unknown.

HAILSTORM LOSSES †

YEAR 1957

Section	January		February		March		April		May		June		July	
	Property	Crops	Property	Crops	Property	Crops	Property	Crops	Property	Crops	Property	Crops	Property	Crops
Alabama					3	4				2	3	3		
Arizona									3	(a)		(a)		
Arkansas					b/c/d/5	(a)	b/5		b/3	b/4	b/d/4	b/d/5		
California										(a)				(a)
Colorado									e/3	e/3	d/e/4	d/e/4	4	d/e/3
Connecticut										3		b/4	(g)	d/5
Delaware														
District of Columbia														
Florida		6				5		(g)		(g)				
Georgia	(g)				(g)	4	3	3	(a)	(a)		e/4	(g)	(g)
Idaho										(a)(d)	(a)(d)(f)	(a)(d)	(a)(e)(f)	(a)(e)
Illinois					4	(a)			4	(a)		(a)		b/5
Indiana								(g)			3	4	3	6
Iowa									b/d/e/4	b/d/e/3	d/e/5	d/e/6	d/5	d/5
Kansas							b/3	b/4	b/5	b/6	b/4	b/6	(a)	(a)
Kentucky								d/3				d/3		d/5
Louisiana					3	(g)	(g)							
Maine														d/e/5
Maryland									(a)	(a)				(a)
Massachusetts											2	3	2	3
Michigan												4	(a)	e/6
Minnesota									3	2	4	e/6	d/6	d/6
Mississippi					3	(a)	(g)		(g)	(g)				
Missouri			(g)	(g)	(g)	(g)	(g)	(g)	(a)	(a)	(a)	(a)	(g)	(g)
Montana											5	5	3	b/6
Nebraska							4	4	3	6	6	7	5	6
Nevada									(g)	(g)				

HAILSTORM LOSSES †

Section	August		September		October		November		December		Crop season April–Sept.		Total		
	Property	Crops	Property	Crops	Property	Crops	Property	Crops	Property	Crops	Property	Crops	Property	Crops	Property and crops
Alabama											3	4	3	4	4
Arizona		(a)									3	(a)	3	(a)	b/3
Arkansas							(a)	(a)			b/d/5	b/d/5	b/c/d/5	b/d/5	b/d/5
California				(a)							0	(a)	0	(a)	(a)
Colorado	f/3	e/5			(a)	(a)					d/e/f/4	d/e/5	b/d/e/f/4	b/d/e/5	b/d/e/f/5
Connecticut		(a)									(g)	b/d/5	(g)	b/d/5	b/d/5
Delaware											0	0	0	0	0
District of Columbia											0	0	0	0	0
Florida											0	(g)	0	b/6	b/6
Georgia											b/e/3	b/4	b/e/3	b/4	b/e/4
Idaho		b/d/4									(a)(d)(e)(f)	b/d/e/4	(a)(d)(e)(f)	b/d/e/4	b/d/e/f/4
Illinois									4		4	b/5	5	b/5	b/5
Indiana											4	b/6	4	b/6	b/6
Iowa	3	3									b/d/e/5	b/d/e/6	b/d/e/5	b/d/e/6	b/d/e/6
Kansas	b/3	b/5	b/5	b/5	(a)	(a)					b/5	b/6	b/5	b/6	b/6
Kentucky		3									0	d/5	0	d/5	d/5
Louisiana											(g)	0	b/3	(g)	b/3
Maine											0	d/e/5	0	d/e/5	d/e/5
Maryland	(a)	(a)									(a)	(a)	(a)	(a)	(a)
Massachusetts	(a)	(a)									b/3	b/4	b/3	b/4	b/4
Michigan		d/4									(a)	d/e/6	(a)	d/e/6	b/d/e/6
Minnesota											d/6	d/e/6	d/6	d/e/6	d/e/6
Mississippi											(g)	(g)	b/3	(a)	b/3
Missouri	(g)	(g)	(g)						(g)	(g)	(a)	(a)	(a)	(a)	(a)
Montana	b/5	b/6									b/5	b/6	b/5	b/6	b/6
Nebraska	3	5	4	5							6	7	6	7	7
Nevada											(g)	(g)	(g)	(g)	(g)

See reference notes at end of table.

HAILSTORM LOSSES†

YEAR 1957

Section	January		February		March		April		May		June		July	
	Property	Crops	Property	Crops	Property	Crops	Property	Crops	Property	Crops	Property	Crops	Property	Crops
New Hampshire											2	3		3
New Jersey														
New Mexico							(g)	(g)	c/ 5	5	3			
New York											(a)	b/ 4	(a)	b/d/ 6
North Carolina										5	4	6		5
North Dakota									4	3	4	5	4	6
Ohio									(a)	b/ 3	4	(a)		
Oklahoma	4				(g)		b/ 3	b/ 5	b/ 5	b/d/e/ 6	b/e/ 6	b/ 4		
Oregon							2		3	4	4	6		
Pennsylvania												(a)	3	(a)
Rhode Island														
South Carolina						(a)		4		5		3		
South Dakota							4	(g)	4	(a)	e/ 4	d/e/ 5	e/ 6	6
Tennessee									(g)	(a)		(a)		
Texas					b/c/d/ 6	b/ 4	5		d/ 5	d/ 5	b/c/d/ 5	b/ 5		
Utah									b/ 4	b/ 4	(g)	(g)	(a)	(a)
Vermont											3		2	4
Virginia							(g)	d/ 3	b/ 3	d/ 4	b/c/ 3	(a)		
Washington									d/e/ 5	5	d/e/f/ 5	d/e/ 6	(g)	(g)
West Virginia							(a)	(a)	(a)	(a)	(g)			
Wisconsin							5					3	4	4
Wyoming									3	3	2		b/f/ 3	5
Alaska														
Hawaii														
West Indies				4										
Total	b/ 4	6	(g)	b/ 4	b/c/d/ 6	b/ 5	b/ 6	b/d/ 5	b/c/d/e/ 6	b/d/e/ 6	b/c/d/e/f/ 6	b/d/e/ 7	b/d/e/f/ 6	b/d/e/ 7

HAILSTORM LOSSES†

Section	August		September		October		November		December		Crop season April–Sept.		Total		
	Property	Crops	Property	Crops	Property	Crops	Property	Crops	Property	Crops	Property	Crops	Property	Crops	Property and crops
New Hampshire											2	3	2	3	3
New Jersey											0	0	0	0	0
New Mexico			c/d/e/ 6	5	d/ 5	e/ 6					b/c/d/e/ 6	b/ 6	b/c/d/e/ 6	b/e/ 6	b/d/e/ 6
New York		(a)	(a)	(a)							(a)	b/d/ 6	(a)	b/d/ 6	b/d/ 6
North Carolina		6		3							4	6	4	6	6
North Dakota	3	6		5							5	6	5	6	6
Ohio											b/ 4	b/ 3	b/ 4	b/ 3	b/ 4
Oklahoma			b/d/ 5	b/d/e/ 5	(a)	(a)					b/d/e/ 6	b/d/e/ 6	b/d/e/ 6	b/d/e/ 6	b/d/e/ 6
Oregon			5	5							5	6	5	[illegible]	6
Pennsylvania											3	(a)	3	(a)	b/ 3
Rhode Island											0	0	0	0	0
South Carolina	4	5									4	5	4	b/ 5	b/ 5
South Dakota	4	d/ 5	4	e/ 5							e/ 6	b/d/e/ 6	e/ 6	b/d/e/ 6	b/d/e/ 6
Tennessee		(a)	b/ 4	b/ 5							b/ 4	b/ 5	b/ 4	b/ 5	b/ 5
Texas	3	5	b/ 5	b/ 6	c/ 5	5					b/c/d/ 6	b/d/ 6	b/c/d/ 6	b/d/ 6	b/d/ 7
Utah	(a)	(a)			(a)						b/ 4	b/ 4	b/ 4	b/ 4	b/ 4
Vermont											3	[illegible]	3	3	4
Virginia	(a)	b/ 4			(g)	d/ 3					b/c/ 4	b/d/ 5	b/c/ 4	b/d/ 5	b/d/ 5
Washington	(g)	(g)									b/d/e/f/ 5	b/d/e/ 6	b/d/e/f/ 5	b/d/e/ 6	b/d/e/f/ 6
West Virginia											(a)	(a)	(a)	(a)	(a)
Wisconsin											5	4	5	4	5
Wyoming	e/f/ 6	e/ 4		4							b/e/f/ 6	e/ 5	b/e/f/ 6	e/ 5	b/e/f/ 6
Alaska											0	0	0	[illegible]	0
Hawaii											0	0	0	0	0
West Indies											0	0	4	0	4
Total	b/e/f/ 6	b/d/e/ 6	b/c/d/e/ 6	b/d/e/ 7	b/c/d/ 5	b/d/e/ 6	(a)	(a)	b/ 4	(g)	b/c/d/e/f/ 7	b/d/e/ 7	b/c/d/e/f/ 7	b/d/e/ 8	b/d/e/f/ 8

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† Storm damages are placed in categories varying from 1 to 9 as follows:
1 Less than $50
2 $50 to $500
3 $500 to $5,000
4 $5,000 to $50,000
5 $50,000 to $500,000
6 $500,000 to $5,000,000
7 $5,000,000 to $50,000,000
8 $50,000,000 to $500,000,000
9 $500,000,000 to $5,000,000,000

a. Losses occurred; amount not reported.
b. Additional losses occurred.
c. Includes crop damage.
d. Includes damage from attendant high winds.
e. Includes damage from attendant heavy rain.
f. Includes lightning damage.
g. Damage reported as small.

HAILSTORM LOSSES FOR PAST YEARS

Year	Property†	Crop†	†Total
1933			7
1934			7
1935			7
1936	6	7	7
1937	6	7	7
1938	6	7	7
1939	5	6	6
1940	6	7	7
1941	6	7	7
1942	6	7	7
1943	6	7	7
1944	7	7	8
1945	6	7	7
1946	7	7	7
1947	6	8	8
1948	7	8	8
1949	7	7	7
1950	7	7	7
1951	7	7	8
1952	7	7	7
1953	7	7	7
1954	7	[illegible]	8
1955	7	7	8
1956	7	8	8
1957	7	8	8

† Storm damages are placed in categories varying from 1 to 9 as follows:

1	Less than $50
2	$50 to $500
3	$500 to $5,000
4	$5,000 to $50,000
5	$50,000 to $500,000
6	$500,000 to $5,000,000
7	$5,000,000 to $50,000,000
8	$50,000,000 to $500,000,000
9	$500,000,000 to $5,000,000,000

NOTE.--The above estimated losses are based on values at time of occurrence.

WINDSTORM LOSSES†

(Windstorms other than tornadoes)

YEAR 1957

Section	January		February		March		April		May		June		July	
	Property	Crops	Property	Crops	Property	Crops	Property	Crops	Property	Crops	Property	Crops	Property	Crops
Alabama	3						5		4		5	5	3	
Arizona					(c)		b/3		3		5		b/d/4	
Arkansas							b/d/f/4		b/d/f/6	b/d/f/5	b/d/f/4	(c)	b/d/4	b/d/f/3
California	d/5	(c)	d/6	(c)	d/4	(c)	d/5	(c)	d/5	(c)(d)	3		d/e/5	(c)
Colorado	3		3		3	(c)	4		3	d/3	(c)	d/f/3		d/3
Connecticut									b/3		(c)			f/5
Delaware	(c)												4	
District of Columbia	4													
Florida			4	(c)	3	3	4	(a)	4	(a)	(a)	(a)		
Georgia	(a)				(a)		(a)		(c)	(c)	(c)	(c)	e/4	3
Idaho					(a)(h)								3	(c)(d)
Illinois					5		4		4		b/e/6		b/e/5	
Indiana							5		g/5	(c)	d/f/5	(c)	d/g/5	(c)
Iowa					d/h/5				d/f/5		b/d/e/f/5	b/d/e/f/6	b/d/e/f/6	b/d/e/f/5
Kansas							4		(c)	(c)	b/5	b/5	b/4	
Kentucky					3		f/5	f/3	5	3	f/5	f/3	e/f/5	e/f/5
Louisiana					4	(a)	(c)		3		8	7	4	(a)
Maine					h/3						d/e/5	3	d/e/4	
Maryland							b/3		5				b/4	
Massachusetts	h/4				h/4		d/e/4		d/e/5		d/e/6	3	d/e/5	3
Michigan	e/4		(a)		e/5		5		e/5		e/5		4	3
Minnesota	(a)(h)				(a)(e)(h)		(c)(d)(h)		d/e/4	d/4	d/e/f/g/7	d/4	b/d/e/5	(c)(d)(f)
Mississippi	4		3				d/g/5	(c)	3		6	b/6	d/5	d/4
Missouri	b/e/3		(c)		(c)	(a)	d/f/5	(c)(d)	e/f/5	f/4	d/e/f/6	d/f/6	d/e/f/2	(c)(d)
Montana			3										b/4	[illegible]
Nebraska			3		h/4		3		b/3		b/4	b/3	b/5	b/4
Nevada														

WINDSTORM LOSSES

(Windstorms other than tornadoes)

YEAR 1957

Section	August		September		October		November		December		Crop season April–Sept.		Total		
	Property	Crops	Property	Crops	Property	Crops	Property	Crops	Property	Crops	Property	Crops	Property	Crops	Property and crops
Alabama	3				(a)		4				6	5	b/6	5	b/6
Arizona	e/5						4				b/d/e/5	0	b/d/e/5	0	b/d/e/5
Arkansas	b/f/2	(c)					b/d/f/4	b/d/f/3	3		b/d/f/6	b/d/f/5	b/d/f/6	b/d/f/5	b/d/f/6
California	d/4	(c)	d/e/4	(c)	d/e/4	(c)	e/6	(c)	d/4	(c)	d/e/5	(c)(d)	d/e/6	(c)(d)	b/d/e/6
Colorado	3	3							4		b/4	d/f/3	b/4	b/d/f/3	b/d/f/5
Connecticut							5		b/4		b/3	f/5	b/5	f/5	b/f/5
Delaware					(c)						4	0	b/4	0	b/4
District of Columbia											0	0	4	0	4
Florida	(a)	(a)	(a)	(a)	(a)	(a)	3	(a)	(a)	(a)	b/4	(a)	b/5	(c)	b/5
Georgia	e/4		(a)	(a)			e/4				b/e/4	b/3	b/e/5	b/3	b/e/5
Idaho					(c)(h)		(c)(h)		(c)		3	(c)(d)	b/h/3	(c)(d)	b/d/h/3
Illinois	b/d/e/6						(c)				b/d/e/6	0	b/d/e/6	0	b/d/e/6
Indiana	5				3		5				d/f/g/6	(c)	d/f/g/6	(c)	b/d/f/6
Iowa	3		d/e/4						4		b/d/e/f/6	b/d/e/f/6	b/d/e/f/h/6	b/d/e/f/6	b/d/e/f/h/6
Kansas	b/4	b/3	(c)	(c)	3	2			4		b/5	b/5	b/5	b/5	b/5
Kentucky	3	3	4				4	4			e/f/6	e/f/5	e/f/6	e/f/5	e/f/6
Louisiana	b/3	(a)	5	5	4	(a)	5	4			b/8	b/7	b/8	b/7	b/8
Maine			(c)				d/e/4		d/5		b/d/e/5	3	b/d/e/h/5	3	b/d/e/h/5
Maryland	(c)				(c)						b/5	0	b/5	0	b/5
Massachusetts	d/e/5		d/e/4		3		d/e/4		d/5		d/e/6	4	d/e/h/6	4	d/e/h/6
Michigan	5	(c)					5		5		e/6	b/3	b/e/6	b/3	b/e/6
Minnesota	d/e/4						(c)(h)	(c)(h)			b/d/e/f/g/h/7	b/d/f/4	b/d/e/f/g/h/7	b/d/f/h/4	b/d/e/f/h/7
Mississippi			5	5	4	(a)	b/f/5	b/4	3		d/g/6	b/d/7	b/d/f/g/6	b/d/7	b/d/f/7
Missouri	d/e/5		(c)(e)				(c)(d)(e)	(c)(d)	d/f/4		d/e/f/6	b/d/f/6	b/d/e/f/6	b/d/f/6	b/d/e/f/6
Montana	b/3	(c)					3				b/4	4	b/4	4	b/5
Nebraska	b/4		4				(c)	h/6	(c)	5	b/5	b/4	b/h/5	b/6	b/h/6
Nevada							(c)				0	0	(c)	0	(c)

See reference notes at end of table.

WINDSTORM LOSSES†

(Windstorms other than tornadoes)

Section	January		February		March		April		May		June		July	
	Property	Crops	Property	Crops	Property	Crops	Property	Crops	Property	Crops	Property	Crops	Property	Crops
New Hampshire					h/3				e/d/4		e/d/5	4	e/d/4	3
New Jersey	(a)				g/4	(a)	4		5		5		4	
New Mexico					h/5									
New York	(c)				(c)		b/d/e/5	(c)	(c)	(c)	d/e/6	(c)	b/5	b/f/6
North Carolina	4		3				3		3		5	5	4	4
North Dakota									d/4		4	4	6	5
Ohio							6		5	(a)	5			
Oklahoma	(c)				5	(a)	b/e/4		b/4	(c)	b/e/4	(c)	b/4	
Oregon			5	(a)	3		5	3			5	4	3	4
Pennsylvania	3						5		d/5		4		2	
Rhode Island											(c)			
South Carolina					d/2		4	3	d/2	d/3	d/e/6	d/e/5		
South Dakota	3			(c)		(c)	3				4	(c)	5	5
Tennessee	(c)				b/3		b/5		b/4		b/4	(c)	(c)	
Texas					e/h/6	(c)	e/f/g/5		e/6	4	d/e/g/7		e/g/4	
Utah	(a)				(a)		3		3					
Vermont					h/3				d/e/4		d/e/5	4	d/e/4	
Virginia	(c)						5	(a)	4	3	e/3	(c)	d/5	(c)
Washington	d/h/5		d/h/5		d/3		b/d/g/5	(a)					(a)	(a)
West Virginia	(c)						4	4	(c)		b/4	b/2	b/4	
Wisconsin							3		4		e/4		d/e/4	d/e/5
Wyoming									6					
Alaska					(c)									
Hawaii			(c)	(c)										
West Indies				(c)										
Total	b/d/e/h/5	(c)	b/d/h/6	(c)	b/d/e/g/h/7	b/3	b/d/e/f/g/h/7	b/d/f/4	b/d/e/f/g/6	b/d/f/5	b/d/e/f/g/8	b/d/e/f/7	b/d/e/f/g/6	b/d/e/f/6

WINDSTORM LOSSES†

(Windstorms other than tornadoes)

YEAR 1957

Section	August		September		October		November		December		Crop season April–Sept.		Total		
	Property	Crops	Property	Crops	Property	Crops	Property	Crops	Property	Crops	Property	Crops	Property	Crops	Property and crops
New Hampshire			d/e/ 4				d/e/ 4		d/ 4		d/e/ 5	4	d/e/h/ 5	4	d/e/h/ 6
New Jersey					5				5		5	0	b/g/ 5	(a)	b/ 5
New Mexico			(c)		f/ 5						(c)	0	f/b/h/ 6	0	f/b/h/ 6
New York	(c)	(c)	(c)	(c)			(c)(h)		b/ 5		b/d/e/ 6	b/f/ 6	b/d/e/ 6	b/f/ 6	b/d/e/f/ 6
North Carolina	4	3	4	3	4		4		4		5	5	5	5	5
North Dakota	5	5									d/ [illegible]	5	d/ 6	5	d/ 6
Ohio							4	(c)			6	(a)	6	(c)	b/ 6
Oklahoma	b/ 4	d/ 2		b/d/ 4	d/ 4		(c)	(c)	b/ 3	(a)	b/e/ 5	d/b/ 4	b/d/e/ 5	d/b/ 4	d/b/e/ 5
Oregon			4	3			4	(a)	5	(a)	6	4	6	b/ 4	b/ 6
Pennsylvania	2		4		4	3	4				d/ 5	0	d/ 5	3	d/ 5
Rhode Island									b/ 4		(c)	0	b/ 4	0	b/ 4
South Carolina	e/ 5		3				d/ 4				d/e/ 6	d/e/ 5	d/e/ [illegible]	d/e/ 5	d/e/ 6
South Dakota	4	b/ 3	d/ 4	3	4				3		d/ 5	b/ 5	d/ 5	b/d/ 5	b/d/ 5
Tennessee	(c)		(c)				b/ 5		(c)		b/ 5	(c)	b/ 5	(c)	b/ 5
Texas	e/g/ 6	e/ 2	e/f/g/ 5	6	e/ 5		3	5	4		d/e/f/g/ 7	e/ 6	d/e/f/g/h/ 7	b/e/ 6	b/d/e/f/h/ 7
Utah	5	(c)					(a)		(a)		5	(c)	b/ 5	(c)	b/ 5
Vermont	4	3	(c)				d/e/ 4		d/ 4		b/d/e/ 5	4	b/d/e/h/ 6	4	b/d/e/h/ 6
Virginia			d/e/ 4	3	(c)	(a)					d/e/ 5	b/ 3	b/d/e/ 5	b/ 3	b/d/e/ 5
Washington			4		d/e/g/h/ 5	(c)	4	(c)	d/g/ 5	(c)	b/d/g/ 5	(a)	b/d/e/g/h/ 6	(a)	b/d/e/h/ 6
West Virginia							(c)				b/ 5	b/ 4	b/ 5	b/ 4	b/ 5
Wisconsin							4				d/e/ 5	d/e/ 5	d/e/ 5	d/e/ 5	d/e/ 5
Wyoming									5		6	0	6	0	6
Alaska			(c)								(c)	0	(c)	0	(c)
Hawaii									5	(c)	0	0	5	(c)	b/ 5
West Indies				(c)				(c)		(c)	0	(c)	(c)	(c)	(c)
Total	b/d/e/f/g/ 6	b/d/e/ 5	b/d/e/f/g/ 6	b/d/ 6	b/d/e/f/g/h/ 6	b/ 3	b/d/e/f/h/ 6	b/d/f/h/ 6	b/d/f/g/ 6	b/ 5	b/d/e/f/g/h/ 8	b/d/e/f/ 7	b/d/e/f/g/h/ 8	b/d/e/f/h/ 7	b/d/e/f/h/ 8

† Storm damages are placed in categories varying from 1 to 9 as follows:

1	Less than $50	6	$500,000 to $5,000,000
2	$50 to $500	7	$5,000,000 to $50,000,000
3	$500 to $5,000	8	$50,000,000 to $500,000,000
4	$5,000 to $50,000	9	$500,000,000 to $5,000,000,000
5	$50,000 to $500,000		

(a) Damage reported as small.
(b) Additional losses occurred.
(c) Losses occurred; amount not reported.
(d) Includes damage from attendant heavy rain.
(e) Includes lightning damage.
(f) Includes damage from attendant hail.
(g) Includes crop damage.
(h) Includes damage from attendant heavy snow.

WINDSTORM LOSSES PAST YEARS
(Windstorms other than tornadoes)

Year	Total loss of life	†Total losses
1916	65	7
1917	25	6
1918	79	7
1919	344	7
1920	42	6
1921	65	7
1922	133	7
1923	68	7
1924	78	7
1925	88	7
1926	357	8
1927	64	7
1928	1,947	8
1929	46	7
1930	49	7
1931	17	7
1932	306	7
1933	156	8
1934	109	7
1935	461	7
1936	121	7
1937	43	7
1938	630	8
1939	60	6
1940	251	7
1941	43	7
1942	68	7
1943	61	7
1944	448	8
1945	85	7
1946	70	7
1947	117	8
1948	52	8
1949	102	8
1950	210	8
1951	289	8
1952	137	8
1953	118	8
1954	292	9
1955	301	8
1956	126	8
1957	553	8
Total	8,746	

† Storm damages are placed in categories varying from 1 to 9 as follows:

1	Less than $50
2	$50 to $500
3	$500 to $5,000
4	$5,000 to $50,000
5	$50,000 to $500,000
6	$500,000 to $5,000,000
7	$5,000,000 to $50,000,000
8	$50,000,000 to $500,000,000
9	$500,000,000 to $5,000,000,000

NOTE.--The above estimated losses are based on values at time of occurrence.

NORTH ATLANTIC TROPICAL STORMS, 1957

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Of the eight tropical storms detected over the waters of the North Atlantic Ocean and the Gulf of Mexico during the 1957 hurricane season, three were accompanied by winds of hurricane force.

Hurricane Audrey, the first June tropical storm of hurricane force to reach the coastline of the United States since 1945, caused heavy loss of life and property damage, particularly along the western Louisiana and east Texas coasts. The other two 1958 hurricanes, Carrie and Frieda, ran their entire course over the waters of the North Atlantic.

For the second successive year, all of the tropical storms that reached the continental United States moved inland on the Gulf coast. Of these the only one reaching the Atlantic was the unnamed storm of June 8-14 which, after losing its tropical characteristics, moved into the Atlantic across the southern portion of the South Carolina coast.

Hurricane damage of over $152 million in the United States during 1957 was considerably less than in a number of recent years. However, the great number of drownings associated with hurricane Audrey brought the total loss of life in the United States from all 1957 tropical storms to 395, a figure which has not been exceeded since 1938 when about 600 died in the New England hurricane. An additional 80 lives were lost outside the United States making a total for all areas in 1957 of 475.

Although the greatest loss of life during the year occurred on shore, there were two marine casualties. As hurricane Audrey, the first of the season, approached the Gulf coast near the Louisiana-Texas border, the M/V KOTURAH, which was under tow in heavy seas off Galveston, sank with the loss of 7 lives. Later in the season, on September 21, the German sailing vessel Pamir sank in hurricane Carrie with 6 surviving from a crew of 86. A summary of the individual storms follows. Their tracks appear on figure 3.

UNNAMED TROPICAL STORM, JUNE 8-14, 1957

Unsettled conditions, accompanied by abnormally low pressure, prevailed over the southwest Gulf of Mexico and the Yucatan area on June 7. Late that day and during the morning hours of June 8, pressure indicated that a depression with a poorly defined circulation existed over the Gulf. At 10 a.m. (c.s.t.) on the 8th it was centered 200 to 250 miles south of Mobile, Ala. Although aircraft reconnaissance on the 8th was unable to locate a definite center, observations from ships in the area indicated that the storm had an exceptionally fast forward movement of about 25 m.p.h. It crossed the mainland east of Apalachicola, Fla., and during the night of the 8th moved northeastward through northern Florida and southern Georgia entering the North Atlantic on the 9th.

Exceptionally heavy rain attended passage of this storm, particularly in Suwannee and all adjacent Florida counties - 48-hour amounts of nearly 15 inches at official stations and some unofficial amounts as high as 19 inches. There was considerable damage to field and truck crops, particularly to tobacco and watermelons. Between 100 and 200 families were evacuated near Perry, Fla. According to the Meteorologist in Charge at Jacksonville, there were at least nine reported tornadoes or damaging windstorms in northeastern Florida on the afternoon and evening of the 8th, and another tornado over Jekyll Island in southeastern Georgia. No deaths were reported from these tornadoes, and the damage and injuries were small.

Having lost its tropical storm characteristics, the extratropical LOW crossed the east coast a short distance south of Charleston, passed eastward over the Atlantic, and reached the vicinity of Bermuda during the morning of the 12th of June, and then headed northeastward, dissipating on the 14th.

In an observation at 0300 G.M.T. on June 10 the SS ATLANTIC VOYAGER located near lat. 32.9°N., long. 72.3°W. reported winds of 65 knots from the north-northeast. About 15 hours later at approximately 1800 G.M.T. on the same day the SS ALCOA PURITAN near lat. 33.8°N., long. 70.5°W. encountered winds from the east-southeast at 63 knots.

HURRICANE AUDREY, JUNE 25-28, 1957

Highlights

Hurricane Audrey, one of the most destructive June hurricanes of record, reached the coastline near the Louisiana-Texas border on the morning of June 27, 1957. A late count indicates that the storm claimed 390 lives and wrought damage estimated at about $150 million. Extreme tides of more than 13 feet and winds in excess of 100 m.p.h. accompanied the hurricane as it moved onto the coast. Rainfall exceeded 10 inches in Jefferson Davis and Acadia Parishes, a maximum of 10.40 inches falling at Jennings, La., during passage of the storm. Greatest damage extended from Sabine Lake to Cote Blanche Bay with extensive damage from the Atchafalaya River westward and northward into La Salle Parish. The cities hardest hit were Cameron and Lake Charles, La., and Port Arthur, Tex.

History of the Hurricane

The existence of a tropical depression in the southwestern Gulf of Mexico was first suspected when upper air winds showed evidence of a weak circulation over the Bay of Campeche on June 24. Later in the day additional confirmation came in an observation received from a boat of the shrimp fleet. At 10:30 p.m. (c.s.t.), with the strongest winds associated with the storm 35 to 40 m.p.h., the Hurricane Warning Center at New Orleans issued the first public bulletin.* During the night the circulation increased rapidly in intensity and by the following morning aircraft reconnaissance reports and an observation from the S. S. TERRIER indicated that the storm, while remaining almost stationary in location, had increased to hurricane intensity.

On June 27, the SS TILLIMOOK was in the eye of the hurricane between 0910 and 1025 G.M.T. near 28.7°N., 94.0°W. In an 0600 G.M.T. observation, before entering the eye, the ship reported 27-foot waves from the east with a period of 21 seconds. Approximately 5 hours after leaving the eye, the vessel encountered winds of 90 knots from the southwest with visibility reduced to a tenth of a mile.

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* A complete listing of official warnings, advisories, and bulletins issued by the Weather Bureau in connection with hurricane Audrey is given in a preliminary report "Hurricane Audrey" dated July 8, 1957. This report can be secured by request made to the U. S. Weather Bureau, 24th and M Streets, N. W., Washington 25, D. C., Attention: Publications Section.

The hurricane, now known as Audrey, began a northward movement as it increased in size and intensity. Moving forward at a speed of approximately 15 m.p.h., the center crossed the coastline during the morning of June 27 near the Texas-Louisiana line, at a point about midway between Beaumont, Tex., and Lake Charles, La. The center of the storm passed east of Sabine Pass, with the City of Orange, Tex., in the western portion of the eye between 9:00 and 10:00 a.m. (c.s.t.)

From this point the storm moved northeastward across Louisiana and into northwestern Mississippi, losing strength as it progressed. The center passed over Vinton, Hackberry, De Ridder, Winfield, and Monroe, La., on the 27th and over Greenville, Minter City, Oxford, and Corinth, Miss., during the morning of June 28. The eye of the hurricane was approximately 35 miles in diameter as it moved across the coast, gradually closing until it lost its identity in the vicinity of Winnfield. Moving on a northeastward course the storm reached northern Louisiana on the morning of the 28th and became extratropical. It continued to move northeastward along the West Virginia-Ohio border and passed through the western portion of Pennsylvania and New York, crossing Lake Ontario during the night.

Pressure

A low pressure of 958 millibars (28.30 inches) was observed by the Fish and Wildlife Service at Hackberry, La., at 9:45 a.m. (c.s.t.) on June 27. The lowest pressure observed at a Weather Bureau Station was 966 millibars (28.52 inches) at Port Arthur, Tex., which at the time was in the western edge of the hurricane eye. The Weather Bureau Airport Station at Lake Charles, La., reported a low of 972 millibars (28.69 inches) at 11:40 a.m. (c.s.t.)

A tabular listing of low pressures and high winds and tides reported during the passage of Audrey is given as table 1.

Wind

Gusts of wind near or exceeding 100 m.p.h. were reported at a number of locations along the coast. A maximum gust of 105 m.p.h. at 9:40 a.m. (c.s.t.) was recorded on the Cities Service Corporation's wind dial located 10 miles to the west of Lake Charles at Sulfur, La. A gust recorder chart from the Drill Barge "Vinegarroon", a portion of which is reproduced as figure 1, shows that a gust in excess of 100 m.p.h. was recorded at that location before the wind indicator failed shortly after 6:00 a.m. (c.s.t.) on June 27. Peak gusts to 150 m.p.h. were reported by several drifting oil tenders.

The Sabine Pass Coast Guard Station reported a fastest mile of 85 m.p.h., with gusts of 100 m.p.h. from the northwest. At the Weather Bureau Airport Station at Lake Charles, the fastest mile was recorded as 69 m.p.h. from the southeast, accompanied by gusts between 90 and 100 m.p.h. There were an unusual number of tornadoes and local storms that accompanied Audrey as she moved northeastward across Louisiana and Mississippi.

Tides and Inundation

Tides rose along the east Texas and entire Louisiana coastline reaching 6 feet or higher from Sabine Lake to Cocodrie, La. The highest tides reported were 13.9 feet above m.s.l. measured at the mouth of the Mermentau River and 12.2 feet above m.s.l. observed at Grand Chenier, La. High tides caused the Atchafalaya River to rise to a height of 8.5 feet above m.s.l. at Morgan City, which exceeded the previous record by 1.7 feet.

Tidal salt water covered all of Cameron and most of Vermilion Parishes and penetrated far inland in Terrebonne, La Fourche, and Jefferson Parishes. Along the Texas coast flooding was largely local in nature due to inadequate drainage. Storm tides were, however, 3 to 4 feet above normal in the Corpus Christi-Port Aransas section, causing some minor damage to beach installations and roads. At Galveston, a tide of slightly over 6.0 feet above m.s.l. caused flooding to depths of 6 to 12 inches over parts of the Galveston Airport.

Captain J. Dryden of the BRITISH SPLENDOUR gives the following description of hurricane Audrey:

"On June 26, 1957 at 1230 G.M.T., the vessel was berthed at Texas City. The wind was a little north of east, force 3, barometer 1007 mb., temperature 82°.

"Throughout the rest of the morning (local time) the wind increased, sky became completely overcast, and passing squalls were observed. At 2200 G.M.T., the wind was E x N force 5 when the first rain squall struck the vessel. Thereafter there was a succession of frequent rain squalls, with the wind increasing to force 9 in them.

"By 0400 G.M.T. on the 27th June, the wind was force 12 and over, rain was continuous and horizontal and, although there was a low island (about 10-12 feet high) one cable to windward of the vessel, spray was driving aboard with the wind and rain.

"Soon after this the wind began to back fairly quickly; the driving spray was not now so apparent, as the wind was on the port quarter, but rain was continuous and torrential until at 1000 G.M.T. the barometer reached almost its lowest observed during the passage of the storm (988 mb).

"By 1100 G.M.T., wind force had decreased to 9 and backed to north, rain was gradually easing until at 1400 G.M.T., wind was westerly force 8.

"During the height of the storm the water level rose to between 8 and 9 feet above chart data. (Normal spring rise is about 2 feet.) This phenomenal rise of water caused the land around the ports of Galveston and Texas City to become inundated and the results at Cameron (29°48'N.,93°19'W.) were catastrophic."

Figure 2 indicates the extensive coastal area that was inundated by salt water during the passage of Audrey. At some points inundation extended 20 to 25 miles inland.

Loss of Life and Property Damage

A recent survey indicates that the loss of life attributed to hurricane Audrey reached a total of 390 known dead*, with most of these fatali-

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* Deaths listed include 263 identified and 127 unidentified. Reported missing were 192 persons, many of whom may have been among the 127 unidentified dead.

ties the result of drownings in inundated areas along the western Louisiana and eastern Texas coasts. Some lives were lost in other areas, as a result of tornadoes, and 7 deaths were reported in the sinking of the fishing boat M/V KOTURAH which was under tow in heavy seas off Galveston.

Many lives were saved through mass evacuations in which a reported 75,000 persons moved from low-lying coastal areas to higher ground. There was extensive advance evacuation of persons from the Bolivar Peninsula southwest of High Island and almost complete evacuation from the Sabine Pass Section.

Total damage resulting from Audrey has been estimated at $150 million-$120 million in Louisiana, $9 million in Mississippi, $8 million in Texas and lesser amounts eastward and northward as far as Canada.

Almost all property was destroyed in a 20 mile area from east of Cameron to the small towns of Creole and Chevanier and more than 60 percent in an area 50 miles long extending 5 miles inland. In the Cameron to Grand Chenier area, 60 to 80 percent of the houses were destroyed or floated off their foundations. About 4,500 homes were destroyed or irreparably damaged in Louisiana, with 100,000 in Louisiana and 50,000 in Mississippi suffering lesser damage. Salt water inundation of a large rice acreage, corn blown down, and flooded cotton fields were the chief crop losses, which have been roughly estimated at $50 million for Louisiana and Mississippi combined. Thousands of cattle drowned or starved, and the trapping industry was probably wiped out for years. Scattered wind damage occurred over the northwestern half of Alabama on the night of the 27th and the morning of the 28th, with no concentrated damage. There were a few instances of structural damage to buildings, the most notable being the unroofing of a school building near Ryland in Madison County. Maximum recorded wind gusts were 71 m.p.h. at Birmingham, 60 at Mobile, 55 at Muscle Shoals, and 48 at Montgomery. Hurricane damage in Alabama has been estimated at $200 thousand.

In addition, over an area south of Montgomery, Ala., an outbreak of 8 tornadoes occurred between 8:30 a.m. and 11:00 a.m. (c.s.t.) on the 28th, as a result of atmospheric conditions associated with Audrey at a time when the storm was centered near the northwestern corner of the State. Fourteen persons were injured in these tornadoes, with property damage estimated about $600 thousand. The area in which these tornadoes occurred extends from Clarke, Monroe, and Conecuh Counties northeastward into Montgomery and Bullock Counties. Following the northeastward course taken just prior to reaching the coast, the storm became extratropical as it reached the northern Louisiana area about midday on the 28th. In the Tennessee-Kentucky-Ohio area, the generally minor wind damage which occurred was concentrated to the east of the storm path. Strongest gusts observed were near 50 m.p.h. at Chattanooga, Knoxville, and Crossville. Flooding was minor and restricted mainly to small tributary streams and low-lying farmlands where runoff was excessive due to heavy antecedent rains.

The storm which had been weakening over the Mississippi and Ohio Valleys re-intensified considerably over the Great Lakes area, due to extratropical processes. Flood and wind damage was reported from widespread areas in the States bordering the Great Lakes.

Over Illinois, rains of 8 to 10 inches along a line from Pana to Paris caused severe flooding of farmlands and placed many highways under water for 1 to 3 days. Rains up to 10 inches fell over central Indiana on June 28 and 29, resulting in floods that drowned 5 persons, damaged over 1,000 homes, flooded 125 business places, washed away approximately a half million acres of crops, and knocked out highway and railroad bridges. Losses by the railroads are estimated at $1.2 million. An 18-car work train fell into Big Walnut Creek near Reelsville when a bridge, weakened by flood water, collapsed. During this storm areas were inundated where previous flooding was unknown. Total damage in Indiana has been set at nearly $2.5 million.

Damage in Pennsylvania, confined mostly to the western portion, was relatively light and resulted mostly from thunderstorms and gusty winds associated with the storm as it moved across the northwestern portion of the State. Winds reached 65 m.p.h. in the Pittsburgh area and an estimated 40 to 50 m.p.h. at Harrisburg. Damage was confined mostly to trees, utility lines, and a few house roofs. One person was killed by lightning and another injured by a falling tree.

Damage in New York State was almost entirely a result of wind effects. The greatest damage occurred in western and central counties near and south of Lake Ontario. Winds reported at 95 to 100 m.p.h. at Jamestown resulted in a general power failure in the area. There were some 150 separate breaks in main powerlines over the western Counties.

At the Buffalo Airport, winds over 50 m.p.h. were observed. Over the north-central counties south of Lake Ontario, damage was almost entirely from winds as dry soils prevented flooding. In some areas there is evidence that the heavy rains probably counter-acted other damage in their relief to crops.

Along the shores of Lake Erie, there was considerable damage to small boats as the wind raised the water level 3 feet above normal. There was no flooding of consequence, but a marked rise in the Niagara River caused damage to sight-seeing facilities and river docks below the falls. Overall damage in New York State is estimated between $250 thousand and $500 thousand and there were 4 deaths attributed to the storm.

HISTORICAL GULF COAST STORMS

The passage of hurricane Audrey is reminiscent of an equally fatal storm which, on the night of August 10, 1856, completely devastated the fashionable hotel and pleasure resort on Last Island, or Isle Derniere as the French call the dot of land lying off the Louisiana coast, 150 miles east of Cameron. During the earlier hurricane, a storm tide swept an estimated 400 persons to their deaths. Last Island is now only a haven for pelicans and other sea birds, mute testimony to the fury of the storm that struck a century ago.

The development of storm tides on the low-lying coasts of the Gulf of Mexico is not unusual with hurricanes. When a hurricane approaches the coast slowly in a direction nearly normal to the coastline, as in the case of Audrey, the storm tide is often the most destructive feature of the hurricane. Some other notable hurricane-caused tides in Gulf coastal areas are the following:

(1) Sept. 16, 1875, Indianola, Tex.; disastrous inundation from Matagorda Bay; wind estimated 100 m.p.h.; 176 lives lost.

(2) Aug. 19, 1886, Indianola, Tex.; water in the bay rose rapidly; not a house remained undamaged; the town was not rebuilt.

(3) Oct. 1, 1893, New Orleans, La.; the storm was accompanied by a tidal wave and caused a loss of approximately 2,000 lives.

(4) Sept. 8, 1900, Galveston, Tex.; the water rose at a steady rate from 3 p.m. until about 7:30 p.m. when there was a sudden rise of about 4 feet; approximately 6,000 persons lost their lives.

(5) Aug. 17, 1915, Galveston, Tex.; the tide at Galveston was 12 feet above normal; extreme wind speed was 120 m.p.h.; 275 lives lost; property damage estimated at $50 million.

(6) Sept. 29, 1915, Mississippi Delta; highest tides of record (to that time) observed on delta; extreme wind speed was 140 m.p.h.; 99 out of 100 houses destroyed in Leeville; 275 deaths reported.

(7) July 5, 1916, Mobile, Ala.; tide was 11.6 feet above normal; wind reached 107 m.p.h.; 4 deaths and $3 million property damage in Mobile.

(8) Oct. 25, 1921, Tampa, Fla.; tide at Tampa rose to 10.5 feet; 6 deaths and $3 million property damage.

(9) Oct. 4, 1949, Freeport, Tex.; storm tide exceeded 11 feet at Freeport; $5 million damage to Texas rice crop.

TROPICAL STORM BERTHA, AUGUST 8-11, 1957

Tropical storm Bertha developed over the Northern Gulf of Mexico in an area of disturbed conditions that prevailed about 100 miles south of the mouth of the Mississippi River on August 8. At this stage of development the storm was accompanied by winds of 30 to 40 m.p.h. in scattered squalls, with winds slightly higher in some of the heavier squalls. From this region the storm, moving in a northwesterly direction, crossed the coastline near Cameron, La., during the late afternoon of the 9th of August and at 7 p.m. (c.s.t.) was centered about 20 miles south of Lake Charles, La. After moving inland the storm weakened and turned northward, passing through east Texas and reaching southeastern Oklahoma during the morning of the 11th of August. In this area the center could no longer be distinguished on a surface map, although a circulation aloft was accompanied by locally heavy rains for about 3 days as the storm area turned eastward and moved across northern Arkansas.

The lowest pressure reported along the coast was 1001 millibars (29.56 inches) from the Weather Bureau Airport Station at Jefferson County Airport, Beaumont, Tex. A slightly lower pressure 997.6 millibars (29.46 inches) was reported from an oil rig located at lat. 28.7°N., long. 91.4°W.

Estimates of winds between 50 and 70 m.p.h. came from a number of ships and land stations. On August 9, the SS NORTH CAROLINA near 28.0°N., 89.6.W., reported a wind of 55 knots from the east. The Weather Bureau Airport Station at Beaumont, Tex., recorded a fastest mile of 44 m.p.h. from the north with gusts to 52 m.p.h.

Excessive rainfall of 12.8 inches was reported from a location 14 miles north of Palestine, Tex., during passage of the storm. At Livingston, Tex., rainfall associated with Bertha was reported as 10.73 inches. Locally heavy rains sent the Trinity River past flood stage and spread its waters 6 miles wide at a point near Liberty, Tex. There was some flooding of homes and business places in Trinity and nearby Livingston, but no heavy damage or casualties were reported in this area. A report of a highest tide of 4.7 feet came from the Schooner Bayou control structure at the west end of Vermilion Bay.

As a result of the severe threat that Bertha posed to the Louisiana and Texas coasts, thousands of persons were evacuated from low-lying areas. Only the sheriff and 12 men remained in Cameron, which less than 3 months before had been devastated by Audrey, the first hurricane of the season. Some 1,350 workers were removed from oil drilling platforms in the Gulf of Mexico, two of whom were rescued by a helicopter from the oil rig tender MURMANILL No. 1 shortly before she sank stern first in the choppy seas about 3 miles south of Tambalier Bay.

The remnants of Tropical Storm Bertha caused excessive heavy rains over a large area of west-central and north-central Arkansas during the afternoon and evening of August 12 and the morning of the 13th. The rains caused considerable flash flooding over a large area with unusually high waters reported on several creeks. A flash flood on the Little Red River reached a crest of 44.2 feet (20.2 feet above flood stage) at Heber Springs at 7:00 a.m., of the 14th and 36.5 feet (6.5 feet above flood stage) at Judsonia at 4:30 a.m., of the 16th. Streets and buildings were flooded in the towns of Mansfield, Clarksville, and Clinton.

Damage from this flash flooding was spread over a large area comprising portions of 14 counties. Since much of the damage was of a local nature, accurate estimates of the monetary losses involved are very difficult to obtain. Damage was $113 thousand in Conway County, $100 thousand of which was to roads and bridges. Faulkner County reported over $100 thousand damage, $35 thousand of which was to roads and bridges. Scott County reported about $12 thousand damage, $1.5 thousand of which was to roads and bridges. Two persons drowned in Conway County when Cypress Creek overflowed and washed away their home.

The storm moved into the northeastern portion of the state on the 13th and 14th, with unofficial precipitation amounts of as much as 12 inches reported. This rain caused flash floods over eastern Greene and southern Clay Counties. Clay County authorities estimate the damage from the flash floods at over $700 thousand, of which $500 thousand was to crops in flooded fields and $100 thousand to roads and bridges. A Missouri Pacific freight train was derailed when it ran onto a flooded section of track near Knobel in southern Clay County.

HURRICANE CARRIE, SEPTEMBER 2-24, 1957

Hurricane Carrie formed in the tropical North Atlantic near the Cape Verde Islands, traveled on an erratic westerly and northwesterly track to a position north of Bermuda, and then turned sharply eastward near the 35th parallel. Carrie was charted over one of the longest tracks, probably the longest track, of record - approximately 6000 miles from its origin off the African coast to near Bermuda and back across the Atlantic to the British Isles.

The first indications that a storm was forming were found in aircraft reports of PANAIR do BRASIL, which on September 2 indicated the existence of a tropical cyclonic development in the vicinity of the Cape Verde Islands (near lat. 11°N., long. 25°W.). No other information was available in the area until September 6, when the ship AFRICAN STAR, about 700 miles west of the Cape Verde Islands, reported a wind of 80 knots from the east-northeast. On the basis of the reports from the AFRICAN STAR, the San Juan Weather Bureau Office issued the first advisory on this severe hurricane. This was the first of a series of 62 advisories, the greatest number ever issued by the Weather Bureau in connection with an Atlantic hurricane.

On September 7, in an unusually long flight, the regular Air Force Gull reconnaissance plane from Bermuda was diverted to the storm area. The observer reported maximum winds of 138 m.p.h. at the 700 millibar level with a well defined eye 20 miles in diameter and a minimum surface pressure of 945 millibars (27.91 inches). This fix made on the 7th and a later one made on the 21st probably reached the farthest east positions a hurricane has ever been reconnoitered by an airplane in the tropical Atlantic. Reconnaissance during the next four days showed a gradual rise in central pressure and on the 11th the minimum pressure was 984 millibars (29.06 inches) and the highest winds were reported as about 70 m.p.h.

After an initial curve to the northward, a rebuilding of the high pressure ridge over the north Atlantic forced a change in course toward the northwest. This change in direction was accompanied by re-intensification and on the 12th reconnaissance aircraft observed maximum winds of 108 m.p.h. and a minimum sea level pressure of 960 millibars (28.35 inches). The increase in intensity and size continued until on the 16th the storm was characterized by National Hurricane Research Project observers as the most perfectly formed hurricane in their experience. The winds of 138 m.p.h. reported on this date were the maximum surface winds observed during the life of Carrie although it is likely that higher velocities occurred during the period of lowest central pressure on September 7 and 8.

When the hurricane passed to the northeast of Bermuda on the 16th, poor radar definition and an increase in the diameter of the eye to 40 to 70 miles indicated weakening. However, as it curved eastward in advance of a trough moving into the North Atlantic, it still maintained maximum winds of near 100 m.p.h. for the next several days. On the 21st the German sailing ship PAMIR encountered the storm southwest of the Azores and went down with the loss of 80 of her 86 crew members. Insufficient reports were obtained to indicate the maximum wind and lowest pressures observed as it passed through the Azores the next day but it is likely that winds of hurricane force persisted. Carrie began to assume extratropical features thereafter and accelerated to the northeast, lashing the British Isles with high winds on the 24th and 25th and causing tremendous waves on the coast and floods over parts of the Isles.

TROPICAL STORM DEBBIE, SEPTEMBER 7-9, 1957

Tropical storm Debbie developed on the morning of September 7 as a weak circulation on an easterly wave that had been observed for several days moving across the northern Gulf of Mexico. The storm moved northeastward at about 15 m.p.h. and intensified somewhat before it moved inland near Fort Walton, Fla., at about 10 a.m. (c.s.t.) on the morning of the 8th. Debbie, however, never became a severe storm. The center continued northeastward across southeastern Alabama and into Georgia with decreasing intensity. By noon of the 9th the pressure and wind patterns had become diffuse and merged with other stronger weather systems.

During passage of the storm, winds of 30 to 40 m.p.h. were reported from stations along the track. The highest winds were reported from the Tampa-Tallahassee area, with Tampa, Fla., reporting a peak gust of 52 m.p.h. from the south on the 8th. A low pressure of 1005 millibars (29.68 inches) was reported at Pensacola, Fla., at 5:30 a.m. (c.s.t.) on the 8th.

Varying precipitation amounts ranging as high as 11.26 inches at Wewahitchka, Fla., accompanied by tides 1 to 4 feet above normal, caused some local flooding, particularly in the vicinity of St. Marks, Fla., where flood waters reached the downtown area. Rains in Florida, Georgia, South Carolina, and Alabama in most instances were welcome as they filled lakes and ponds which were at low levels; and were for the most part more beneficial than damaging to growing crops. No deaths or severe injuries were reported as a result of this storm.

TROPICAL STORM ESTHER, SEPTEMBER 16-19, 1957

A midlevel cyclonic circulation over Nicaragua on September 12 drifted northeastward and out over the southwestern Gulf of Mexico on the 15th. Tropical storm Esther formed under this circulation on the 16th and intensified during the first 24 hours of its existence, but did not reach hurricane force. Over the Gulf, the storm took on a northward drift of about 15 m.p.h. and was characterized by a central area of relatively light winds with a diameter of roughly 100 miles. Turning to a north-northeasterly direction the storm area reached the southeastern Louisiana coast about daybreak on the 18th and moved up the Mississippi Valley where it dissipated during the 19th.

The lowest pressure observed at a land station was 1003 millibars (29.62 inches) at New Orleans, La. A slightly lower pressure of 1000 millibars (29.53 inches) was reported by reconnaissance aircraft flying in the vicinity of lat. 23.5°N., long. 93°W. The highest observed wind occurred a considerable distance to the east of the storm track in a squall at Pensacola, Fla., where a maximum of 52 m.p.h. from the south and gusts to 75 m.p.h. were reported at the airport on the 18th. Mobile, Ala., recorded a fastest mile of 40 m.p.h., with peak gusts of 60 m.p.h. during the morning of the 18th.

Attendant squalls and heavy rains occurred in advance and to the east of the central storm area and continued along the Mississippi and Alabama coasts and near the mouth of the Mississippi River for some time after the central portion of the storm area had passed to the north. Heavy rains from Esther began on September 17 and continued through September 19. The heaviest reported was 18.11 inches at Quarantine, La., recorded between 9:10 a.m. on the 17th and 3:30 p.m. on the 19th. Other heavy falls in the area of excessive rains were 13.36 inches and 12.35 inches at Buras and Burrwood, La., respectively, and 12.74 inches and 11.12 inches at Van Cleve and Richton, Miss. Tides were generally 4 to 5 feet above m.s.l. along the Louisiana and Mississippi coasts east of the mouth of the Mississippi River. A high tide of 6.5 feet above m.s.l. was reported as occurring at 10:00 a.m. on September 18 at Gulfport, Miss.

Additional pressure, wind, precipitation, and tide values for selected stations are listed in Table 2.

Some flooding, caused primarily from the heavy rains, occurred through southeastern Louisiana, southern Mississippi, and along the Alabama coast. In the Buras, La., section breaks in the back levees, brought about by inflow from the Gulf of Mexico, resulted in considerable flooding. Although there was some damage to piers and small craft along the coast, property damage from winds and local flooding was generally minor and did not exceed a few hundred thousand dollars. Crop losses were more extensive and have been estimated at about $1 million; the greatest losses being in cotton, peanuts, and pecans. In Mobile and Baldwin Counties, Ala., an estimated 50 percent of the pecans were blown from the trees. In most sections the heavy rains were beneficial to agriculture since precipitation during the months of July and August had been much below normal throughout the general area.

No loss of life was directly attributable to the storm during its passage, but two persons were drowned later in a New Orleans canal and one person was electrocuted by a downed wire at Buras, La., the following day.

HURRICANE FRIEDA, SEPTEMBER 20-27, 1957

Hurricane Frieda was first identified in its formative stage on September 20, as a squally area with an ill-defined wind circulation near Bermuda. On the 21st, it was located about 800 miles east of Miami. At this stage Freida was moving in a westerly direction toward Florida but then turned northeastward parallel to the coastline without appreciably affecting any land area. During the first few days of its existence highest winds around the center were 26 to 35 knots with gusts up to 52 knots. After recurving northeastward off the coast Frieda intensified and on September 25, when the storm was moving past the Virginia Capes, it reached hurricane force with highest winds estimated at 61 to 70 knots. Assuming extratropical characteristics on the 26th, it remained a dangerous storm for vessels in its path as it advanced along a northeastward course in the western Atlantic, passing close eastward of Newfoundland on the 27th.

UNNAMED TROPICAL STORM, OCTOBER 22-27, 1957

While this October storm did not develop strong tropical characteristics, it was accompanied by a few squalls with winds as high as 43 knots. The storm developed about 500 miles northeast of Puerto Rico and moved in a northwesterly direction to 27°N., 66°W. It recurved on the 24th and passed about 120 miles southeast of Bermuda on the 25th. Continuing on a northeasterly course the storm became extratropical on the afternoon of the 26th.

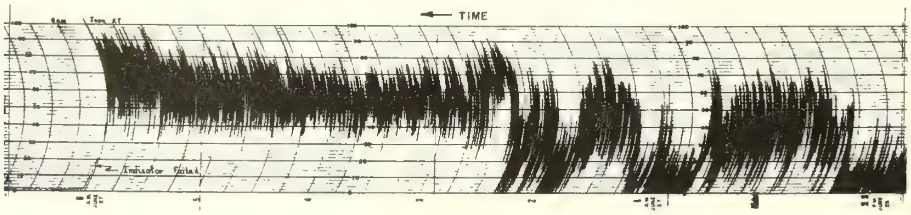

FIGURE 1 HURRICANE AUDREY, Gust Recorder Chart from the Drill Barge VINEGARROON. - Period: 11:00 p.m. June 26 through 6:00 a.m. June 27, 1957. Approximate Location: Lat. 29° 38' N., Long. 93° 05' W.

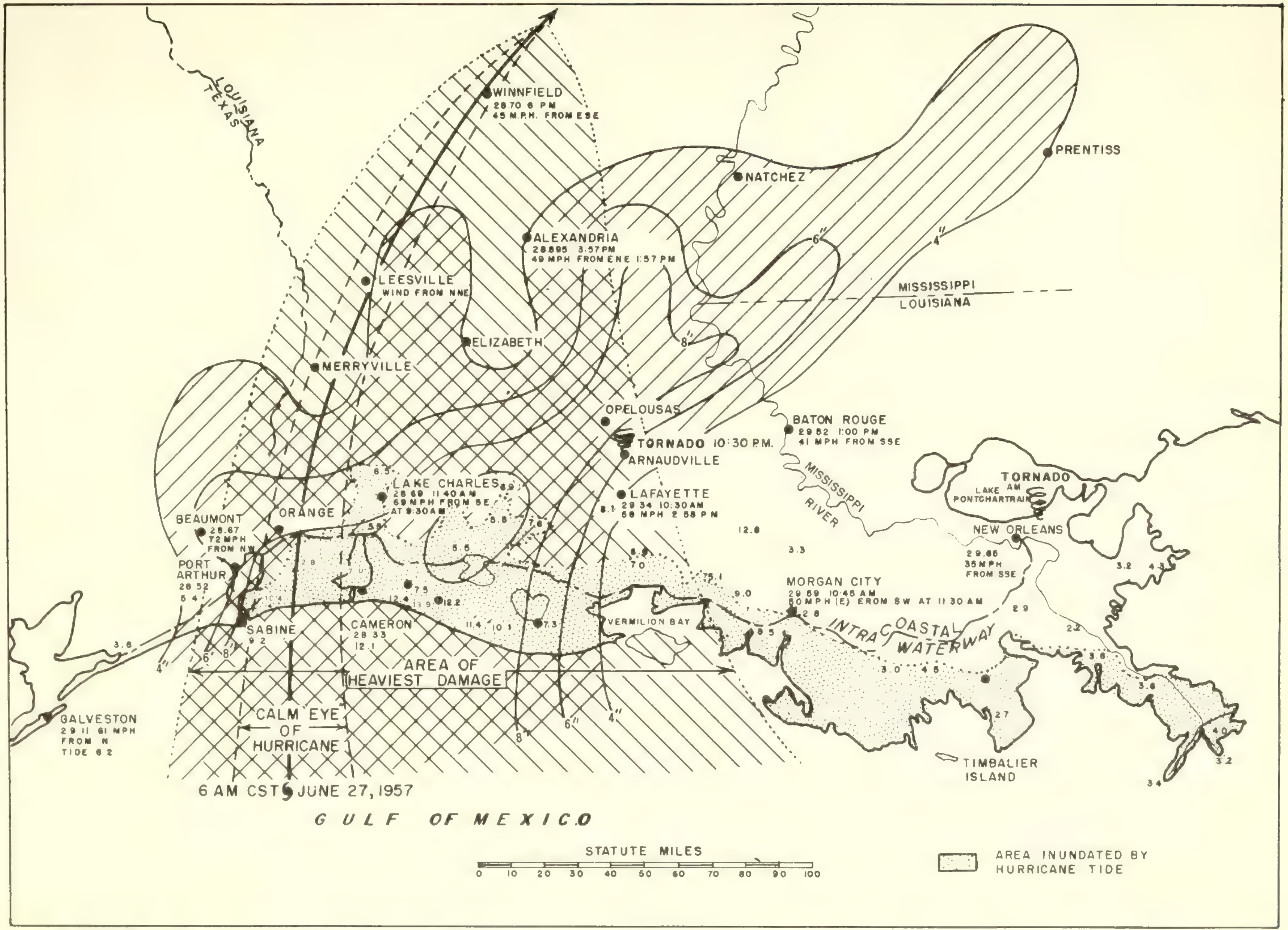

FIGURE 2 Map showing landfall and track of hurricane Audrey in Louisiana on June 27. Wind speeds given are the fastest mile or the highest 1-minute speed; (E)=estimated. Pressure (inches) is the lowest observed at the point plotted. Tide heights are in feet above mean sea level, and were measured by the Corps of Engineers.

TROPICAL STORM DATA
AUDREY

JUNE 25 - 28, 1957

Station	Date	Pressure (inches)		Wind (m.p.h.)				Rainfall (inches)	Remarks
		Low	Time	Fastest mile	Time	Gusts	Time		
LOUISIANA									
Alexandria AFB	27	28.90	3:57 p.	49 ENE	1:57 p.	65	2:48p	3.90	
Baton Rouge WBAS	27	29.52	1.00 p.	41 SSE	11:50 a.	69	11:50a	1.51	
Bay St. Elaine	27	29.80	10:11 a.	65*	6:00 a.	--	--	--	High tide 6.5 feet above m.s.l. at 12:30 p.m.
Bunkie	27	--	--	80*SSW	3-4 p.	--	--	4.30	
Cameron-Coast Guard	27	28.33	8:30 a.	--	--	--	--	--	High tide 12.1 feet above m.s.l. Wave peaks 5-10 feet higher.
Clinton	27	--	--	69*	11:00 p.	--	--	4.31	
Cocodrie	27	--	--	65*	6:00 a.	--	--	--	High tide 6.5 feet above m.s.l. at 12:30 p.m.
DeRidder	27	--	--	70*E	12-1 p.	--	--	3.15	Wind calm 2:00-2:45 p.m.
Elizabeth	27	--	--	--	--	75* SE	2:30p	3.99	
Franklin	27	29.46	6:00 a.	--	--	--	--	--	High tide 8.0 feet above m.s.l.
Garden Island	27	--	--	40*ESE	--	--	--	--	High tide 4.0 feet above m.s.l. at 8:30 a.m.
Golden Meadow	27	29.82	10:00 a.	50*SSW	10:00 a.	--	--	0.74	High tide 3.5 feet above m.s.l. at 11:59 a.m.
Grand Ecaille	27	--	--	40* SE	--	45*	--	--	High tide 4.6 feet above m.s.l. at 12 noon.
Hackberry	27	28.30	9:45 a.	--	--	--	--	--	Gust of wind estimated as high as 110 m.p.h. High tide 6.7 feet above m.s.l.
Hineston	27	--	--	60*S/SE	2:30-3p.	85*S	2:45p.	4.75	
Lafayette CAA AP	27	29.34	10:30 a.	58 S	2:58 p.	92	12:00m.	3.69	
Lake Charles WBAS	27	28.69	11:40 a.	69 SE	9:30 a.	97	--	6.83	Cities Service Refinery reported wind of 105 m.p.h. at 9.40 a.m.
Leesville	27	--	--	--	--	--	--	2.05	Calm 2:15-3:45 p.m.
Louisa	27	29.46	6:30 a.	--	--	--	--	--	High tide 7.0 feet above m.s.l.
Monroe CAA AP	27	29.07	9:00 p.	35 E	--	64	--	2.85	
Morgan City	27	29.59	10:45 a.	50*SW	11:30 a.	--	--	2.06	High tide 8.5 feet above m.s.l. at 3:30 p.m.
New Orleans WBO	27	29.68	--	27 S	10:11 a.	--	--	0.16	
New Orleans WBAS	27	29.65	--	35 SSE	1:30 p.	54SSE	10:17a	0.15	
Opelousas	27	29.37	2:00 p.	--	--	80 E	--	--	
Port Sulphur	27	--	--	45*SE	11:30 a.	--	--	2.18	High tide 3.6 feet above m.s.l. at 6 p.m.
Rayne	27	29.32	11:50 a.	--	--	--	--	8:59	Calm 10:30 - 11:30 a.m.
Shreveport WBAS	27	29.27	4:55 p.	--	--	51	--	0.45	
Tullulah	27	--	--	55*SSE	8-12 p.	--	--	2.39	Damage slight.
Urania	27	--	--	75*SE	5:00 p.	--	--	5.62	
Winnifield	27	28.70	6:00 p.	45*ESE	4:00 p.	65*	4:00p	2.76	
TEXAS									
Beaumont	27	28.67	9.28 a.	72 NW	10:36 a.	86 NW	10:33a	7.57	
Galveston	27	29.11	6:00 a.	61 N	5:18 a.	78 N	4:33a		High tide 6.2 feet above m.s.l. at 4:45 a.m.
Orange	27	--	--	55 NE	--	100*	--	5.10	Wind calm 9:15-11:15 a.m., increasing to estimated 80 m.p.h. after passage of the eye.
Port Arthur USAE	27	28.52	9:23 a.	--	--	--	--	5.75	Considerable damage to plateglass and from falling trees. High tide 5.4 feet above m.s.l.
Sabine Pass-Coast Guard	27	28.68#	8:00 a.	85 NW	--	100NW	9:30a	--	High tide 9.2 feet above m.s.l. Center passed to the eastward.
MISSISSIPPI									
Greenwood CAA AP	28	29.11	1:53 a.	52 SSE	1:55 a.	--	--	0.43	
Jackson WBAS	27	29.47	10:59 p.	52 SE	11:23 p.	55	11:23p	2.52	
Vicksburg	27	29.35	11:45 p.	38 SE	10:18 p.	60*	10:18p	1.81	
ARKANSAS									
El Dorado	27	--	--	30 NNE	5:58 p.	43NNE	5:58p	0.63	Minor damage.
Lowest Pressure & Highest Wind	27	28.30	9:45 a.	85 NW	--	100NW	9:30a		

All Times - Central Standard
*Estimated
#Lowest pressure not observed

TABLE I

TROPICAL STORM DATA

ESTHER

SEPTEMBER 16–19, 1957

Station	Date	Pressure (inches)		Wind (miles per hour)				Rainfall # (inches)	Remarks
	Sept.	Low	Time	Fastest mile	Time	Gusts	Time		
LOUISIANA									
Amite	18	---	---	45*ENE	3:30 a.	60*--	3:30a	6.40	
Baton Rouge	18	29.71	---	23 NE	---	31 NE	---	0.40	
Bogalusa	18	29.58	8:00 a.	- SE	6:30 a.	---	---	6.07	
Burrwood	18	29.66	4:50 a.	48SSW	5:20 a.	---	---	12.35	High tide 3.4 feet above m.s.l. at 4:30 a.
Cameron	18	---	---	28-30 E	---	---	---	5.64	High tide 1.5 - 2 feet above m.s.l.
Franklintown	18	29.82	8-9 a.	45* NE	9:00 a.	---	---	3.39	
Grande Isle	18	29.67	2:00 a.	35 SSE	2:00 a.	---	---	4.00	High tide 3.0 feet above m.s.l. at 5:00 p.
Hammond	18	---	---	---	---	---	---	3.63	
Hobedale	18	29.64	6:30 a.	45 SSE	4:30 a.	---	---	6.80	High tide 4.0 feet above m.s.l. at 10:00 a.
Lafayette	18	29.66	---	15 NE	3:00 a.	---	---	0.15	
New Orleans (City Office)	18	29.65	---	22 E	1:02 a.	---	---	6.68	
New Orleans (Airport)	18	29.61	---	25 ENE	1:30 a.	---	---	5.46	
Ponchartrain Bridge (North)	18	---	---	56 E	5:00 a.	64 E	5:00 a.	---	
Ponchartrain Bridge (South)	18	---	---	46 ESE	4:50 a.	50 ESE	4:50 a.	---	
Port Sulphur	18	29.71	6:30 a.	35 S	3:00 a.	50 S	4:35 a.	9.75	High tide 3.4 feet above m.s.l.
Quarantine	18	29.82	4:00 a.	-- S	---	---	---	18.11	
Rigolets	18	---	---	38 E	4:00 a.	46 E	---	4.90	High tide 3.0 feet above m.s.l. at 9:00 a.
Schriever	18	---	---	---	---	---	---	2.90	
Slidell	18	---	---	50*SE	4:00 a.	---	---	5.35	
Violet	18	29.63	3:30 a.	55*SE	4:00 a.	---	---	6.19	High tide 3.5 feet above m.s.l.
MISSISSIPPI									
Bay St. Louis	18	---	---	50*SE	---	60*SE	---	10.26	High tide 5*feet above m.s.l.
Bay Springs	18	---	---	---	---	---	---	4.85	
Biloxi	18	---	---	40*--	---	---	---	10.55	High tide 4-5 feet above m.s.l.
Gulfport	18	---	---	52 E	7:00 a.	---	---	10.55	High tide 6.5 feet above m.s.l. at 10:00 a.
Hattiesburg	18	---	---	---	---	---	---	6.00	
Jackson	18	---	---	32 NE	2:24 p.	40 --	2:29 p.	1.49	
Laurel	18	---	---	35 NNE	12.30 p.	40 NNE	12:30 p.	5.29	
McComb	18	29.63	3:58 p.	23 ENE	7:58 a.	32 ENE	7:58 a.	3.83	
Meridian	18	---	---	29 E	2:42 p.	37 E	2:42 p.	2.80	
Pascagoula	18	29.78	3:00 p.	48 ESE	8:30 a.	51 ESE	8:30 a.	9.97	High tide 4.1 feet above m.s.l.
Poplarville	18	---	---	---	---	---	---	5.94	
Richton	18	---	---	---	---	---	---	11.12	
Standard	18	---	---	---	---	---	---	9.15	
Van Cleave	18	---	---	---	---	---	---	12.74	High tide 3-5 feet above m.s.l. Local flooding.
Waynesboro	18	---	---	---	---	---	---	6.09	
ALABAMA									
Evergreen	18	29.87	5:58 p.	21 SSE	2:12 p.	---	---	1.38	
Mobile	18	29.79	4:00 p.	40 E	8:32 a.	60 SE	9:58 a.	7.05	Major damage to pecan crop in Mobile and Baldwin Counties.
Montgomery	19	29.94	3-4 a.	21 S	10:17 a.	---	---	1.20	
Tuscaloosa	19	29.68	2:58 a.	15 ESE	12:58 a.	26 ESE	12:58 a.	--	
FLORIDA									
Pensacola (City office)	18	29:86	6:00 p.	31 S	12:31 p.	---	---	5.80	No report of any local flooding.
Pensacola (Airport	18	29.86	6:00 p.	52 S	12:37 p.	75 S	12:37 p.	4.83	

All Times Central Standard
# Total rainfall for duration of storm
* Estimated

TABLE 2

HURRICANES AND TROPICAL DISTURBANCES

(Names of storms in table correspond to names on tracks shown on accompanying chart)

YEAR 1957

Storm name	Date	Area where first reported	Coast lines crossed	Highest wind speed reported	Lowest pressure reported *	Place of dissipation reported	Intensity	Remarks
Unnamed	June 8-14	Central Gulf of Mexico	Florida and South Carolina	65 knots from the north-northeast reported by the SS ATLANTIC VOYAGER near Lat. 32.9°N., Long. 72.3°W.	Not reported	Atlantic Ocean near Lat. 40°N. Long. 55° W.	Tropical Storm	Exceptionally heavy rain over northern Florida resulting in some flood damage.
AUDREY	June 25-28	Bay of Campeche	Louisiana and Texas	Gusts of 100 m.p.h. from the northwest reported by the Sabine Pass Coast Guard Station.	958 mb (28.30 in) at Hackberry, Louisiana.	Canadian border in vicinity of Lake Ontario	Hurricane	One of the most destructive June hurricanes of record, claimed 390 lives and caused damage estimated at $150,000,000.
BERTHA	Aug. 8-11	North central Gulf of Mexico	Louisiana	A fastest mile of 44 m.p.h. with gusts to 52 m.p.h. reported by the Airport Station at Beaumont, Texas.	998 mb (29.46 in) reported from an oil rig at 28.7°N., 91.4°W.	Arkansas-Oklahoma area	Tropical Storm	Heavy rainfall in excess of 12 inches at some locations caused considerable damage from flash flooding over large areas of Louisiana, Texas and Arkansas.
CARRIE	Sept. 2-23	North Atlantic Ocean in the vicinity of the Cape Verde Islands	None	Winds of 138 m.p.h. reported by reconnaissance aircraft from a location east of Bermuda.	945 mb (27.91 in) near 16°N., 38°W.	British Isles	Hurricane	Sailing ship PAMIR encountered the hurricane southwest of the Azores and went down with the loss of 80 of her 86 crew members.
DEBBIE	Sept. 7-9	Central Gulf of Mexico	Florida	Peak gust of 52 m.p.h. from the south at Tampa, Florida.	1005 mb (29.68 in) at Pensacola, Florida.	Central Georgia	Tropical Storm	Some damage from local flooding. No deaths or severe injuries were reported.
ESTHER	Sept. 16-19	Southwestern Gulf of Mexico	Louisiana	Fastest mile of 52 m.p.h. from the south with gusts to 75 m.p.h. at Pensacola, Florida.	1003 mb (29.62 in) at New Orleans, Louisiana.	Eastern Arkansas	Tropical Storm	Property damage generally light. Crop damage estimated at $1,000,000.
FRIEDA	Sept. 20-27	North Atlantic Ocean southwest of Bermuda.	None	Wind estimated at 70 knots over the open ocean on September 25.	Not reported	North Atlantic east of Newfoundland	Hurricane	No damage to shipping reported.
Unnamed	Oct. 22-27	North Atlantic about 500 miles northeast of Puerto Rico.	None	Wind estimated as high as 43 knots in squalls.	Not reported	North Atlantic near 39° N., 45°W.	Tropical Storm	Storm remained at sea.

*Reduced to sea level

TABLE 3

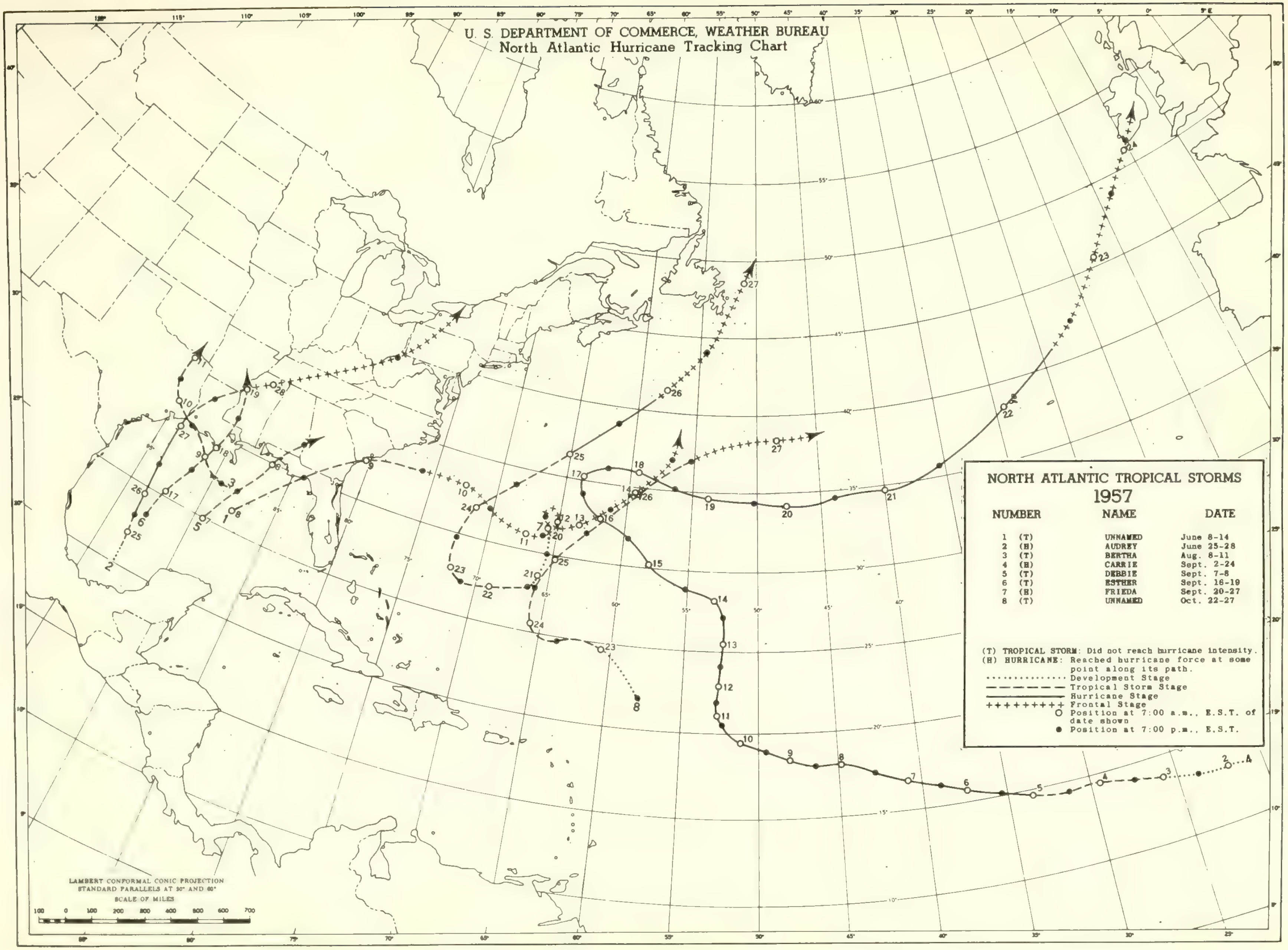
U. S. DEPARTMENT OF COMMERCE, WEATHER BUREAU
North Atlantic Hurricane Tracking Chart
NORTH ATLANTIC TROPICAL STORMS
1957
NUMBER NAME DATE
1 (T) UNNAMED June 8-14
2 (H) AUDREY June 25-28
3 (T) BERTHA Aug. 8-11
4 (H) CARRIE Sept. 2-24
5 (T) DEBBIE Sept. 7-8
6 (T) ESTHER Sept. 16-19
7 (H) FRIEDA Sept. 20-27
8 (T) UNNAMED Oct. 22-27
(T) TROPICAL STORM: Did not reach hurricane intensity.
(H) HURRICANE: Reached hurricane force at some point along its path.
Development Stage
Tropical Storm Stage
Hurricane Stage
Frontal Stage
○ Position at 7:00 a.m., E.S.T. of date shown
● Position at 7:00 p.m., E.S.T.
LAMBERT CONFORMAL CONIC PROJECTION
STANDARD PARALLELS AT 30° AND 60°
SCALE OF MILES
100 0 100 200 300 400 500 600 700

FIGURE 3

NORTH ATLANTIC HURRICANES AND TROPICAL DISTURBANCES FOR PAST YEARS

Frequency of tropical storms by month and season and number of storms reaching hurricane intensity

	May	June	July	Aug	Sept.	Oct.	Nov.	Dec.	Total
1887									
Number of tropical storms	1		2	2	3	6	1	2	17
Number of hurricanes			1	2	3	2	1	1	10
1888									
Number of tropical storms		1	1	2	2	1	3		10
Number of hurricanes		1		2	1	1	1		6
1889									
Number of tropical storms	1	1		1	5	1			9
Number of hurricanes	1			1	3				5
1890									
Number of tropical storms				1					1
Number of hurricanes				1					1
1891									
Number of tropical storms			1	2	3	4	1		11
Number of hurricanes			1	2	3	2			8
1892									
Number of tropical storms		1		1	4	3			9
Number of hurricanes				1	2	1			4
1893									
Number of tropical storms		1	1	5	3	1	1		12
Number of hurricanes		1	1	5	3				10
1894									
Number of tropical storms				2	1	3			6
Number of hurricanes				1	1	3			5
1895									
Number of tropical storms				2	1	3			6
Number of hurricanes				1		1			2
1896									
Number of tropical storms			1	1	2	2			6
Number of hurricanes			1	1	2	2			6
1897									
Number of tropical storms				1	2	2			5
Number of hurricanes				1	1				2
1898									
Number of tropical storms				2	5	2			9
Number of hurricanes				2	2				4
1899									
Number of tropical storms			1	2	1	2			6
Number of hurricanes			1	2	1	1			5
1900									
Number of tropical storms				1	3	3			7
Number of hurricanes				1	2				3
1901									
Number of tropical storms		1	2	2	3	2			10
Number of hurricanes			1	2					3
1902									
Number of tropical storms		2			1	1	1		5
Number of hurricanes		1			1	1			3
1903									
Number of tropical storms			1	1	4	2	1		9
Number of hurricanes			1	1	3	2	1		8
1904									
Number of tropical storms		1			1	3			5
Number of hurricanes					1	1			2
1905									
Number of tropical storms					3	2			5
Number of hurricanes						1			1
1906									
Number of tropical storms		2		1	3	4	1		11
Number of hurricanes		1		1	2	2			6
1907									
Number of tropical storms		1			2	1			4
Number of hurricanes									0
1908 March									
Number of tropical storms 1			1	1	3	[illegible]			8
Number of hurricanes 1			1		2	1			5
1909									
Number of tropical storms		2	2	2	2	1	1		10
Number of hurricanes			1	1	1	1			4

Frequency of tropical storms by month and season and number of storms reaching hurricane intensity

	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1910									
Number of tropical storms				1	2	1			4
Number of hurricanes					2	1			3
1911									
Number of tropical storms				2	1	1			4
Number of hurricanes				2	1				3
1912									
Number of tropical storms		1	1		1	2	1		6
Number of hurricanes					1	2	1		4
1913									
Number of tropical storms		1		1	1	1			4
Number of hurricanes		1		1	1				3
1914									
Number of tropical storms					1				1
Number of hurricanes									0
1915									
Number of tropical storms			1	2	2				5
Number of hurricanes				2	2				4
1916									
Number of tropical storms		1	2	3	4	3	1		14
Number of hurricanes		1	2	3	2	2	1		11
1917									
Number of tropical storms				2	1				3
Number of hurricanes				1	1				2
1918									
Number of tropical storms				3	2				5
Number of hurricanes				2	1				3
1919									
Number of tropical storms			1		1		1		3
Number of hurricanes					1				1
1920									
Number of tropical storms					4				4
Number of hurricanes					4				4
1921									
Number of tropical storms		1			3	2			6
Number of hurricanes		1			2	1			4
1922									
Number of tropical storms		1			1	2			4
Number of hurricanes					1	1			2
1923									
Number of tropical storms				1	1	4			6
Number of hurricanes				1	1	1			3
1924									
Number of tropical storms		1		2	2	2	1		[illegible]
Number of hurricanes				2	1	1	1		5
1925									
Number of tropical storms					1		1		2
Number of hurricanes							1		1
1926									
Number of tropical storms			1	2	5	2	1		11
Number of hurricanes			1	2	4	1			8
1927									
Number of tropical storms				1	3	3			7
Number of hurricanes				1	3				4
1928									
Number of tropical storms				2	3	1			6
Number of hurricanes				2	1	1			4
1929									
Number of tropical storms		1			1	1			3
Number of hurricanes		1			1	1			3
1930									
Number of tropical storms				2					2
Number of hurricanes				2					2
1931									
Number of tropical storms		1	1	2	3	1	1		9
Number of hurricanes					2				2
1932									
Number of tropical storms	1			3	3	3	1		11
Number of hurricanes				3	1	1	1		6

NORTH ATLANTIC HURRICANES AND TROPICAL DISTURBANCES FOR PAST YEARS –Continued

Frequency of tropical storms by month and season and number of storms reaching hurricane intensity

			May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1933											
Number of tropical storms			1	1	3	7	5	3	1		21
Number of hurricanes				1	1	3	3	1			9
1934											
Number of tropical storms			1	1	1	2	2	3	1		11
Number of hurricanes				1	1	1	1	1	1		6
1935											
Number of tropical storms						3	1	2			6
Number of hurricanes						2	1	2			5
1936											
Number of tropical storms				3	2	6	4	1			16
Number of hurricanes				1	1	3	2				7
1937											
Number of tropical storms					1	2	6				9
Number of hurricanes							3				3
1938											
Number of tropical storms						3	1	3	1		8
Number of hurricanes						2	1				3
1939											
Number of tropical storms				1		1	1	2			5
Number of hurricanes						1		2			3
1940											
Number of tropical storms			1			3	2	2			8
Number of hurricanes						3	1				4
1941											
Number of tropical storms							4	2			6
Number of hurricanes							3	1			4
1942											
Number of tropical storms						3	3	3	1		10
Number of hurricanes						3			1		4
1943											
Number of tropical storms					1	2	4	3			10
Number of hurricanes					1	1	2	1			5
1944											
Number of tropical storms					3	2	4	2			11
Number of hurricanes					2	1	3	1			7
1945											
Number of tropical storms				1	1	4	3	1			10
Number of hurricanes				1		1	1	1			4
1946											
Number of tropical storms				1	1	1	1	2			6
Number of hurricanes					1		1	1			3
1947											
Number of tropical storms					1	2	3	3			9
Number of hurricanes						2	1	2			5
1948											
Number of tropical storms			1		1	2	3	1	1		9
Number of hurricanes						1	3	1	1		6
1949											
Number of tropical storms						3	7	2	1		13
Number of hurricanes						2	4	1			7
1950											
Number of tropical storms						4	3	6			13
Number of hurricanes						4	3	4			11
1951											
Number of tropical storms			1			3	4	2			10
Number of hurricanes			1			2	3	2			8
1952											
Number of tropical storms	Feb.					2	2	2			7
Number of hurricanes	1					2	2	2			6
1953											
Number of tropical storms			1			3	4	4	1	1	14
Number of hurricanes						2	3	1			[illegible]
1954											
Number of tropical storms				1	1	2	4	1	1	1	11
Number of hurricanes				1		2	3	1		1	8
1955											
Number of tropical storms					1	4	5	2			12
Number of hurricanes						3	5	1			9
1956											
Number of tropical storms				1	1	1	4	1			8
Number of hurricanes					1	1	1	1			4
1957											
Number of tropical storms				2		1	4	1			8
Number of hurricanes				1			2				3
Totals	Feb	Mar									
Number of tropical storms	1	1	9	33	38	127	187	134	26	4	560
Number of hurricanes	0	1	2	14	20	94	119	62	11	2	325

TOTAL NUMBER OF HURRICANES AND TROPICAL STORMS, LOSS OF LIFE AND DAMAGE

	Total number tropical storms*		Total number hurricanes		Loss of Life		Damage by categories**	
Year	In all areas	Reaching U.S.Coast	In all areas	Reaching U.S.Coast	Total all areas	In United States	Total all areas	In United States
1887	17	4	10	3				
1888	10	6	6	4				
1889	9	4	5	2				
1890	1	0	1	0				
1891	11	4	8	2				
1892	9	3	4	0				
1893	12	7	10	6				
1894	6	3	5	2				
1895	6	4	2	1				
1896	6	4	6	4				
1897	5	4	2	1				
1898	9	6	4	3				
1899	6	4	5	3				
1900	7	3	3	1		6,000		7
1901	10	6	3	2		10		6
1902	5	3	3	1		#		#
1903	9	2	8	2		9		6
1904	5	3	2	2		#		6
1905	5	2	1	0		#		#
1906	11	6	6	4		285		7
1907	4	3	0	0		#		#
1908	8	3	5	1		#		#
1909	10	7	4	3		404		7
1910	4	3	3	2		13		6
1911	4	2	3	2		17		6
1912	6	4	4	2		12		6
1913	4	3	3	2		#		#
1914	1	1	0	0		#		#
1915	5	4	4	3		600		8
1916	14	9	11	5		107		7
1917	3	1	2	1		5		5
1918	5	2	3	1		34		6
1919	3	2	1	1		287		7
1920	4	3	4	2		2		6
1921	6	2	4	2		5		6
1922	4	1	[illegible]	0		0		#
1923	6	4	3	1		0		4
1924	[illegible]	3	5	2		2		3
1925	2	2	1	1		6		3
1926	11	4	8	4		269		8
1927	7	1	4	0		0		#
1928	6	3	4	2		1,836		7
1929	3	2	3	2		3		[illegible]
1930	2	1	2	0		0		2
1931	9	2	2	0		0		#
1932	11	5	6	2		0		#
1933	21	7	9	5		63		7
1934	11	5	6	3		17		6
1935	6	2	5	2		414		7
1936	16	7	7	3		9		6
1937	9	4	3	0		0		4
1938	8	4	3	2		600		8
1939	5	3	3	1		3		3
1940	8	4	4	3		51		6
1941	6	4	[illegible]	2		10		7
1942	10	3	4	2	17	8	7	7
1943	10	4	5	1	19	16	7	7
1944	11	4	7	3	1,076	64	8	8
1945	10	5	4	2	29	7	8	8
1946	6	4	3	0	5	0	7	7
1947	9	7	5	3	72	53	8	8
1948	9	4	6	3	24	3	7	7
1949	13	3	7	2	4	4	8	8
1950	13	4	11	3	27	19	7	7
1951	10	1	8	0	244	0	7	6
1952	7	2	6	1	16	3	6	6
1953	14	6	6	2	3	2	7	7
1954	11	5	8	4	720+	193	9	9
1955	12	5	9	3	1,518+	218	9	9
1956	8	2	4	1	76	21	8	7
1957	8	5	3	1	475	395	8	8
Total	560	259	325	136				
Median	8	4	4	2				

** This is a new form of presentation of storm damage estimates. The Weather Bureau has for some time recognized the fact that without detailed expert appraisal of damage all figures published are merely approximations to fact. Since errors in dollar estimates vary in proportion to the total damage, storms are placed in categories varying from 1 to 9 as follows:

1	Less than $50	4	$5,000 to $50,000	7	$5,000,000 to 50,000,000
2	$50 to $500	5	$50,000 to $500,000	8	$50,000,000 to $500,000,000
3	$500 to $5,000	6	$500,000 to 5,000,000	9	$500,000,000 to $5,000,000,000

Blank spaces indicate no figures available.

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* Including hurricanes.

# Not reported in literature, believed minor.

+ Additional deaths for which figures are not available.

EASTERN NORTH PACIFIC TROPICAL STORMS, 1957

By R. Corday Counts
U.S. Weather Bureau
San Francisco, California

Nine tropical storms occurred during the late summer and fall of 1957 in the area between the coast and 140° W. longitude and from the equator to 40° N. latitude. During seven storms winds reached hurricane force, the two exceptions being the storms of Sept. 20-21 and Sept. 26-27.

Special advisories were issued for all storms that attained or were expected to attain winds of Beaufort force 7 or greater. For the nine storms advisories issued by the San Francisco Forecast Office totaled 102. For two storms additional bulletins were issued by the Honolulu Forecast Office, and for one storm additional bulletins were issued by the Los Angeles Forecast Office after the storms moved into areas for which these offices were responsible.

Extensive damage occurred in the Mazatlan area as the hurricane of Oct. 20-21 passed inland on the morning of Oct. 21, 1957. Known damage: the "TUNA CLIPPER" MV SUN PACIFIC sunk; 20 shrimp boats sunk in Mazatlan harbor and 20 beached; one freighter aground. Eight men were killed when the Mazatlan jail blew down. The disturbance of Sept. 16-18, 1957, was rumored to have caused considerable damage in the Acapulco area.

THE HURRICANE OF JULY 14-26, 1957

This storm was initially located by reference to the report of the SS GRAVEL PARK 10.3° N., 109.5° W. at *2000 G.M.T., July 14, which reported winds 45 knots and pressure 998 millibars. The disturbance was charted until 0600 G.M.T. of the 18th upon the basis of a few ship reports, mainly those of the SS CAPE HORN, which reported heavy rain squalls and winds up to 30 knots. At 2155 G.M.T., July 20, the disturbance was relocated on the basis of a report from the SS CAPE HORN. This report gave winds 60 knots, from the east-northeast, barometer 985 millibars, precipitous swells, and rough seas at 15.0° N., 129.7° W. Successive reports from the SS CAPE HORN at 3 hour intervals until 1500 G.M.T. of the 21st indicated precipitous swells, heavy seas, and frequent rain. Winds of 30 to 50 knots were reported by ships from 1500 G.M.T. of the 21st to 0600 G.M.T. of the 23d. After this time winds decreased until the disturbance could no longer be located and was presumed to have dissipated. The last location was 19.1° N., 146.1° W., at 0000 G.M.T., July 25, 1957.

Reconnaissance aircraft flying from Honolulu located the eye of the disturbance six times and estimated the diameter to be 25 to 40 miles.

Highest winds reported were 71 knots by the SS CAPE HORN between 0300 G.M.T. and 0900 G.M.T., July 21 in the area between 18° N., 130° W. and 17° N., 132° W. Lowest pressure reported was 985 millibars on July 21.

THE HURRICANE OF AUGUST 6-16, 1957

This disturbance was located by reference to reports from the SS STEEL ADVOCATE, which reported winds force 7 to 9 and barometer 995 millibars at 0000 G.M.T. and 0300 G.M.T., Aug. 6 near 18° N. and 126° W. The SS STEEL FLYER apparently passed closer to the center near 18.6° N. and 129.7° W. at 1800 G.M.T. of the 6th. Thereafter the storm was followed along a west-northwest course, with positions determined by extrapolation and a few ship reports until the center was located by reconnaissance aircraft at 2214 G.M.T., Aug. 7 near 20.6° N., 134.5° W. Further extrapolation was made to 21.6° N., 142.5° W. at 0000 G.M.T., Aug. 9, after which it was impossible to follow the storm due to lack of reports.

At 2315 G.M.T., Aug. 9, the storm was relocated by reconnaissance aircraft near 27.9° N., 148.1° W. The storm was followed along a northwesterly and later a northerly course to a point near 45.0° N., 165.0° W. in which area the storm dissipated.

Highest wind reported by a surface vessel was 90 knots by the SS JEAN LAFITTE near 35.5° N., 165.5° W. at 1800 G.M.T., Aug. 13. Lowest pressure reported was 990 millibars, Aug. 13, 1957.

THE HURRICANE OF AUGUST 8-15, 1957

At 2100 G.M.T., Aug. 8, 1957, the SS STEEL ADVOCATE reported winds force 9 or 10 at 13.7° N., 106.8° W., and upon the basis of this report a tropical storm was assumed to be in the area. This storm was followed along a northwesterly course on the basis of a few ship reports and extrapolation until the center was located by reconnaissance aircraft near 18.3° N., 110.0° W., at 0028 G.M.T., Aug. 11; further reconnaissance flights determined the position daily until 1500 G.M.T. of the 15th at which time the center was dissipating near 29.1° N., 120.2° W.

Strongest wind reported by a surface vessel was force 8 or 9 by the SS WORLD THOUGHT at 19.8° N., 111.0° W., at 1700 G.M.T. of the 11th, but this was some distance from the estimated position of the center. Reconnaissance aircraft estimated surface winds at 75 knots in the vicinity of 22.7° N., 119.9° W., at 2256 G.M.T. of the 11th. Lowest pressure reported was 972 millibars on Aug. 13, 1957.

THE HURRICANE OF SEPTEMBER 16-18, 1957

This disturbance was located by reference to ship reports at 1800 G.M.T. of the 16th in the area near 15.0° N., 99.0° W., where winds of 30 to 45 knots were reported some distance from the estimated position of the center. From the initial location the disturbance moved in a northwesterly direction with slow curvature to the north and apparently moved inland 50 to 100 miles north of Acapulco, Mexico.

Strongest winds reported were 113 knots by the SS DOLLY TURMAN at 16.3° N., 100.3° W., at 1715 G.M.T. of the 17th. The SS JOSHUA HENDY reported 60 to 100 knots and the SS NASHVILLE reported 80 knots in this same general area. Lowest pressure reported at the surface was 984 millibars on Sept. 17, 1957.

There have been rumors of considerable damage in the Acapulco area caused when the hurricane passed near that town.

* To obtain Pacific Standard Time 8 hours should be subtracted from the G.M.T. times indicated. In some instances the day of the month will be moved back one day by this subtraction. Example - 0000 G.M.T. July 25 will become 4 p.m. (PST) of July 24.

THE TROPICAL STORM OF SEPTEMBER 20-22, 1957

A weak low moving northward along the coast of Mexico attained tropical storm intensity near 22.0° N., 109.0° W., at 1800 G.M.T. of the 21st. This storm was followed to 23.8° N., 109.0° W., at 0900 G.M.T. of the 22d; reports indicated rapid weakening in the latter area and the storm could no longer be followed.

Strongest winds reported were force 6 to 8 by SS ALCYN near 22.05° N., and 109.06° W., at 1700 G.M.T. of the 21st and 37 knots near 21.5° N., 108.4° W. by SS SAHRSTEIN at 1800 G.M.T. of the 21st. Lowest pressure reported was 991 millibars, Sept. 21, 1957.

THE TROPICAL STORM OF SEPTEMBER 26-27, 1957

The SS ROMULUS reported winds of force 10 with heavy seas and rain in the area near 14° N., 101° W., at 2100 G.M.T. of the 26th and on the basis of this report a tropical storm was assumed to be in the area. The storm was followed on the basis of extrapolation until 1500 G.M.T. of the 27th after which it was impossible to follow the storm further due to complete lack of evidence to support its existence.

The strongest wind reported was the force 10 by the SS ROMULUS. The lowest pressure reported at the surface was 999 millibars.

THE HURRICANE OF OCTOBER 1-5, 1957

This disturbance was first located upon the basis of a report from the SS ACADIA at 0000 G.M.T. of the 1st which reported 52 knots at 17.8° N., 120.2° W. This disturbance moved northwest to about 19.5° N., 122.5° W., and then curved to the northeast moving over the lower portion of Baja, California, the Gulf of California, and onto the mainland south of Guaymas.

The strongest wind reported was 90 knots by the MV SEA PREAM while at anchor in Magdalena Bay. The master of the SEA PREAM believed the center passed near his vessel at 1845 G.M.T. of the 4th, at which time the master of SEA PREAM stated that 6 ships were in Magdalena Bay with 2 ships outside the bay and apparently in trouble. The lowest pressure reported by a surface vessel was 996 millibars, Oct. 4, 1957.

THE HURRICANE OF OCTOBER 17-20, 1957

The SS KONGSBERG reported winds of 55 knots near 13.3° N., and 103.3° W. at 0600 G.M.T., Oct. 17, and the disturbance was initially located on the basis of this report. From the initial position the disturbance moved northwestward to about 18° N., 107° W., then northward and finally weakened and dissipated in the area southwest of Mazatlan on Oct. 20, 1957.

Strongest wind reported was 80 knots by the SS NERVA near 18.5° N., 107.3° W., at 0949 G.M.T. of the 19th. Lowest pressure reported by a surface vessel was 986 millibars, Oct. 20, 1957

THE HURRICANE OF OCTOBER 20-21, 1957

This disturbance was first located on reports from the SS DOWA MARU which reported winds of 40 to 50 knots near 19.4° N., 109.1° W. However, a tropical depression was present southwest of this area for some time before the strong winds began. From the initial position the disturbance developed into the season's most severe storm, deepened and rapidly moved northeastward and passed inland over Mazatlan about 1500 G.M.T., Oct. 21, 1957.

Strongest winds were about 130 knots reported by the MV ECUADOR near 21° 40' N., and 108° 15' W; 100 to 120 knots by MV AGRESSOR near 21.4° N., 108.0° W; and 100 knots or more by the MV SUN PACIFIC. Lowest pressure reported by a surface vessel was 959 millibars, Oct. 21, 1957.

Damage was extensive: eight persons were killed when the Mazatlan jail blew down; the MV SUN PACIFIC was sunk; 20 shrimp boats were sunk and 20 beached in Mazatlan harbor; one large freighter grounded; and extensive structural damage occurred in the Mazatlan area. Flooding was reported in areas about 100 miles south of Mazatlan.

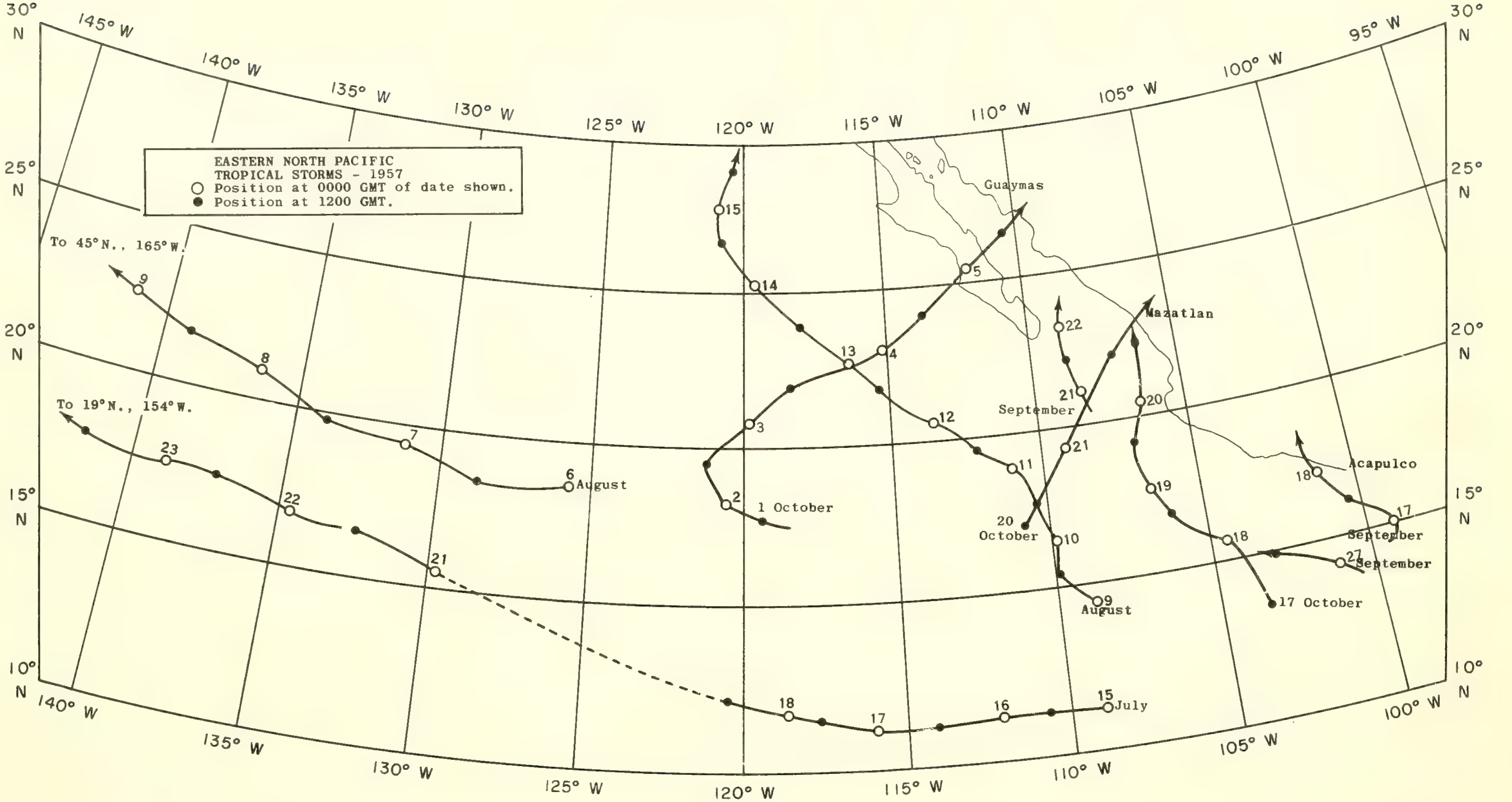
EASTERN NORTH PACIFIC
TROPICAL STORMS - 1957
○ Position at 0000 GMT of date shown.
● Position at 1200 GMT.
30° N
25° N
20° N
15° N
10° N
145° W
140° W
135° W
130° W
125° W
120° W
115° W
110° W
105° W
100° W
95° W
To 45°N., 165°W.
To 19°N., 154°W.
6 August
15 July
9 August
1 October
20 October
17 October
17 September
27 September
21 September
Guaymas
Mazatlan
Acapulco

FIGURE I

HURRICANES AND TROPICAL DISTURBANCES

EASTERN NORTH PACIFIC

Storm number	Date	Area where first reported	Coast lines crossed	Highest wind speed reported	Lowest pressure reported *	Place of dissipation reported	Intensity	Remarks
	1957							
I	July 14-26	Near 10°North 109°West	None	71 knots July 21	985 Mbs July 21	Near 19°N. 154°W.		Moved unusually far west
II	Aug. 6-16	Near 18°North 125°West	None	90 knots Aug. 13	990 Mbs Aug. 13	Near 45°N. 165°W.		Moved unusually far west
III	Aug. 8-15	Near 13°North 106°West	None	55 knots Aug. 11	972 Mbs Aug. 13	Near 29°N. 120°W.		Aircraft reported 75 knot surface wind Aug. 11
IV	Sept. 16-18	Near 14°North 99°West	Mexican coast 50-100 miles north of Acapulco	113 knots Sept. 17	984 Mbs Sept. 17	Inland North of Acapulco		Damage reported in Acapulco area
V	Sept. 20-27	Near 20°North 109°West	None	40 knots Sept. 21	991 Mbs Sept. 21	Near 24°N. 109°W.		Winds did not reach hurricane force
VI	Sept. 26-27	Near 14°North 100°West	None	55 knots Sept. 26	999 Mbs Sept. 27	Near 15°N. 104°W.		Winds did not reach hurricane force
VII	Oct. 1-5	Near 18°North 118°West	Crossed Baja, Calif., Gulf of Calif. and Mex. coast south of Guaymas	90 knots Oct. 4	996 Mbs Oct. 4	Inland south of Guaymas		Some damage to ships in Magdalena Bay
VIII	Oct. 17-20	Near 13°North 103°West	None	80 knots Oct. 19	986 Mbs Oct. 20	South and southwest of Mazatlan		
IX	Oct. 20-21	Near 16°North 113°West	Mexican coast at Mazatlan	130 knots Oct. 21	959 Mbs Oct. 21	Inland near Mazatlan		Extensive damage to ships and structures Mazatlan area

* Lowest pressure reported are actual values and not estimates of central pressure.

CENTRAL NORTH PACIFIC HURRICANES, 1957

by Rue E. Rush
Weather Bureau Airport Station
Honolulu

Storms which develop into hurricanes in the extensive area east of the International Date Line and west of 140° W. or hurricanes which move westward from the warm waters southwest of Mexico, to as far west as 140° W. are fairly rare. Nevertheless, in 1957 two hurricanes in each of these two categories were observed.

HURRICANE KANOA, JULY 14-26, 1957*

A tropical storm originated some 750 miles southwest of Manzanillo, Mexico, on July 14, and moved west-northwestward for 3 days, at which time lack of data forced abandonment of advisories. On July 20, the SS CAPE HORN, at about 15° N., 130° W., reported 60-knot winds and very high seas with precipitous swells. Late in the afternoon of July 20, the Weather Bureau Office in San Francisco began issuing hurricane bulletins on the storm. On July 22, an Air Force reconnaissance plane from Hickam Air Force Base in Honolulu located the eye of the storm described as 40 miles in diameter, with maximum sustained winds of 70 knots and gusts to 100 knots in the storm. Reconnaissance continued daily until the storm filled and maximum winds dropped below 35 knots. When military meteorological offices in Hawaii assumed their advisory responsibilities, they named the storm Kanoa, "the free one". Kanoa continued moving west-northwestward at about 10 knots until July 24, when it began weakening and became a tropical storm within 24 hours, then moved westward as an easterly wave after further weakening. As this wave which had been Kanoa passed across the Islands, it caused marked increase in trade wind rainfall, as much as 12 times the daily normal in some gages on the island of Hawaii.

Even though reports on this storm were much more prevalent than usual for that part of the Pacific, no true analysis as to highest wind or lowest pressure can be made. No damage or loss of life resulted, as the storm spent its entire life over water and approached no inhabited areas.

UNNAMED STORM, AUGUST 6-16, 1957*

Early in August, one of a series of easterly waves developed a closed circulation and intensified to become a tropical storm, and in its early stage moved in virtually the same manner as had Kanoa. However, its path was some 200 to 250 miles further north, but parallel to that of Kanoa. In its tropical storm stage on August 6 a ship passing through this storm reported very rough seas and winds in excess of 40 knots. Later the same day the STEEL FLYER passed very close to the center, and reported a central pressure of 997 millibars.

Early on August 7, a reconnaissance aircraft from Hickam Air Force Base on Oahu penetrated the storm and estimated maximum winds at 50 knots and a central pressure of 995 mb. As the storm neared the 145th meridian, it appeared to weaken markedly, and suddenly recurved sharply to the northwest and accelerated. During the period from 0800 (h.s.t.) August 9 to 0200 (h.s.t.) August 10, it crossed the flight path of the California-Hawaii air traffic and necessitated revisions in flight forecasts. During this time, the storm was apparently very small, as surface ships only a hundred to two hundred miles from the center reported no winds over 25 knots. The reconnaissance eye fix estimated 40 to 45 knots near the center. On August 10, the storm decelerated and at the same time intensified. At 30° N. the winds reached hurricane force of 65 knots by 0800 (h.s.t.). Six hours later the winds were in excess of 75 knots. It continued a regular northwesterly movement of about 12 knots, and maintained hurricane strength. On August 13 at 0800 (h.s.t.), when it was located near 35.5° N., 165.5° W., the ship JEAN LAFITTE, passing near the center, reported a 90-knot wind and a 998 millibar pressure. On August 15, the storm recurved to the north and dissipated within 24 hours. No loss of life or property damage resulted from this storm.

HURRICANE DELLA, SEPTEMBER 2-18, 1957

The third hurricane of 1957, unnamed while it was east of the 180th meridian, became Typhoon Della after crossing that meridian. Della had its origin somewhere south of the Hawaiian Islands, with evidence pointing to development from a cusp in the northern section of an easterly wave of great amplitude. Its early life was camouflaged by the presence of an extensive low aloft to the southwest of the Hawaiian Islands.

Della reached tropical storm intensity on September 2, and at this time was about 250 miles south of Honolulu. It moved northwestward, passing to the southwest of Oahu and Kauai. As it passed near Kauai, swells in excess of 15 feet were generated, a fact verified as they broke over the 15-foot sea wall in Nawiliwili Harbor on South Kauai.

On the afternoon of September 4, a navy ship west of Kauai reported winds of 85 knots, and hurricane warning were issued. The storm continued its northwestward movement and maintained hurricane strength. It passed almost directly across the Coast Guard Loran Station at French Frigate Shoals, and the barograph trace from that station exhibited a near classical profile dropping 33 millibars and rising the same amount all within 10 hours. At a point some 180 miles southeast of Midway Island, the storm appears to have described a tight circle and turned to the south, then to the southwest and moved across the 25th and 20th parallels, and then curved westward toward Wake Island. However, at a point some 350 miles east of Wake Island, it again assumed a northwesterly movement, and travelled to a point near 28° N., 152° E. At this position it recurved to the north then northeast, and remained in the typhoon category for 2 more days. During her life, Della maintained hurricane strength for more than 12 days, travelled more than 5000 miles. No property damage or loss of life was reported on any of the islands Della passed near, but a fishing sampan from Honolulu, working in the French Frigate Shoals area at the time of the storm's passage, has been missing (with its 5 occupants) and is presumed lost.

The Liberian freighter CYGNET suffered damages when a large wave carried away part of the bridge structure, and members of the crew suffered injuries, mainly from flying debris. The damages to the vessel required that a damage control party be put aboard by the Coast Guard Cutter BERING STRAIT.

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* Early history described in Eastern North Pacific Tropical Storms preceding this article.

HURRICANE NINA, NOVEMBER 30 - December 6, 1957

Hurricane Nina is the second hurricane in recent time to pose a definite threat to Hawaii. It actually came no closer to the islands than had Della 3 months earlier, but at its closest point to the islands, it was somewhat more intense. Nina was first detected on November 29 near Palmyra Island, about a thousand miles south-southwest of Honolulu. The cooperative weather station on Palmyra, manned by personnel of Scripps Institution of Oceanography reported high winds, and from this report the earliest location and intensity were estimated. On Saturday November 30, a plane from the 57th Air Force Reconnaissance Squadron at Hickam Air Force Base located the storm. By late Saturday night, the storm had reached hurricane intensity, with sustained winds of 70 knots and gusts to 90 knots, and had moved northward toward Kauai. At about the 20th parallel, Nina curved slightly to the northwest, and thus relieved the threat to the island of Kauai. A day later Nina turned sharply to the west, and moved on a track just south of west for 3 more days, then quickly dissipated.

Kauai did receive direct winds, rain and heavy seas associated with the storm. At 8:00 p.m. (h.s.t.) on Sunday, December 1, the Kilauea Light Station on the north tip of the island of Kauai reported winds of 80 knots. Waves as high as an estimated 35 feet pounded the south shores of Kauai on Sunday, and were still 15 to 20 feet on Monday. Several homes along the south coast were damaged, and many persons were forced to flee their low-lying homes.

Rainfall was heavy, the Wainiha gage on North Kauai reporting 20.42 inches in a 14 hour period beginning at 8:00 a.m., Sunday, December 1. Floods washed out several roads. Damage was estimated near $100 thousand as a result of the storm.

Oahu, while never under the direct winds of Nina, nevertheless had some damage resulting from what appeared to be a very squally and unstable indraft into the storm. Most of these high winds were lee-slope winds, with sustained speeds above 35 knots. At the Honolulu International Airport, gusts of 71 knots registered at the weather station on Saturday night, November 30, set an all time maximum speed record for the station. Indraft winds not associated with the storm's circulation produced minor damage on each of the islands southeast of Oahu. In some locations minor flood damage also resulted on these islands.

At least one death, and probably three more, resulted from the storm. A City-County employee was electrocuted on Oahu. A sampan with three fishermen aboard was reported missing near Kauai, and is presumed lost.

The merchant vessel MARGARITA CHANDRIS was reported in distress west of Kauai during passage of the storm, but later made port.

Airlines and surface vessels ceased operation into and out of Honolulu during the weekend, leaving some 1250 air travellers delayed at Honolulu and at other Pacific air terminals.

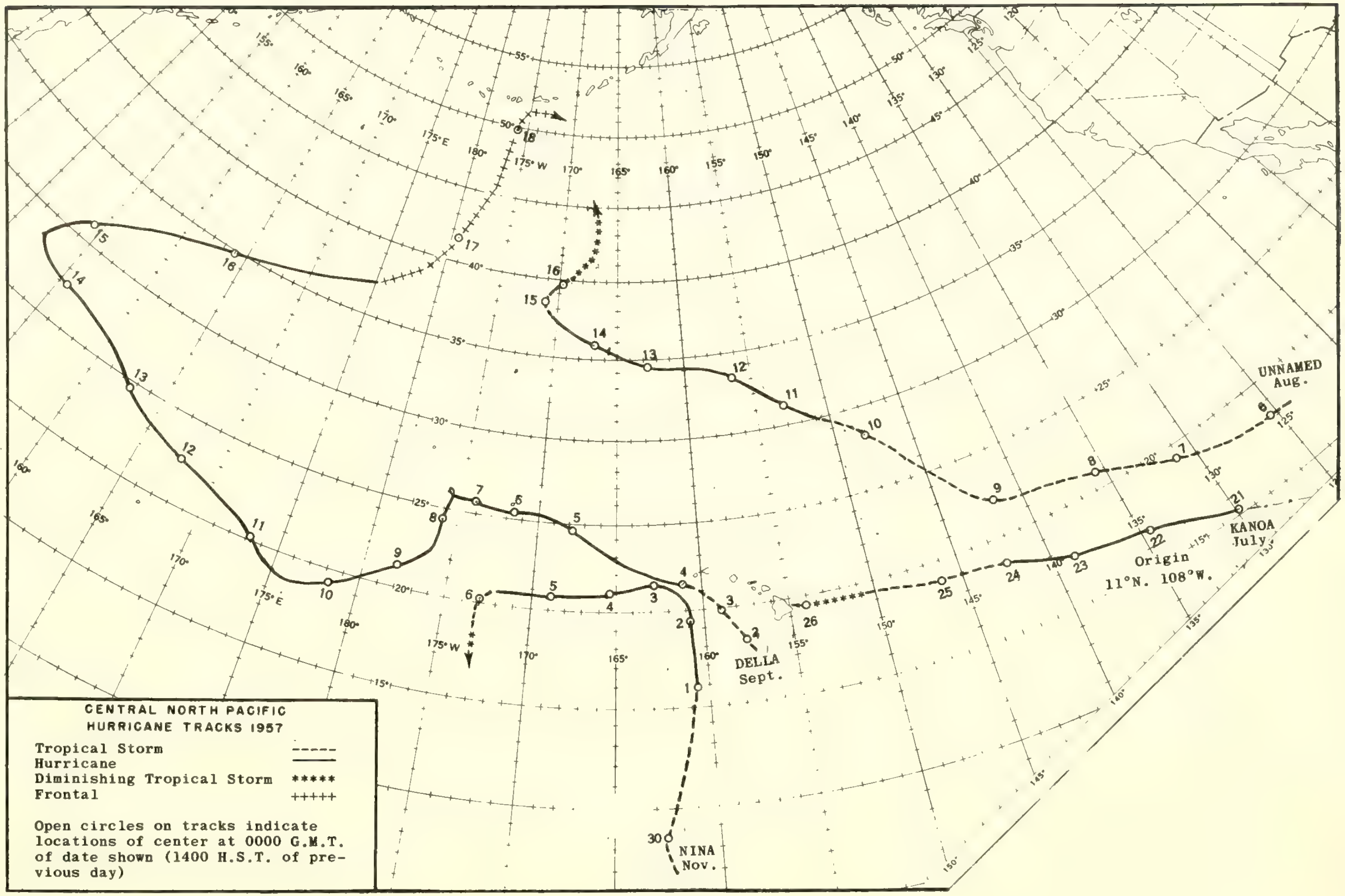

CENTRAL NORTH PACIFIC
HURRICANE TRACKS 1957
Tropical Storm ------
Hurricane ——
Diminishing Tropical Storm *****
Frontal +++++
Open circles on tracks indicate locations of center at 0000 G.M.T. of date shown (1400 H.S.T. of previous day)
UNNAMED Aug.
KANOA July
Origin 11°N. 108°W.
DELLA Sept.
NINA Nov.
175° E
180°
175° W
170°
165°
160°
155°
150°
145°
140°
135°
130°
125°
120°
55°
50°
45°
40°
35°
30°
25°
20°
15°

FIGURE 1.

GENERAL SUMMARY OF FLOOD LOSSES FOR 1956

Monetary losses from floods in the United States during 1956, estimated at $64,685,200, was the lowest flood loss since 1941. It was quite a contrast to 1955 which had the second largest flood loss in 54 years of record. The flood loss in 1956 was only 6 percent of the flood loss suffered in 1955. The national average, based on the 10-year period 1942-1951 and adjusted to the 1951 price index is $275,000,000. The total loss of life this year was 42 compared to 302 in 1955 and 47 in 1941. It was considerably smaller than the national annual average of 86 lives lost during the last 32 years (1925-1956). The savings resulting from the flood forecasting and warning service was, as compiled from fragmentary information, approximately $20,000,000 - this figure represents only 15 percent of the river systems where flooding occurred during the year.

The most important flooding during the year 1956 was the spring flood in the Columbia River Basin where record-breaking stages and record peak flows were reported in some of the tributary streams in Idaho and Oregon. The flood damages, estimated at $19,181,000 were comparatively small compared to the flood of 1948. The loss of life in this flood totaled 4 as compared to more than a score of lives in 1948.

ESTIMATED FLOOD LOSSES FOR 1956 (Property Losses in Thousands of Dollars)

River and drainage	Urban Property					Rural Property					Other Property		Miscellaneous	Unclassified	Total Loss	Lives Lost
	Residential		Commercial		Public	Crops		Livestock	Other		RR's, bridges, Highways, etc.	Public Utilities				
	Fixed	Movable	Fixed	Movable		Growing	Stored		Fixed	Movable						
ST. LAWRENCE DRAINAGE Lake Michigan																
Red Cedar River	A 20.0	....	....	....	....	....	....	....	....	....	....	....	....	....	20.0	....
Grand River	170.0	71.0	101.0	85.0	93.7	2.7	....	....	12.0	1.0	12.5	44.5	485.5	....	1,078.9	....
Total	190.0	71.0	101.0	85.0	93.7	2.7	....	....	12.0	1.0	12.5	44.5	485.5	....	1,098.9	....
Lake Huron																
Flint River	A175.0	....	....	....	....	....	....	....	....	....	....	....	....	....	175.0	....
Total	175.0	....	....	....	....	....	....	....	....	....	....	....	....	....	175.0	....
Lake Ontario																
Genesee River and Tributaries	....	....	....	....	3.0	....	....	....	....	....	29.8	....	20.0	....	52.8	....
Total	....	....	....	....	3.0	....	....	....	....	....	29.8	....	20.0	....	52.8	....
ATLANTIC SLOPE DRAINAGE																
Tioga and Chemung Rivers	3.2	....	....	....	25.0	....	....	....	....	....	3.5	....	....	....	31.7	....
Frankstown Branch and Tributaries	15.3	13.1	2.3	7.7	0.3	37.3	0.1	0.1	13.0	0.7	4.4	....	59.9	....	154.2	....
Susquehanna River and Tributaries	234.4	9.2	25.4	3.0	37.6	8.5	4.0	1.0	10.0	3.0	20.0	5.2	22.5	....	383.8	3
Rock Creek (tributary of Potomac River in D. C. and Maryland)	....	....	....	....	55.3	500.0	....	....	....	....	300.0	....	....	....	855.3	7
Potomac River	....	....	....	....	....	....	....	....	....	....	27.2	....	....	....	27.2	....
Schenks Branch (Charlottesville, Va.)	....	....	....	....	....	....	....	....	....	....	....	....	....	....	No estimate	1
Little River, Bear and Drowning Creeks (N. C.)	10.3	85.0	90.0	100.0	50.0	26.0	15.0	23.0	25.0	50.0	325.7	....	30.0	....	830.0	3
St. Johns River (Florida)	....	....	....	....	....	122.0	....	....	....	....	....	....	....	B168.0	290.0	....
Total	263.2	107.3	117.7	110.7	168.2	693.8	19.1	24.1	48.0	53.7	680.8	5.2	112.4	168.0	2,572.2	14
Lake Okeechobee																
Kissimmee River	122.0	....	40.0	....	183.0	622.0	....	8.0	....	....	195.0	....	5.0	B425.0	1,600.0	....
Total	122.0	....	40.0	....	183.0	622.0	....	8.0	....	....	195.0	....	5.0	425.0	1,600.0	....
EAST GULF OF MEXICO DRAINAGE																
Apalachicola River	....	....	....	....	....	....	....	....	....	....	....	....	1.0	....	1.0	....
Etowah River	....	....	....	....	....	....	....	....	....	....	....	....	....	B 0.8	C 0.8	....
Oostanaula River	....	....	....	....	....	....	....	....	....	....	23.3	....	....	B182.4	C205.7	....
Coosa River	....	....	....	....	....	....	....	....	....	....	0.1	....	....	B 9.9	C 10.0	....
Tallapoosa River	....	....	....	....	....	....	....	....	....	....	1.5	....	....	B 14.4	C 15.9	....
Cahaba River	....	....	....	....	....	....	....	....	....	....	....	....	....	B 23.8	C 23.8	....
Small streams in Washington, Clark and Monroe Counties, Alabama	....	....	....	....	....	100.0	....	3.0	....	....	....	....	....	400.0	503.0	....
Alabama River	....	....	....	....	....	....	....	....	....	....	19.9	....	....	B142.9	C162.8	....
Chickasawhay River	....	....	....	....	....	....	....	....	....	....	19.5	....	....	B 57.3	C 76.8	....
Bowie Creek (Miss.)	....	....	....	....	....	2.5	....	....	....	....	2.4	....	....	....	4.9	....
Leaf River	....	....	....	....	....	....	....	....	....	....	2.6	....	....	B 3.0	C 5.6	....
Boque Chitto River	....	....	....	....	....	13.0	....	....	....	....	....	....	....	....	13.0	....
Pearl River	25.0	....	....	....	16.0	10.0	....	25.0	....	5.0	75.2	....	....	D198.9	355.1	1
Total	25.0	....	....	....	16.0	125.5	....	28.0	....	5.0	144.5	....	1.0	1,033.4	1,378.4	1

See reference notes at end of table.

ESTIMATED FLOOD LOSSES FOR 1956 (Property Losses in Thousands of Dollars)

River and drainage	Urban Property					Rural Property					Other Property		Miscellaneous	Unclassified	Total Loss	Lives Lost
	Residential		Commercial		Public	Crops		Livestock	Other		RR's, bridges, Highways, etc.	Public Utilities				
	Fixed	Movable	Fixed	Movable		Growing	Stored		Fixed	Movable						
MISSISSIPPI SYSTEM Upper Mississippi Basin																
Zumbro and Whitewater Rivers	...	...	...	...	...	...	...	...	...	...	5.0	...	...	...	5.0	...
Trempealeau River	72.0	28.8	21.6	21.6	18.0	5.8	...	...	18.0	...	72.0	7.2	5.8	...	270.8	...
Black River	...	...	...	...	...	1.5	...	...	...	...	...	...	...	...	1.5	...
La Crosse River	...	...	...	...	...	1.5	...	...	...	...	3.0	...	...	...	4.5	...
Root River	0.5	...	...	...	...	...	...	...	...	...	1.0	...	...	...	1.5	...
Lemonweir River (Tributary of Wisconsin River)	3.0	2.0	...	...	5.0	2.0	...	...	...	...	20.0	5.0	10.0	...	47.0	...
Kickapoo River	1.5	0.5	...	...	0.8	1.2	...	...	...	...	2.0	...	1.0	...	7.0	...
Buck Creek (Tributary of Maquoketa River)	...	...	...	...	...	...	...	...	...	...	50.0	...	...	...	50.0	...
Total	77.0	31.3	21.6	21.6	23.8	12.0	...	...	18.0	...	153.0	12.2	16.8	...	387.3	...
Missouri Basin																
Big Hole River	...	...	...	...	...	...	...	...	...	...	...	...	...	E10.0	10.0	...
Gallatin River and Tributaries	...	...	...	...	...	...	...	...	2.5	...	34.0	...	...	E64.0	C100.5	...
Jefferson River	...	...	...	...	...	...	...	...	...	...	5.0	...	...	E65.0	C 70.0	...
Yellowstone River and Tributaries	2.0	0.3	1.5	0.5	3.0	...	...	...	0.2	0.3	0.5	...	7.5	...	15.8	1
Small Tributaries of James River in South Dakota	...	...	...	...	...	...	...	...	...	...	5.7	...	...	...	5.7	...
Small Tributaries of South Platte River in Denver, Colo., and Vicinity	...	...	...	...	...	...	...	...	...	...	...	...	...	5,000.0	5,000.0	...
Clear Creek (Tributary of South Platte River in Colorado)	5.0	...	...	...	...	...	...	...	...	...	97.0	...	4.0	...	C106.0	...
Corporation Creek (Norfolk, Nebr.)	75.0	...	...	...	...	...	...	...	...	...	...	...	...	...	75.0	...
Paradise Creek (Tributary of Saline River)	...	...	...	...	0.7	23.0	...	...	2.0	...	3.0	...	...	...	28.7	...
North Fork Nemaha River and Sulphur Creek	F 9.5	...	...	...	...	E 9.1	...	...	...	...	2.4	...	...	...	C21.0	...
Frenchman, Stinking Water and Spring Creeks (Tributaries of Republican River)	...	...	2.1	...	224.4	235.1	...	7.3	69.2	...	226.5	...	...	...	C764.6	...
Grand and Lamine Rivers	...	...	...	...	0.5	155.0	...	...	5.5	...	...	...	...	...	161.0	...
Missouri River	...	...	1.3	...	...	...	...	...	...	...	...	...	...	...	C 1.3	...
Total	91.5	0.3	4.9	0.5	228.6	422.2	...	7.3	79.4	0.3	374.1	...	11.5	5,139.0	6,359.6	1
Ohio Basin																
Small Streams in Western Pennsylvania and Northern West Virginia	...	...	...	...	...	...	...	...	...	...	380.0	...	...	2,000.0	2,380.0	3
Allegheny River and Tributaries	327.2	132.1	297.9	278.3	249.0	...	...	...	...	...	162.6	30.5	445.9	...	1,923.5	...
Monongahela, Youghiogheny, Cheat and West Fork Rivers and Smaller Tributaries	378.0	205.1	1,630.9	1,117.4	439.8	194.7	4.2	3.7	54.0	23.8	900.8	371.0	1,267.6	...	6,591.0	8
Little Kanawha River	...	...	...	...	0.1	...	...	...	...	...	...	...	10.0	...	10.1	...
Kanawha, Gauley and New Rivers and Tributaries	20.0	2.0	1.0	1.0	2.0	...	...	...	...	...	2.0	...	4.0	...	32.0	...
Guyandot, Tug Fork and Levisa Fork Rivers	5.5	2.0	...	...	9.0	3.0	...	...	1.0	...	2.0	...	2.0	...	24.5	...
Black Lick Creek (Pickerington, Ohio)	...	...	...	...	...	...	...	...	...	...	...	...	...	200.0	200.0	...
Licking River	...	...	25.0	...	...	5.0	...	0.2	1.0	0.1	75.0	...	...	...	106.3	...
Kentucky River	2.0	1.0	1.0	0.5	2.4	...	...	...	...	...	...	...	12.9	...	19.8	...

See reference notes at end of table.

ESTIMATED FLOOD LOSSES FOR 1956 (Property Losses in Thousands of Dollars)

River and drainage	Urban Property					Rural Property					Other Property		Miscellaneous	Unclassified	Total Loss	Lives Lost
	Residential		Commercial		Public	Crops		Livestock	Other		RR's, bridges, Highways, etc.	Public Utilities				
	Fixed	Movable	Fixed	Movable		Growing	Stored		Fixed	Movable						
MISSISSIPPI SYSTEM--CONT. Ohio Basin--Cont.																
Wabash and White Rivers	600.0	500.0	50.0	50.0	100.0	3,000.0	....	....	50.0	20.0	200.0	50.0	400.0	....	5,020.0	1
Cumberland River	75.0	15.0	91.5	50.0	5.0	20.0	10.0	....	21.2	....	15.0	5.0	13.0	....	320.7	....
Ohio and Green Rivers and Other Minor Tributaries	320.4	37.6	51.5	31.0	58.5	71.8	2.8	2.0	10.8	8.3	307.3	6.0	300.2	....	1,208.2	....
Total	1,728.1	894.8	2,148.8	1,528.2	865.8	3,294.5	17.0	5.9	138.0	52.2	2,044.7	462.5	2,455.6	2,200.0	17,836.1	12
Arkansas Basin																
Purgatoire River and Minor Tributaries of Arkansas River in Colorado	....	....	0.1	0.1	0.6	....	1.2	....	0.1	0.2	21.3	0.4	0.2	....	24.2	....
Total	....	....	0.1	0.1	0.6	....	1.2	....	0.1	0.2	21.3	0.4	0.2	....	24.2	....
Red Basin																
Ouachita River	....	....	....	....	....	....	....	....	....	....	....	....	....	250.0	250.0	1
Total	....	....	....	....	....	....	....	....	....	....	....	....	....	250.0	250.0	1
Lower Mississippi Basin																
Minor Tributaries of Mississippi River in Northern Tennessee	....	....	....	....	....	....	....	....	....	....	....	....	....	50.0	50.0	....
St. Francis River	....	....	....	....	....	5.0	....	....	....	....	....	....	....	....	5.0	....
Yazoo and Big Black Rivers	....	....	100.0	....	....	370.0	....	....	124.0	....	216.0	....	....	....	810.0	....
Total	....	....	100.0	....	....	375.0	....	....	124.0	....	216.0	....	....	50.0	865.0	....
WEST GULF OF MEXICO DRAINAGE																
Brazos River and Tributaries	16.0	....	12.0	....	10.0	1,768.0	....	115.0	527.5	....	512.5	16.0	50.0	....	C3,027.0	....
Pecan Bayou	50.0	6.0	10.0	5.0	125.0	100.0	....	10.0	25.0	10.0	60.0	65.0	10.0	....	476.0	....
San Saba River	....	....	....	....	0.5	....	....	....	2.0	....	....	....	....	....	2.5	3
Colorado River	....	....	....	....	40.0	20.0	....	20.0	10.0	5.0	100.0	....	....	....	195.0	....
San Miguel and La Parita Creeks and Frio River	....	....	....	....	....	....	....	....	8.0	....	4.0	....	....	....	12.0	....
Nueces River	....	....	....	....	....	....	....	....	....	....	....	....	1.5	....	1.5	....
Total	66.0	6.0	22.0	5.0	175.5	1,888.0	....	145.0	572.5	15.0	676.5	81.0	61.5	....	3,714.0	3
Great Basin																
Small Streams in and Around Cedar City, Minesville, Ogden, Salt Lake City, Monticello and Jensen, Utah	25.0	6.6	25.0	....	3.5	45.0	....	....	3.0	....	72.5	....	....	....	180.6	....
Provo River	....	....	....	....	....	....	....	....	....	....	25.0	....	....	....	25.0	....
Peavine and Galena Creeks (Tributaries of Truckee River)	236.0	....	....	....	....	....	....	....	....	....	....	....	....	....	236.0	4
Total	261.0	6.6	25.0	....	3.5	45.0	....	....	3.0	....	97.5	....	....	....	441.6	4
PACIFIC SLOPE DRAINAGE Coastal Drainage																
San Gabriel River	....	50.0	....	G 3.0	....	....	H 10.0	....	....	....	120.0	3.0	4.0	75.0	C265.0	....
Rio Hondo	....	J 7.0	....	....	....	....	H 1.0	....	....	....	16.0	....	....	136.0	C160.0	....
Los Angeles River	....	J 4.0	....	G 1.0	....	....	H 1.5	....	....	....	26.0	2.0	5.5	1,080.0	C1,120.0	....
Laguna Dominguez	....	50.0	....	G5,250.0	27.0	....	H100.0	....	....	....	105.0	....	33.0	15.0	C5,580.0	....
Ballona Creek	....	19.0	....	311.0	....	....	H 1.0	....	....	....	14.0	5.0	....	10.0	C360.0	....
Fresno and Chowchilla Rivers	....	....	....	....	....	....	H 10.0	....	....	....	....	....	....	K625.0	635.0	....

See reference notes at end of table.

ESTIMATED FLOOD LOSSES FOR 1956 (Property Losses in Thousands of Dollars)

River and drainage	Urban Property					Rural Property					Other Property		Miscellaneous	Unclassified	Total Loss	Lives Lost
	Residential		Commercial		Public	Crops		Livestock	Other		RR's, bridges, Highways, etc.	Public Utilities				
	Fixed	Movable	Fixed	Movable		Growing	Stored		Fixed	Movable						
PACIFIC SLOPE DRAINAGE--CONT. Coastal Drainage--Cont.																
Russian River	...	...	...	...	...	...	...	...	...	...	...	...	100.0		100.0	...
Eel River	...	...	...	...	25.0	...	...	...	...	...	500.0	...	...	...	525.0	...
Total	...	130.0	...	5,565.0	52.0	...	123.5	...	...	...	781.0	10.0	142.5	1,941.0	8,745.0	...
Columbia Basin																
Kootenai River	2.7	1.6	...	...	14.0	1,500.0	15.0	...	95.0	10.0	2,379.5	18.0	1,389.0	...	5,424.8	...
Small Streams in Butte, Mont. Area	50.0	...	...	...	75.0	...	...	...	...	...	...	...	...	...	C125.0	1
Colville River	15.0	...	...	...	25.0	157.0	...	...	3.0	...	4.0	...	10.0	...	C214.0	...
St. Joe River	...	...	...	...	...	...	...	...	...	12.0	...	...	70.5	...	82.5	...
Coeur d'Alene River	...	...	...	...	...	...	...	...	...	...	1.5	...	...	...	1.5	...
Spokane River	1.0	...	...	...	1.5	...	...	...	...	...	...	...	...	...	2.5	...
Henrys Fork	...	...	...	...	...	...	...	...	...	...	...	...	...	28.0	C 28.0	...
Wood River (Idaho)	...	...	...	...	...	...	...	...	...	...	...	...	...	205.0	C205.0	...
Salmon River	27.7	...	...	...	...	...	...	...	...	...	105.0	...	20.0	...	C152.7	...
Clearwater River	17.0	...	...	...	...	75.0	...	...	...	...	...	...	...	...	92.0	...
Snake River	...	...	...	...	...	35.0	...	...	...	...	192.0	...	...	...	C227.0	...
Willamette River and Tributaries	5.0	5.0	...	...	150.0	...	...	...	20.0	5.0	500.0	5.0	305.0	...	995.0	1
Johnson Creek (East Portland, Ore.)	100.0	30.0	...	...	...	250.0	...	...	...	...	...	...	...		380.0	...
Columbia River and Minor Tributaries	400.0	70.0	420.0	100.0	646.0	4,925.0	50.0	500.0	810.0	120.0	1,100.0	50.0	2,060.0	...	11,251.0	2
Total	618.4	106.6	420.0	100.0	911.5	6,942.0	65.0	500.0	928.0	147.0	4,282.0	73.0	3,854.5	233.0	19,181.0	4
CLOSED DRAINAGE																
Big Lost River (Darlington, Idaho)	...	...	...	...	...	...	...	...	...	...	4.1	...	...	...	4.1	2
Total	...	...	...	...	...	...	...	...	...	...	4.1	...	...	...	4.1	2
Grand Total	3,617.2	1,353.9	3,001.1	7,416.1	2,725.2	14,422.7	225.8	718.3	1,923.0	274.4	9,712.8	688.8	7,166.5	11,439.4	64,685.2	42

A Includes all residential and commercial property
B Rural property
C Coordinated with U. S. Engineers
D Includes 42.0 urban property and 156.9 rural property
E Includes all rural property except livestock
F Includes all urban property
G Includes all commercial property
H Includes all crops
J Includes all residential property
K Urban property

LOSS OF LIFE AND PROPERTY IN THE UNITED STATES FROM FLOODS

Property Losses in Thousands of Dollars
BY DISTRICTS AND YEARS, 1925-56

District	1925		1926		1927		1928		1929		1930		1931	
	Life	Property	Life	Property	Life	Property	Life	Property	Life	Property	Life	Property	Life	Property
Great Lakes	---	--------	---	19	48	15,750	---	--------	---	171	---	36	---	1
North Atlantic	---	50	---	137	40	29,408	3	2,105	---	245	---	--------	---	1,050
South Atlantic	---	2,999	---	--------	---	1	5	8,382	8	10,196	---	--------	---	31
East Gulf	2	615	---	37	8	255	---	2,428	5	8,746	---	466	---	174
Ohio Valley	---	33	2	5,523	94	15,639	4	10,279	34	17,050	---	7,042	---	1
Upper Mississippi	14	3,983	1	5,435	---	19,612	---	1,173	---	3,677	---	15	---	20
Lower Mississippi	---	115	---	42	100	133,898	---	7,819	4	9,980	---	530	---	--------
Missouri	---	--------	6	1,434	1	4,880	2	6,714	13	2,118	---	13	---	886
Arkansas	---	224	6	8,938	132	26,183	1	4,349	12	7,516	---	213	---	6
Red	---	--------	1	155	---	100,908	---	153	1	100	14	3,616	---	19
West Gulf	6	1,436	---	301	---	208	---	75	---	8,124	---	924	---	2
Colorado	---	--------	---	447	---	12	---	100	12	175	---	--------	---	3
Pacific	14	468	---	--------	---	902	---	1,032	---	--------	---	--------	---	560
Miscellaneous east of Rockies	---	--------	---	1,000	---	--------	---	--------	---	--------	---	2,500	---	--------
Miscellaneous west of Rockies	---	--------	---	--------	---	--------	---	--------	---	--------	---	495	---	55
Total	36	9,923	16	23,468	423	347,656	15	44,611	89	68,098	14	15,850	---	2,808

District	1932		1933		1934		1935		1936		1937		1938	
Great Lakes	---	1	---	14	---	--------	---	13,185	1	9	---	690	---	240
North Atlantic	---	25	2	5,418	---	142	52	16,340	24	146,035	---	2,689	8	37,068
South Atlantic	---	191	---	19	---	240	---	77	2	2,391	---	989	---	455
East Gulf	---	615	---	444	---	13	---	719	---	1,240	---	357	---	1,655
Ohio Valley	---	288	5	7,725	2	928	5	8,536	82	122,296	65	413,936	8	4,481
Upper Mississippi	---	88	4	1,157	12	1,023	---	1,506	---	313	3	1,127	2	3,659
Lower Mississippi	---	1,840	---	6,933	---	--------	17	6,631	---	55	72	6,657	---	1
Missouri	---	451	2	1,391	6	1,906	125	38,959	---	109	2	1,367	71	4,333
Arkansas	---	2,528	---	776	---	18	4	8,344	6	817	---	1,557	---	2,202
Red	---	516	---	38	22	640	8	2,751	---	16	---	24	---	755
West Gulf	11	3,522	---	1,160	---	422	20	29,522	24	8,376	---	1,830	6	6,003
Colorado	---	13	---	--------	1	22	---	--------	---	--------	---	264	---	256
Pacific	---	217	20	11,604	45	5,008	5	557	3	892	---	9,245	85	39,990
Total	11	10,295	33	36,679	88	10,362	236	127,127	142	282,549	142	440,738	180	101,098

District	1939		1940		1941		1942		1943		1944		1945	
Great Lakes	---	11	2	--------	---	--------	---	153	1	9,564	---	130	---	119
North Atlantic	2	56	4	2,519	---	--------	35	22,321	4	1	---	--------	3	5,729
South Atlantic	---	454	12	5,034	---	89	---	608	---	152	---	1,926	3	1,007
East Gulf	1	6,680	---	5,497	---	24	2	155	---	773	---	2,660	---	268
Ohio	80	3,773	28	8,077	---	1,122	16	16,546	44	31,416	---	806	27	52,887
Upper Mississippi	---	228	---	199	---	3,018	1	5,592	16	42,097	7	27,031	---	9,288
Lower Mississippi	---	1,448	---	--------	---	--------	---	475	---	829	---	1,550	---	3,601
Missouri	---	610	5	1,759	2	12,019	1	22,511	13	62,630	13	44,616	4	34,403
Arkansas	---	179	2	1,332	9	13,346	---	6,577	26	41,850	10	11,171	20	15,068
Red	---	22	---	12	---	1,855	---	2,205	---	44	---	1,676	6	22,209
West Gulf	---	360	7	7,622	34	5,458	2	12,489	---	2,589	3	8,938	4	10,987
Colorado	---	13	---	180	2	1,061	---	3	---	310	---	575	10	182
Pacific	---	--------	---	8,236	---	1,532	11	8,872	3	7,477	---	--------	14	9,530
Great Basin	---	--------	---	--------	---	--------	---	--------	---	--------	---	--------	---	520
Total	83	13,834	60	40,467	47	39,524	68	98,507	107	199,732	33	101,079	91	165,798

District	1946		1947		1948		1949		1950		1951		1952	
Great Lakes	---	251	1	5,761	4	20,270	---	1,619	9	33,542	---	131	---	2,350
North Atlantic	14	8,500	---	198	4	12,467	---	--------	2	7,149	1	916	5	1,222
South Atlantic	---	172	---	944	1	1,372	14	9,564	---	1,203	---	9	---	236
East Gulf	---	2,963	2	654	---	3,122	---	1,747	---	1,435	---	4,310	---	347
Ohio	---	10,914	5	7,812	16	16,871	7	4,754	50	25,195	1	4,889	14	4,940
Upper Mississippi	4	8,642	27	87,937	---	2,905	---	406	2	11,060	6	71,799	7	22,439
Lower Mississippi	---	4,407	1	2,555	---	5,390	---	10,020	6	10,071	---	5,996	---	444
Missouri	---	8,305	18	163,176	1	31,490	6	33,503	18	35,090	31	889,872	8	181,335
Arkansas	---	1,791	1	1,424	14	18,721	---	6,696	---	8,294	10	44,331	---	5
Red	---	1,434	---	1,446	---	220	2	365	1	1,105	---	2,101	---	836
West Gulf	10	15,967	---	330	1	4,604	18	22,462	---	417	---	238	10	9,584
Colorado	---	--------	---	3	---	1	---	155	---	--------	---	889	---	76
Pacific	---	7,367	---	88	37	111,826	1	2,640	5	37,362	2	3,260	10	20,251
Great Basin	---	100	---	--------	---	--------	---	--------	---	4,127	---	--------	---	9,999
Total	28	70,813	55	272,328	82	229,959	48	93,931	93	176,050	51	1,028,741	54	254,064

District	1953		1954		1955		1956	
Great Lakes	1	2,654	---	15,000	---	2,596	---	1,327
North Atlantic	1	10,637	11	7,337	211	761,303	11	1,453
South Atlantic	---	109	1	546	2	902	3	2,720
East Gulf	2	2,444	---	543	6	5,300	1	1,379
Ohio	5	778	9	18,594	15	14,645	12	17,836
Upper Mississippi	2	5,602	4	24,656	---	85	---	388
Lower Mississippi	12	7,857	---	490	---	1,352	---	865
Missouri	14	44,255	---	11,999	1	2,753	1	6,360
Arkansas	2	2,020	---	296	2	5,362	---	24
Red	---	2,061	---	923	---	2,003	1	250
West Gulf	1	34,849	29	21,639	2	4,286	3	3,714
Colorado	---	7	---	1,890	---	2,173	---	--------
Pacific	---	8,931	1	2,929	63	186,785	6	27,930
Great Basin	---	--------	---	--------	---	5,946	4	442
Total	40	122,204	55	106,842	302	995,491	42	64,688

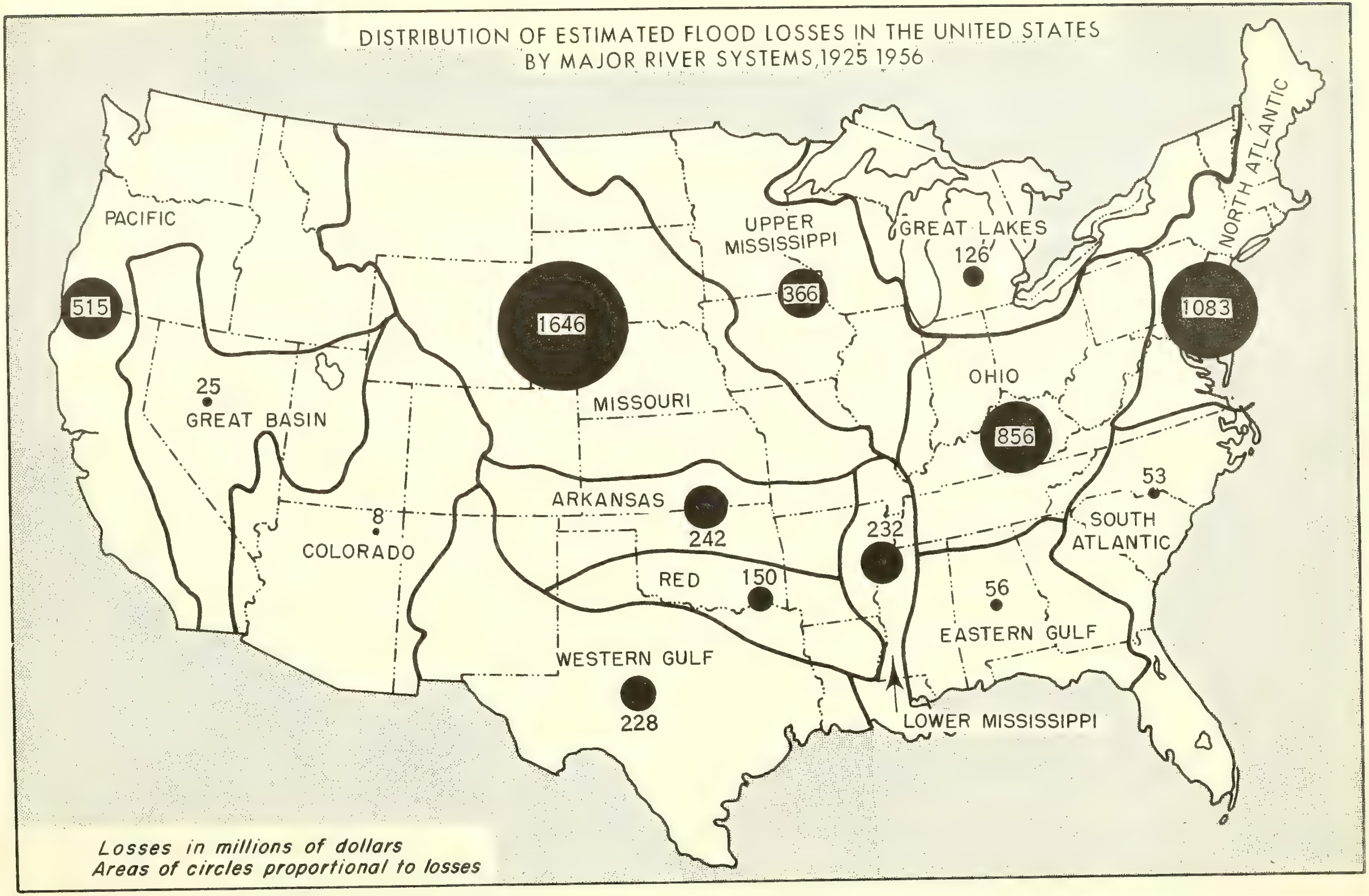
LOSS OF LIFE AND PROPERTY IN THE UNITED STATES FROM FLOODS, 1925-1956

Property Losses in Thousands of Dollars
BY MONTHS AND YEARS

Year	January		February		March		April		May		June	
	Property	Life	Property	Life	Property	Life	Property	Life	Property	Life	Property	Life
1925	3,614	2	141	0	74	0	-	0	65	6	3,980	14
1926	19	0	600	0	77	0	293	0	-	0		1
1927	2,626	8	1,867	0	407	0	283,207	232	7,566	95	1,125	0
1928	4	0	9	0	758	0	1,168	0	105	0	12,296	1
1929	122	0	2,964	0	21,947	47	1,937	0	15,668	5	10,268	5
1930	7,110	0	7	0	146	0	-	0	5,021	14	3,042	0
1931	-	0	30	0	572	0	-	0	8	0	13	0
1932	1,207	0	-	0	165	0	373	0	1,552	0	1,245	0
1933	308	0	87	0	2,008	1	2,709	4	10,785	4	2,650	4
1934	5,002	45	9	0	706	0	1,693	34	-	0	899	0
1935	297	0	1	0	2,177	4	2,698	5	16,903	40	62,702	122
1936	341	0	2,107	6	145,936	24	124,743	82	1,118	6	124	0
1937	411,481	65	7,691	75	62	0	4,524	0	2,627	0	5,429	0
1938	260	0	3,712	2	27,819	86	3,008	0	12,402	0	3,624	58
1939	3	0	1,657	4	738	0	1,982	0	37	0	4,271	1
1940	58	0	7,246	0	1,048	2	2,185	0	438	0	2,790	12
1941	3	0	516	0	820	2	1,970	4	3,081	7	12,718	12
1942	131	0	1,901	1	327	0	18,369	2	14,837	31	25,586	1
1943	3,579	4	69	5	7,183	8	10,161	5	130,478	57	41,771	0
1944	3	0	35	1	2,633	3	42,646	13	24,103	0	24,535	16
1945	146	0	5,882	0	33,202	14	54,054	36	23,530	0	28,866	8
1946	13,385	0	4,015	0	631	0	2	0	12,587	12	20,343	3
1947	486	3	96	0	1,458	0	56,027	2	18,032	1	193,134	48
1948	6,479	6	11,429	1	17,896	4	28,667	15	107,244	35	22,160	15
1949	9,772	6	5,073	2	11,676	3	9,261	2	18,195	10	32,861	17
1950	4,619	3	6,925	7	3,451	7	14,668	0	51,126	21	22,340	34
1951	884	0	5,823	2	7,264	1	18,287	2	15,166	6	5,383	8
1952	9,139	14	926	1	1,909	9	199,127	10	6,438	3	22,775	2
1953	8,575	1	368	0	10,675	2	-	0	41,656	5	53,572	29
1954	2,554	4	84	0	20	0	557	0	6,213	1	52,076	20
1955	-	0	1,620	4	17,372	17	2,653	4	9,231	2	3,825	1
1956	9,455	0	2,731	3	3,403	2	1,202	0	24,799	10	2,300	4
Total	501,662	161	75,621	114	324,560	236	888,171	452	581,011	371	678,703	436
Average	15,677	5	2,363	4	10,143	7	27,756	14	18,156	12	21.209	13

Year	July		August		September		October		November		December		* Total	
1925	140	0	275	0	1,171	14	380	0	83	0	-	0	9,923	36
1926	55	0	7	0	7,729	6	12,699	6	135	0	1,854	3	23,468	16
1927	241	0	3,460	0		0	1,627	0	45,093	88	437	0	347,656	423
1928	13,339	0	9,272	3	4,047	5	-	0	3,567	6	46	0	44,611	15
1929	4,959	32	130	0	92	0	9,379	0	556	0	76	0	68,098	89
1930	244	0	251	0	-	0	29	0	-	0	-	0	15,850	14
1931	1,215	0	201	0	2	0	1	0	744	0	22	0	2,808	0
1932	1,627	0	763	0	2,666	11	335	0	3	0	359	0	10,295	11
1933	1,117	0	6,516	4	489	0	10	0	-	0	10,000	16	36,679	33
1934	178	0	322	9	84	0	28	0	1,287	0	154	0	10,362	88
1935	29,370	52	159	5	7,551	0	2,691	0	61	0	2,517	8	127,127	236
1936	2,428	20	205	0	5,046	4	378	0	118	0	5	0	282,549	142
1937	124	2	760	0	140	0	256	0	97	0	7,546	0	440,738	142
1938	10,373	9	232	8	39,641	17	3	0	5	0	19	0	101,098	180
1939	1,725	78	3,408	0	13	0	-	0	-	0	-	0	13,834	83
1940	5,314	0	18,853	40	2,135	6	88	0	95	0	217	0	40,467	60
1941	314	0	23	0	6,247	15	10,446	7	3,361	0	25	0	39,524	47
1942	13,064	17	267	0	3,234	0	5,678	2	-	0	15,113	14	98,507	68
1943	2,870	3	3,621	25	-	0	-	0		0	-	0	199,732	107
1944	3,198	0	928	0	1,708	0	108	0	-	0	1,182	0	101,079	33
1945	8,280	3	2,942	13	1,059	3	1,424	3	-	0	6,413	11	165,798	91
1946	1,636	4	1,148	0	7,346	9	1,965	0	1,314	0	6,441	0	70,813	28
1947	652	1	1,431	0	455	0	248	0	5	0	304	0	272,328	55
1948	17,550	2	1,144	0	590	0	-	0	3,553	0	13,247	4	229,959	82
1949	3,762	5	568	0	618	0	1,551	2	578	1	16	0	93,931	48
1950	19,224	6	1,687	0	3,718	4	5,562	3	6,638	3	36,092	5	176,050	93
1951	972,458	25	2,509	7	621	0	-	0	-	0	346	0	1,028,741	51
1952	3,858	9	296	0	9,376	6	-	0	30	0	190	0	254,064	54
1953	3,873	1	1,926	2	887	0	42	0	300	0	330	0	122,204	40
1954	2,218	2	6,606	3	3,170	8	33,341	17	-	0	3	0	106,842	55
1955	1,071	0	712,085	193	3,471	0	52,442	18	1,168	0	190,553	63	995,491	302
1956	5,849	15	11,671	4	-	0	1,892	0	137	3	1,249	1	64,688	42
Total	1,132,327	286	793,666	316	113,306	108	142,603	58	68,928	101	294,756	125	5,595,314	2,764
Average	35,385	9	24,802	10	3,541	3	4,457	2	2,154	3	9,211	4	174,854	86

* Not adjusted to present price index



DISTRIBUTION OF ESTIMATED FLOOD LOSSES IN THE UNITED STATES
BY MAJOR RIVER SYSTEMS, 1925 1956

Losses in millions of dollars
Areas of circles proportional to losses

LOSSES IN INDIVIDUAL SEVERE FLOODS IN THE UNITED STATES SINCE JULY 1902

Property Losses in Thousands of Dollars

Date	Locality	Lives #	Property
May-June 1903	Kansas, Lower Missouri, and Upper Mississippi Rivers	100	$ 40,000
July 1908	Missouri River	---	9,339
	Upper Mississippi River	---	5,600
	Red River	---	16,200
July 1909	Missouri River east of Kansas City	---	5,500
March 1912	Lower Mississippi River	---	70,000
March 1913	Ohio River and tributaries	467	147,000
	Mississippi River	---	7,000
December 1913	Texas rivers	177	9,000
June 1915	Kansas River	---	5,950
August 1916	Rivers of the Carolinas	---	21,700
June 1921	Arkansas River in State of Colorado	120	25,000
September 1921	Texas rivers	215	19,000
April-May, 1922*	Upper Mississippi River	---	4,700
	Ohio Valley	---	4,000
	Lower Mississippi River	---	7,500
October 1923	Lower Arkansas, including the State of Oklahoma	---	15,000
March 1924	Potomac River	---	6,000
Spring of 1927	Mississippi Valley	313	284,118
August 1927	Arkansas River and tributaries	---	3,440
November 1927	New England rivers	88	45,578
June 1928	Ohio Valley	---	7,536
August 1928	South Atlantic drainage	---	4,400
September 1928	South Atlantic drainage	---	4,000
March-June 1929	East Gulf drainage	---	8,000
	Ohio Valley	---	16,500
	Missouri Valley	---	2,000
	Upper Mississippi Valley	---	3,600
	Lower Mississippi Valley	---	10,000
	Arkansas-White Valley	---	2,700
	Rivers in Texas	---	8,000
July 1929	Rivers in Central Kansas	---	4,000
October 1929	Rivers in Southeastern States	---	** 9,000
January 1930	White-Wabash Rivers	---	7,000
May 1930	Red River and tributaries	---	3,000
Sept.-Oct. 1932	Lower Rio Grande	---	2,500
March 1933	Ohio River	---	2,000
December 1933	Columbia River and tributaries	---	10,000
May 1935	Rivers in eastern Colorado	---	6,000
May-June 1935	Republican and Kansas Rivers	110	18,000
	Lower Missouri River	---	10,000
July 1935	Upper Susquehanna tributaries	52	26,000
December 1935	Houston, Texas, area	---	2,500
March-April 1936	Rivers in Eastern United States	107	270,000
July 1936	Rivers in central Texas	---	2,000
September 1936	Rivers in central and northern Texas	---	5,000
Jan.-Feb. 1937	Ohio and lower Mississippi River basins	137	417,685
December 1937	Sacramento Valley	---	7,100
March 1938	Streams in southern California	79	24,500
September 1938	Rivers in New England	---	37,000
July 1939	Licking and Kentucky Rivers	78	1,715
Feb.-Mar. 1940	Sacramento Valley	---	6,700
August 1940	Rivers in southern Virginia, the Carolinas, and eastern Tennessee	40	12,000
Oct.-Nov. 1941	Arkansas River Basin	---	8,500
April-June 1942	Upper Mississippi, Missouri, Arkansas, Red, and Trinity River Basins	---	44,350
May 1942	Delaware & Susquehanna River Basins	33	13,000
July 1942	Upper Allegheny River and Sennemahoning Creek Basins	15	10,000
Nov.-Dec. 1942	Willamette River	10	6,900

LOSSES IN INDIVIDUAL SEVERE FLOODS IN THE UNITED STATES SINCE JULY 1902-Continued

Property Losses in Thousands of Dollars

Date	Locality	Lives #	Property
Dec.1942-Jan.1943	Ohio River	---	$ 10,540
Apr.-June 1943	Maumee, Wabash, upper Mississippi, Missouri, White, and Arkansas River Basins	60	172,500
August 1943	Little Kanawha	23	1,300
Apr.-June 1944	Upper Mississippi, Missouri, Arkansas, Red, lower Mississippi Basins and east Texas Streams	17	82,000
Feb.-Mar. 1945	Ohio River	18	30,000
Feb.-Apr. 1945	Trinity and Sabine Rivers	---	9,000
Mar.-July 1945	Lower Mississippi River	---	9,500
July 1945	Lake Section of Rensselaer County, N. Y.	---	3,500
December 1945	Willamette River	9	6,000
January 1946	Cumberland River	---	3,925
	Tennessee River and tributaries	---	4,500
May-June 1946	Trinity River	---	4,150
September 1946	San Antonio and Nueces Rivers	9	6,050
December 1946	Willamette River	---	5,525
April 1947	Allegheny	---	4,319
May-July 1947	Rivers in Middle West in the lower Missouri and middle Mississippi River Basins	29	235,000
June 1947	East Creek at Rutland, Vt.	---	2,000
March 1948	Susquehanna River and tributaries	---	4,300
Apr.-May 1948	Red River of North and tributaries	---	18,700
May-June 1948	Columbia Basin	35	101,725
June-July 1948	Arkansas River and minor tributaries	---	14,500
December 1948	Housatonic River	---	4,200
April 1949	Rio Grande	---	3,300
May 1949	Trinity River	10	14,000
June 1949	Shenandoah and Potomac Rivers	11	8,850
Apr.-May 1950	Red River of North	9	33,000
June 1950	Central West Virginia	31	4,020
Nov.-Dec. 1950	Central Valleys of California and Western Nevada	---	23,000
February 1951	Western Washington	---	2,688
Mar.-Apr. 1951	Alabama-Georgia	---	3,292
April 1951	Upper Mississippi Basin	---	18,622
June-July 1951	Kansas-Missouri	28	935,224
Jan.-Feb. 1952	Ohio River	---	1,898
April 1952	Red River of the North-Upper Mississippi-Missouri River Basins	11	198,000
May 1952	Great Basin	---	8,373
September 1952	West Gulf of Mexico Drainage	---	7,762
January 1953	Northern California, Oregon, and Washington	---	5,971
March 1953	New England States	---	10,000
Apr.-May 1953	Louisiana-Texas	12	38,959
June 1953	Northwestern Iowa	14	32,950
June 1954	Middle Rio Grande and lower Pecos	16	19,079
October 1954	Pecos River in New Mexico	13	1,783
March 1955	Ohio Basin	15	14,396
August 1955	Hurricane floods in Northeast	187	714,079
December 1955	West Coast	61	154,532
May-June 1956	Columbia and Kootenai Rivers	---	14,025

# Loss of life carried only where considerable.
* No lives lost in Mississippi Valley floods of 1922.
** Partly storm damage caused by tropical disturbance.

GENERAL SUMMARY OF RIVER AND FLOOD CONDITIONS

YEAR 1957

The most important floods of the year were those that occurred during April to June in Arkansas, Kansas, Louisiana, Missouri, Oklahoma, and Texas. Major floods occurred on all of the rivers in those states flowing into the Mississippi River and Gulf of Mexico. The most extensive flood damage was along the lower reaches of the Arkansas, White, Ouachita, Red and Washita, the upper Sabine, Trinity, Brazos, middle and lower Colorado, Guadalupe, Nueces and the middle Rio Grande. Several of the streams had 6 major flood peaks or more during this period. The lower reaches of the White, Arkansas, Red, Trinity, and Brazos were in flood from 30 to over 60 days.

The most damaging floods during January 1957 were the severe floods in streams in southeastern Kentucky, southwestern West Virginia, and adjoining portions of Tennessee and Virginia. Record stages were reported on several of the streams. Flooding was almost entirely in headwater areas. The record flooding severely inundated several towns in the area.

Severe floods were reported in several small streams in the Snake River Basin during the latter part of February. The flooding on the Portneuf River in Idaho exceeded the previous floods of record. Flooding in central Washington was also severe as it occurred in an area that is generally arid to semiarid. Moderate to severe flooding occurred in several streams in the East Gulf of Mexico Drainage. Flooding elsewhere was mostly minor.

All flooding during March was minor and very little damage was reported.

Most significant during April were the severe floods that developed in Texas during the last 10 days of the month. Excessive flooding occurred on nearly all streams throughout the area east of the Pecos River to the Sabine River. Seventeen lives were lost, several hundred homes were destroyed, and large lowland areas were evacuated. A great amount of damage was done by comparatively small streams in urban areas where flood flows were flashy and large in comparison to stream capacities. These floods were in progress at the end of the month.

The most important flooding during May were the floods in Texas, Oklahoma, Arkansas, and south-central Kansas. The floods were record-breaking in the Cimarron and Washita Rivers in Oklahoma. Major flooding occurred along the Arkansas River throughout its entire course in Arkansas. At Dardanelle, Ark., the flood was the second highest for the period of record. In Texas the floods were less than record, except in isolated cases. More than 4,000 persons were evacuated from unprotected lowlands on the West Fork of the Trinity above Fort Worth and along creeks in Fort Worth, Tex. In south-central Kansas, record-breaking floods occurred on the Ninnescah River and Beaver Creek.

Record to near record floods occurred in several drainage areas at different times during June. The overflows in the Saline, Solomon, Republican, and Blue River Basins were the most widespread in the past 6 years. One of the most severe floods on record occurred on Skunk Creek and the Big Sioux River in South Dakota. It was the highest flood in Sioux Falls, S. Dak., in the last 50 to 75 years. Record to near record floods occurred in the Minnesota River Drainage due to excessive rains. Several streams in the Colorado Basin in Colorado reached record to near record stages during the 1957 "spring runoff". A record crest occurred on the Atchafalaya due to wind and tide effects from hurricane "Audrey". A severe flash flood occurred in the St. Louis, Mo., area with the loss of 10 lives.

The floods in the Chicago area on the 12th of July caused a loss of 9 lives and heavy property damage. Near record crests occurred in the lower Meramec Basin in Missouri during the first 2 days of July. Major flooding occurred in the Saline Basin in Kansas from the heavy June rains. The Wakarusa River approached within 2 feet of the record July 1951 flood. The most damaging flood of record occurred in the White and Wabash Rivers in Indiana.

There was no major flooding during August. Considerable damage resulted from flash floods, the most damaging one being the flash flood on the Little Red River at Heber Springs, Ark. During this rise, the Little Red River exceeded flood stage by over 20 feet at that point. The rise downstream was considerably less.

Major flooding occurred in the smaller tributaries of the middle and upper portions of the San Antonio and Guadalupe Rivers in Texas during September. Considerable flash-flooding occurred in the city of San Antonio and a short distance downstream and over the upper portions of the Medina River. Flooding elsewhere was minor and sparse.

There were 2 major floods in the Colorado Basin in Texas during October. One was in the upper watershed above Ballinger and the other in the lower section below Smithville to the Gulf. Both were due to heavy rains measuring 7 to 13 inches in 24 hours. About 500 persons had to be evacuated from their homes. Major flooding occurred along the Guadalupe River from Gonzales, Tex., to the mouth. Light to moderate overflows occurred on other Texas streams. Flooding elsewhere was light and sparse.

Damaging floods occurred during November in the Ohio Basin and in the East Gulf of Mexico Drainage. The flooding along the main stem of the Tennessee, though relatively minor under normal conditions, resulted in major agricultural losses to the unharvested corn and cotton crops in the western portion of the Basin. A near record flood with heavy crop losses occurred on the Elk River in Tennessee. Severe flooding and heavy damage was reported on the Green and Barren Rivers in Kentucky and on the upper Tombigbee in Mississippi.

The most significant flooding during December occurred in the Wabash and White River Basins in Indiana. Streams in this area rose to their highest levels in 6 or 7 years. Actual damage was small considering the magnitude of the flood as most crops are normally gathered by December. Flooding elsewhere was mostly light.

RAWINSONDE DATA

Average annual values #

ALBANY, N. Y.
(1007 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	363	86	7.2	77	263	2.1
1,000	363	141	6.7	71	263	2.7
950	363	563	5.9	66	280	7.8
900	363	1,005	4.1	65	286	12.0
850	363	1,469	2.2	63	287	15.0
800	363	1,957	.3	59	284	17.3
750	363	2,475	- 1.8	54	280	20.4
700	363	3,020	- 4.2	49	278	23.3
650	363	3,603	- 7.0	44	276	26.8
600	361	4,222	-10.3		274	29.7
550	361	4,885	-14.2		274	33.4
500	361	5,605	-18.7		273	36.9
450	361	6,381	-24.0		273	39.8
400	361	7,232	-30.0		273	43.9
350	361	8,171	-36.4		272	48.2
300	361	9,224	-43.5		271	51.1
250	360	10,431	-50.5		271	55.4
200	357	11,868	-55.4		274	54.8
175	356	12,717	-56.3		275	51.5
150	352	13,696	-56.7		274	45.3
125	346	14,848	-57.7		274	37.9
100	333	16,252	-58.6		276	29.7
80	319	17,654	-58.1		275	21.8
60	305	19,472	-56.5		273	12.2
50	288	20,632	-55.5		268	8.5
40	262	22,059	-54.0			
30	197	23,912	-51.8			

ALBUQUERQUE, N. MEX.
(839 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	365	1,619	9.4	59	54	1.2
1,000	365	134				
950	365	571				
900	365	1,029				
850	365	1,507				
800	365	2,012	9.2	51	272	3.1
750	365	2,545	6.2	51	270	7.4
700	365	3,107	2.7	52	271	10.7
650	365	3,702	- 1.2		268	13.0
600	365	4,337	- 5.3		268	14.6
550	364	5,011	- 9.7		269	16.3
500	362	5,745	-14.5		269	17.7
450	362	6,536	-19.8		270	17.9
400	361	7,401	-25.8		272	16.7
350	361	8,354	-32.8		274	17.1
300	361	9,420	-40.8		272	18.8
250	361	10,637	-49.4			
200	358	12,073	-56.4			
175	351	12,915	-58.3			
150	346	13,879	-60.7			
125	330	15,004	-63.6			
100	299	16,363	-65.0			
80	278	17,726	-64.2			
60	254	19,496	-61.5			
50	244	20,630	-59.8			
40	212	22,035	-57.4			
30						

AMARILLO, TEX.
(892 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	363	1,095	9.1	74	187	2.9
1,000	363	138				
950	363	570				
900	363	1,022				
850	363	1,499	10.9	58	219	8.0
800	363	2,004	9.6	52	247	9.9
750	363	2,538	6.9	48	260	11.7
700	363	3,102	3.6		269	12.0
650	363	3,698	- .2		272	13.2
600	363	4,336	- 4.4		271	15.5
550	362	5,010	- 8.8		271	18.1
500	361	5,748	-13.6		270	20.6
450	360	6,539	-19.1		269	23.9
400	360	7,407	-25.4		267	26.4
350	358	8,363	-32.5		267	29.7
300	354	9,431	-40.4		266	34.4
250	353	10,650	-49.1		266	39.1
200	352	12,088	-56.5		266	43.5
175	350	12,930	-59.0		266	42.4
150	344	13,892	-60.9		268	39.2
125	334	15,020	-63.4		268	34.0
100	305	16,385	-65.1		269	25.3
80					270	15.0
60					270	5.4
50					268	.6
40					124	.6
30						

ANCHORAGE, ALASKA
(1006 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	365	30	1.4	79	242	0.8
1,000	365	75			219	1.4
950	365	494	2.8	63	139	1.4
900	365	927	1.2	62	130	3.1
850	365	1,385	- 1.2	63	135	4.1
800	365	1,867	- 3.7	63	150	5.2
750	365	2,374	- 6.5	62	172	5.8
700	365	2,910	- 9.5	58	179	6.2
650	364	3,478	-12.9	56	190	6.4
600	364	4,085	-16.7	52	199	6.6
550	361	4,731	-20.8	48	200	7.4
500	361	5,433	-25.5		202	8.0
450	361	6,187	-30.8		206	9.1
400	361	7,016	-36.6		211	9.3
350	361	7,928	-42.9		219	8.9
300	360	8,952	-49.4		214	8.5
250	359	10,132	-54.1		225	7.2
200	348	11,561	-53.4		238	10.1
175	339	12,421	-52.0		243	10.7
150	332	13,421	-51.3		251	11.7
125	324	14,603	-51.4			
100	309	16,048	-51.8			
80	293	17,493	-52.0			
60	274	19,355	-52.4			
50	259	20,535	-52.7			
40	231	21,972	-53.2			
30						

ANNETTE, ALASKA
(1011 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	365	37	6.3	85	127	3.1
1,000	365	122	6.6		123	2.7
950	365	542	5.0	76	146	4.5
900	365	982	2.7	73	170	4.7
850	365	1,443	.3	70	181	4.1
800	365	1,927	- 2.1	67	213	4.1
750	365	2,439	- 4.9	63	234	4.9
700	365	2,978	- 7.8	59	239	5.2
650	365	3,550	-11.1	53	254	5.2
600	365	4,161	-14.9		251	6.8
550	365	4,812	-19.1		258	7.0
500	365	5,518	-23.7		258	8.0
450	364	6,279	-29.0		267	8.0
400	362	7,113	-35.1		264	6.8
350	362	8,031	-41.7			
300	362	9,059	-48.4			
250	357	10,244	-53.6			
200	353	11,674	-53.9			
175	350	12,532	-53.1			
150	349	13,527	-52.6			
125	338	14,703	-53.0			
100	331	16,138	-53.5			
80	312	17,574	-53.9			
60	302	19,420	-54.5			
50	288	20,592	-54.5			
40	268	22,023	-54.4			
30	224	23,885	-53.8			

ATHENS, GA.
(990 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	363	246	14.0	84	22	1.0
1,000	363	159				
950	363	596	14.1	70		.0
900	363	1,050	12.4	67	238	2.9
850	363	1,528	10.4	65	250	5.8
800	363	2,031	8.0	60	260	8.0
750	363	2,564	5.6	54	264	10.3
700	363	3,124	2.9	49	265	12.6
650	363	3,721	- .4		268	15.3
600	361	4,358	- 3.9		267	19.8
550	360	5,037	- 7.8		269	20.2
500	360	5,775	-12.3		268	23.7
450	358	6,572	-17.6		268	27.0
400	355	7,445	-23.7		269	29.9
350	355	8,407	-30.6		269	33.0
300	351	9,484	-38.7		267	35.8
250	349	10,711	-47.6		269	40.0
200	348	12,156	-56.0		272	43.3
175	340	12,997	-59.3		272	43.5
150	336	13,956	-61.9		274	39.2
125	330	15,077	-64.6		274	32.1
100	324	16,436	-65.8		275	22.9
80	314	17,792	-65.1		280	11.1
60	298	19,565	-61.2			
50	279	20,704	-58.6			
40	258	22,115	-55.7			
30	220	23,963	-52.2			

BARROW, ALASKA
(1017 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	365	8	-13.0	80	67	3.9
1,000	365	132	-11.7	81	81	4.1
950	365	528	- 9.7	79	102	2.7
900	365	945	- 9.1	72	107	1.7
850	365	1,387	- 9.7	68	152	1.0
800	365	1,854	-11.0	62	243	2.1
750	365	2,348	-13.0	58	252	3.9
700	365	2,872	-15.5		250	5.2
650	365	3,427	-18.5		250	7.4
600	365	4,022	-21.9		253	7.6
550	365	4,655	-25.8		250	8.7
500	364	5,343	-30.2		253	10.7
450	363	6,084	-35.2		253	12.4
400	362	6,897	-40.8		253	12.6
350	362	7,794	-46.6		254	14.4
300	362	8,803	-52.1		253	14.4
250	360	9,974	-54.7		259	13.8
200	359	11,407	-52.4			
175	356	12,273	-51.3			
150	352	13,275	-51.0			
125	349	14,460	-51.3			
100	341	15,908	-51.5			
80	326	17,356	-51.8			
60	311	19,216	-52.3			
50	305	20,394	-52.8			
40	278	21,838	-53.1			
30						

BARTER IS., ALASKA
(1015 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	363	15	-12.6	77	59	0.6
1,000	363	128	-10.8	76	61	1.7
950	363	528	- 8.5	73	84	1.0
900	363	945	- 7.5	67	243	1.4
850	363	1,390	- 8.0	62	252	3.3
800	363	1,860	- 9.7	60	257	5.2
750	363	2,358	-11.8	59	261	7.2
700	363	2,883	-14.3	57	263	9.5
650	362	3,441	-17.3		267	10.9
600	362	4,038	-20.7		267	13.8
550	362	4,672	-24.7		269	15.7
500	361	5,364	-29.3		268	18.3
450	357	6,106	-34.3		270	20.4
400	356	6,925	-39.8		270	22.5
350	355	7,825	-45.8		269	25.3
300	354	8,837	-51.6		268	27.0
250	352	10,008	-54.8		268	26.0
200	348	11,437	-52.9		267	23.3
175	345	12,300	-51.8		268	21.0
150	339	13,299	-51.5		271	19.4
125	335	14,481	-51.6		272	18.3
100	322	15,923	-51.9		275	18.3
80	314	17,371	-52.1		279	18.7
60	303	19,225	-52.6		284	18.3
50	290	20,404	-52.8		288	17.9
40	277	21,838	-53.1		295	16.7
30	248	23,702	-53.1		303	12.4

BETHEL, ALASKA
(1008 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	364	[illegible]	- 1.2	87	357	1.2
1,000	364	70	- .5		343	1.7
950	364	486	.9	72	102	2.5
900	364	916	- .6	69	140	2.3
850	364	1,371	- 2.3	65	169	2.7
800	364	1,851	- 4.5	63	186	3.9
750	364	2,359	- 7.1	59	196	4.5
700	364	2,893	-10.0		199	4.1
650	363	3,461	-13.3		199	5.2
600	362	4,066	-17.0	49	205	5.2
550	361	4,713	-21.1	47	210	5.6
500	361	5,412	-25.8		207	6.4
450	360	6,167	-31.0		204	6.4
400	360	6,994	-36.9		199	7.2
350	360	7,906	-43.2		205	8.4
300	360	8,930	-49.4		217	8.0
250	360	10,112	-53.3		226	8.7
200	360	11,549	-52.2		239	9.9
175	360	12,415	-50.8		242	10.7
150	357	13,421	-50.3		247	10.1
125	355	14,610	-50.4		248	10.5
100	353	16,064	-50.6		251	9.5
80	349	17,519	-50.9		256	8.9
60	341	19,389	-51.4			
50	329	20,573	-51.6			
40	305	22,024	-51.7			
30	243	23,895	-52.0			

BISMARCK, N. DAK.
(956 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	364	505	2.1	80	86	0.6
1,000	364	142				
950	364	559	2.0	76		.0
900	364	997	4.0	65	273	3.3
850	364	1,462	3.1	59	286	6.4
800	364	1,952	1.2	56	289	9.5
750	364	2,470	- 1.4	54	291	12.2
700	364	3,016	- 4.3	52	288	15.5
650	364	3,596	- 7.7	49	286	17.5
600	364	4,215	-11.5	46	283	19.4
550	364	4,876	-15.6	43	281	20.8
500	364	5,590	-20.4		278	22.7
450	364	6,362	-25.8		276	24.3
400	364	7,206	-32.0		272	26.2
350	363	8,136	-38.9		269	27.4
300	363	9,176	-46.3			
250	362	10,369	-53.0			
200	356	11,797	-55.6			
175	354	12,647	-55.4			
150	351	13,630	-55.7			
125	348	14,789	-56.4			
100	340	16,203	-56.9			
80	328	17,617	-57.0			
60	320	19,438	-56.9			
50	307	20,601	-56.2			
40	280	22,027	-55.2			
30						

BOISE, IDAHO
(917 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	364	868	5.8	71	165	1.9
1,000	364	146				
950	364	574				
900	364	1,017	7.8	61	190	.8
850	364	1,489	7.4	53	293	2.5
800	364	1,986	4.8	52	278	5.1
750	364	2,512	1.6	52	272	7.8
700	364	3,062	- 2.0	52	269	10.7
650	364	3,648	- 5.7	51	267	13.0
600	364	4,270	- 9.6	49	266	15.7
550	364	4,934	-14.0	47	265	17.9
500	364	5,654	-18.9	44	264	18.8
450	364	6,429	-24.4		264	19.8
400	362	7,279	-30.7		265	20.0
350	360	8,214	-37.6		268	17.5
300	356	9,260	-45.1		264	16.5
250	345	10,460	-52.3			
200	333	11,888	-55.9			
175	324	12,736	-55.9			
150	316	13,719	-56.3			
125	301	14,872	-57.5			
100	276	16,275	-58.5			
80	257	17,679	-58.4			
60	237	19,497	-57.9			
50						
40						
30						

BROWNSVILLE, TEX.
(1014 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	364	7	20.9	88	127	4.5
1,000	364	129	21.7	82	135	7.8
950	364	575	19.6	78	155	12.8
900	363	1,039	17.6	70	162	11.7
850	363	1,527	15.7	58	170	8.5
800	363	2,040	13.5	50	185	5.4
750	363	2,581	10.9	44	222	4.1
700	363	3,154	7.7	42	246	5.4
650	363	3,759	4.0		253	7.6
600	363	4,407	- .2		253	8.7
550	363	5,093	- 4.6		259	9.9
500	362	5,842	- 9.3		264	11.9
450	362	6,648	-14.7		262	14.0
400	362	7,531	-21.0		266	15.5
350	362	8,502	-28.1		269	15.5
300	362	9,590	-36.4		269	18.1
250	362	10,828	-45.7		265	16.1
200	360	12,280	-55.6			
175	359	13,122	-60.1			
150	352	14,073	-64.6			
125	343	15,174	-68.7			
100	328	16,497	-71.9			
80	315	17,811	-70.9			
60	302	19,536	-65.3			
50	294	20,655	-61.6			
40	279	22,048	-57.9			
30	249	23,876	-53.7			

BUFFALO, N. Y.
(995 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	364	182	7.5	79	245	4.1
1,000	364	142				
950	364	564	6.6	71	252	8.9
900	364	1,007	4.4	70	260	12.6
850	364	1,471	2.3	66	264	15.0
800	364	1,959	.4	59	268	16.9
750	364	2,478	- 1.7	53	271	19.8
700	364	3,022	- 4.2	50	272	22.2
650	364	3,605	- 7.2	48	272	25.1
600	364	4,224	-10.6	46	272	27.6
550	364	4,888	-14.5		272	30.7
500	364	5,604	-19.1		271	34.0
450	363	6,382	-24.4		271	37.3
400	363	7,229	-30.4		270	40.6
350	363	8,166	-37.0		270	44.5
300	363	9,215	-44.2		272	47.4
250	362	10,419	-51.1		271	51.3
200	360	11,853	-55.4		273	51.9
175	352	12,701	-56.3		274	49.0
150	343	13,678	-56.8		272	43.3
125	332	14,831	-57.8		272	36.5
100	325	16,235	-58.9		272	29.5
80	307	17,636	-58.8		271	20.6
60	287	19,445	-57.6		269	12.4
50	266	20,599	-56.8		269	7.4
40	242	22,017	-55.6			
30	187	23,855	-53.7			

BURRWOOD, LA.
(1017 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	357	3	21.1	86	92	1.0
1,000	357	147	20.8	81	120	2.3
950	357	589	18.3	75	164	3.1
900	356	1,052	15.9	69	192	3.9
850	356	1,537	13.7	61	220	4.1
800	355	2,046	11.3	55	237	6.0
750	354	2,583	8.7	49	247	7.6
700	353	3,151	5.8		255	8.7
650	351	3,754	2.5		262	10.3
600	350	4,396	- 1.3		267	12.2
550	350	5,080	- 5.5		267	13.6
500	350	5,825	-10.3		267	15.5
450	349	6,630	-15.8		266	17.1
400	348	7,506	-22.1		270	19.2
350	346	8,474	-29.2		272	19.2
300	342	9,557	-37.4		273	20.2
250	339	10,791	-46.5		272	21.4
200	328	12,243	-55.7		275	20.6
175	319	13,084	-59.7			
150	312	14,039	-63.4			
125	305	15,149	-66.9			
100	294	16,488	-69.1			
80	279	17,824	-68.5			
60	257	19,564	-63.9			
50	248	20,689	-60.6			
40	239	22,090	-57.2			
30	220	23,925	-53.5			

CAPE HATTERAS, N. C.
(1018 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	363	4	17.0	79	329	1.7
1,000	363	153	16.5	74	306	2.1
950	363	586	14.2	70	270	4.5
900	363	1,044	12.0	66	263	7.2
850	363	1,521	9.7	62	267	9.5
800	363	2,023	7.3	57	267	11.3
750	363	2,553	5.0	50	267	13.8
700	363	3,113	2.3	47	268	17.1
650	362	3,707	- .8		266	19.6
600	361	4,345	- 4.3		266	22.5
550	359	5,021	- 8.3		266	24.5
500	359	5,760	-12.8		267	27.4
450	359	6,555	-18.0		267	30.7
400	359	7,427	-24.0		267	33.8
350	357	8,388	-31.0		268	37.1
300	357	9,464	-38.8		268	40.2
250	356	10,690	-47.7		269	43.3
200	350	12,135	-55.8		271	44.1
175	346	12,979	-58.7		273	42.7
150	340	13,941	-60.9		275	39.1
125	335	15,069	-63.0		275	32.6
100	331	16,436	-64.0		274	25.1
80	324	17,807	-62.9		276	14.0
60	317	19,592	-59.5		271	.8
50	311	20,739	-57.2		110	1.7
40	297	22,159	-54.3			
30	261	24,015	-51.0			

See reference note at end of table

RAWINSONDE DATA

Average annual values #

YEAR 1957

CARIBOU, ME.
(992 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	365	191	2.7	78	267	3.3
1,000--	365	121				
950----	365	537	2.2	70	277	7.6
900----	365	973	.6	69	290	11.7
850----	365	1,430	- 1.0	67	290	13.8
800----	365	1,913	- 2.8	64	288	16.1
750----	364	2,426	- 5.1	59	285	18.1
700----	364	2,963	- 7.6	56	282	20.8
650----	364	3,538	-10.4	52	280	23.5
600----	362	4,151	-13.7	48	278	26.4
550----	362	4,805	-17.6	45	277	29.7
500----	362	5,515	-22.1		276	32.4
450----	361	6,284	-27.3		275	35.9
400----	359	7,123	-33.1		275	38.5
350----	357	8,050	-39.5		276	42.4
300----	357	9,089	-46.2		273	48.2
250----	355	10,285	-51.5		274	52.3
200----	347	11,723	-53.7		276	50.3
175----	342	12,581	-54.0		275	46.4
150----	338	13,570	-54.3		274	42.2
125----	336	14.737	-55.2		273	37.1
100----	327	16,159	-55.8		273	31.7
80-----	315	17,578	-56.1		270	24.1
60-----	299	19,408	-55.5		266	17.5
50-----	282	20,571	-54.9		263	13.4
40-----	264	21,999	-54.1			
30-----	240	23,851	-52.8			
25-----						
20-----						

CHARLESTON, S. C.
(1017 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	363	13	16.4	84	344	0.8
1,000--	363	159	17.2	76		.0
950----	363	598	15.8	71	221	2.5
900----	363	1,056	13.8	67	246	4.3
850----	363	1,536	11.5	63	255	5.8
800----	363	2,041	9.1	56	264	7.8
750----	363	2,577	6.7		265	10.3
700----	363	3,139	3.8		265	12.4
650----	362	3,739	.7		266	14.4
600----	362	4,377	- 2.8		267	17.1
550----	362	5,059	- 6.8		267	19.2
500----	362	5,800	-11.5		265	20.2
450----	362	6,601	-16.7		264	21.4
400----	362	7,477	-22.9		266	22.2
350----	361	8,442	-29.9		266	23.5
300----	361	9,523	-38.0		268	25.5
250----	361	10,754	-47.2		271	28.4
200----	360	12.200	-56.1		276	29.1
175----	357	13,044	-59.4			
150----	355	14,003	-62.2			
125----	349	15,121	-65.1			
100----	342	16,476	-66.4			
80-----	331	17,828	-65.5			
60-----	311	19,593	-61.6			
50-----	304	20,730	-58.9			
40-----	281	22,139	-56.0			
30-----	206	23,981	-52.4			
25-----						
20-----						

COLD BAY, ALASKA
(1004 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	363	27	3.6	89	182	1.9
1,000--	363	58	3.3		223	1.7
950----	363	474	2.5	81	227	1.2
900----	363	911	.5	77	250	1.7
850----	363	1,368	- 1.5	72	236	2.3
800----	363	1,849	- 3.6	66	226	4.1
750----	363	2,358	- 6.0	60	228	5.6
700----	363	2,895	- 8.8	55	220	6.6
650----	363	3,464	-12.1	50	219	8.4
600----	363	4,073	-15.6	47	222	7.6
550----	363	4,722	-19.8	45	218	8.4
500----	362	5,425	-24.5		212	9.5
450----	362	6,183	-29.8		213	9.7
400----	362	7,014	-35.7		224	10.3
350----	362	7,930	-42.0		215	11.9
300----	361	8,957	-48.2		213	13.0
250----	361	10,145	-51.9		226	14.4
200----	358	11,591	-50.9		236	12.8
175----	353	12,462	-50.1		237	13.0
150----	351	13,468	-50.0		235	13.2
125----	349	14,656	-50.4			
100----	346	16,110	-50.8			
80-----	339	17,562	-51.1			
60-----	324	19,433	-51.6			
50-----	312	20,617	-51.8			
40-----	280	22,064	-52.1			
30-----	209	23,934	-52.0			
25-----						
20-----						

COLUMBIA, MO.
(989 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	365	238	9.6	81	156	1.2
1,000--	365	147				
950----	365	577	10.3	68	216	4.3
900----	365	1,025	9.2	63	250	7.2
850----	365	1,498	7.7	59	264	8.9
800----	365	1,996	5.6	56	269	11.3
750----	365	2,523	3.2	53	271	14.0
700----	365	3,079	.3	50	272	16.3
650----	365	3,668	- 2.9	47	274	19.0
600----	365	4,301	- 6.5		272	22.3
550----	365	4,971	-10.6		273	24.3
500----	364	5,703	-15.2		273	27.0
450----	364	6,490	-20.5		272	31.3
400----	364	7,354	-26.6		271	35.0
350----	363	8,304	-33.5		271	39.1
300----	363	9,368	-41.2		270	44.3
250----	363	10,583	-49.6		269	46.4
200----	363	12,019	-56.3		268	51.1
175----	362	12,863	-58.0		269	49.2
150----	360	13,831	-59.1		271	44.1
125----	354	14,971	-60.7		272	37.1
100----	349	16,355	-61.7		273	27.0
80-----	341	17,737	-61.1		273	18.1
60-----	326	19,532	-58.8		278	9.3
50-----	320	20,682	-57.2		275	5.8
40-----	306	22,099	-55.0		274	3.1
30-----	261	23,950	-51.9		273	3.3
25-----						
20-----						

DAYTON, OHIO
(983 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	364	297	8.7	76		0.0
1,000--	364	155				
950----	364	579	8.6	70	245	3.7
900----	364	1,027	7.2	66	258	8.5
850----	364	1,496	5.5	61	263	12.2
800----	364	1,990	3.5	57	268	15.0
750----	364	2,510	1.1	54	271	17.5
700----	364	3,065	- 1.6	49	272	19.4
650----	364	3,648	- 4.6		273	22.5
600----	363	4,277	- 8.1		273	26.0
550----	363	4,943	-11.9		274	28.4
500----	363	5,672	-16.4		274	31.9
450----	363	6,454	-21.7		273	35.8
400----	362	7,314	-27.7		272	40.0
350----	361	8,260	-34.3		270	44.3
300----	360	9,321	-41.8		271	48.6
250----	359	10,533	-49.7		270	54.4
200----	355	11,969	-55.8		271	56.3
175----	348	12,814	-57.4		273	53.8
150----	341	13,785	-58.6		274	47.8
125----	335	14,927	-60.0		274	39.1
100----	323	16,314	-61.0		274	31.3
80-----	310	17,700	-60.6		273	21.6
60-----	296	19,497	-58.6		275	12.4
50-----	283	20,648	-57.0		272	7.4
40-----	262	22,067	-54.8		255	2.9
30-----	208	23,912	-52.0			
25-----						
20-----						

DENVER, COLO.
(837 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	364	1,611	4.5	71	202	1.7
1,000--	364	142				
950----	364	571				
900----	364	1.019				
850----	364	1,490				
800----	364	1,989	7.4	53	254	3.1
750----	364	2,520	5.2	48	280	5.8
700----	364	3,079	1.7	47	285	9.1
650----	364	3,670	- 2.5	49	287	12.4
600----	364	4,302	- 6.9	49	287	16.1
550----	364	4,971	-11.5		285	19.0
500----	364	5,700	-16.5		282	21.6
450----	364	6,483	-22.0		278	23.9
400----	363	7,340	-28.2		276	27.6
350----	362	8,284	-35.3		275	31.5
300----	362	9,340	-43.1		273	38.1
250----	362	10,547	-50.9		271	43.7
200----	361	11,979	-56.4		271	44.5
175----	359	12,824	-57.5		271	44.3
150----	355	13,795	-58.5		271	40.6
125----	337	14,937	-60.3		271	33.8
100----	321	16,325	-61.6		273	26.8
80-----	302	17,707	-61.0		274	17.7
60-----	288	19,501	-59.5		277	9.7
50-----	282	20,644	-58.4		283	7.2
40-----	269	22,054	-56.6		300	3.7
30-----	229	23,891	-54.1		294	4.5

DODGE CITY, KANS.
(925 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	363	792	8.3	78	135	1.9
1,000--	363	143				
950----	363	573				
900----	363	1,020	10.1	64	171	2.5
850----	363	1,496	10.0	53	230	4.7
800----	363	1,999	8.4	48	261	7.6
750----	363	2,531	5.7	47	270	10.1
700----	363	3,091	2.3	47	273	12.2
650----	363	3,687	- 1.6		274	14.4
600----	363	4,319	- 5.7		275	17.7
550----	363	4,994	-10.1		273	19.6
500----	363	5,725	-14.9		275	22.3
450----	362	6,513	-20.2		274	24.9
400----	359	7,378	-26.3		271	26.8
350----	358	8,328	-33.3		270	26.2
300----	357	9,393	-41.3			
250----	356	10,607	-49.8			
200----	350	12,041	-56.4			
175----	345	12,885	-58.2			
150----	342	13,852	-59.6			
125----	330	14,988	-61.5			
100----	318	16,366	-62.9			
80-----	305	17,741	-62.3			
60-----	287	19,528	-59.7			
50-----	274	20,673	-58.2			
40-----	254	22,087	-56.0			
30-----	211	23,932	-53.3			

EL PASO, TEX.
(992 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	365	1,197	13.6	54	325	2.3
1,000--	365	124				
950----	365	564				
900----	365	1,026				
850----	365	1,510	14.7	44	280	2.1
800----	365	2,020	12.3	44	260	6.0
750----	365	2,558	9.1	45	258	9.3
700----	365	3,127	5.5		256	11.3
650----	365	3,727	1.6		255	12.6
600----	365	4,370	- 2.7		254	13.6
550----	365	5,050	- 7.1		258	14.6
500----	364	5,792	-11.9		265	15.5
450----	361	6,590	-17.3		264	15.5
400----	361	7,464	-23.6		268	16.1
350----	360	8,427	-30.7		267	18.3
300----	360	9,503	-38.7			
250----	354	10,733	-47.6			
200----	353	12,177	-56.1			
175----	352	13,019	-59.1			
150----	350	13,979	-61.9			
125----	335	15,098	-65.1			
100----	286	16,450	-67.4			
80-----	263	17,793	-66.6			
60-----	252	19,549	-62.7			
50-----	243	20,679	-60.2			
40-----	228	22,081	-57.4			
30-----	200	23,917	-53.7			

ELY, NEV.
(809 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	364	1,908	1.1	66	190	4.9
1,000--	364	166				
950----	364	593				
900----	364	1,038				
850----	364	1,506				
800----	364	1,998	4.7	59	191	4.7
750----	364	2,530	4.5	50	222	4.1
700----	363	3,084	1.1	48	254	7.0
650----	363	3,676	- 2.7	47	263	9.9
600----	363	4,306	- 6.9	45	265	12.0
550----	363	4,979	-11.3	41	267	14.4
500----	363	5,704	-16.2		268	17.3
450----	362	6,490	-21.7		268	18.7
400----	362	7,347	-28.0		262	20.0
350----	362	8,292	-35.2		261	17.7
300----	360	9,348	-43.0		257	18.5
250----	358	10,556	-50.7			
200----	351	11,990	-55.5			
175----	344	12,839	-56.4			
150----	338	13,815	-57.7			
125----	330	14,962	-59.2			
100----	317	16,354	-60.7			
80-----	302	17,745	-60.2			
60-----	290	19,546	-58.7			
50-----	274	20,691	-57.8			
40-----	253	22,107	-56.0			
30-----	195	23,959	-53.4			

FAIRBANKS, ALASKA
(996 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	364	135	- 4.0	76	6	1.4
1,000--	364	101				
950----	364	512	- .4	62	61	.6
900----	364	943	- 1.2	61	163	1.7
850----	364	1,397	- 2.8	62	203	3.1
800----	364	1,876	- 5.0	61	221	5.2
750----	364	2,381	- 7.8	61	229	7.0
700----	364	2,914	-10.7	58	229	7.6
650----	364	3,481	-14.2	54	235	8.4
600----	364	4,084	-17.9	52	239	8.5
550----	364	4,727	-22.0	50	243	9.5
500----	364	5,424	-26.7		240	10.9
450----	364	6,175	-31.9		246	11.1
400----	362	7,000	-37.8		245	12.2
350----	360	7,907	-44.3		244	11.5
300----	360	8,925	-50.8		254	8.9
250----	358	10,097	-55.4		253	8.7
200----	353	11,520	-54.5		263	9.3
175----	351	12,377	-53.1			
150----	348	13,371	-52.3			
125----	339	14,552	-52.0			
100----	332	15,999	-52.1			
80-----	322	17,442	-52.3			
60-----	304	19,305	-52.5			
50-----	287	20,488	-52.8			
40-----	267	21,936	-52.8			
30-----	219	23,801	-53.0			

FLINT, MICH.
(989 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	360	234	6.0	80	223	1.9
1,000--	360	146				
950----	360	567	6.1	72	253	5.1
900----	360	1,010	4.4	67	269	8.9
850----	360	1,474	2.7	60	276	11.9
800----	360	1,963	1.1	54	277	14.6
750----	360	2,482	- 1.0	50	276	17.5
700----	360	3,029	- 3.6	47	276	20.4
650----	360	3,612	- 6.6		275	23.1
600----	358	4,234	-10.0		275	25.6
550----	358	4,896	-13.9		274	28.4
500----	358	5,618	-18.5		274	31.9
450----	358	6,395	-23.8		274	35.9
400----	357	7,247	-29.7		274	40.8
350----	356	8,185	-36.4		274	46.0
300----	355	9,238	-43.5		274	50.5
250----	350	10,444	-50.5		272	55.2
200----	346	11,880	-55.0		273	55.2
175----	344	12,731	-56.1		274	52.3
150----	337	13,709	-56.6		274	46.0
125----	330	14,863	-57.8		275	38.9
100----	321	16,267	-58.6		274	31.3
80-----	313	17,668	-58.5		275	22.7
60-----	304	19,481	-57.3		274	14.0
50-----	297	20,636	-56.3		275	10.1
40-----	276	22,062	-54.5			
30-----	235	23,913	-52.3			
25-----						
20-----						

FORT WORTH, TEX.
(996 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	363	180	15.3	80	138	1.0
1,000--	362	143				
950----	363	580	15.0	72	186	6.8
900----	363	1,037	14.1	66	205	8.4
850----	363	1,518	12.6	60	229	8.0
800----	363	2,026	10.2	55	252	8.4
750----	363	2,560	7.5	51	263	10.1
700----	363	3,126	4.3	49	266	11.9
650----	362	3,724	.7		267	13.8
600----	361	4,363	- 3.2		267	16.3
550----	359	5,045	- 7.5		268	19.0
500----	358	5,783	-12.2		267	21.2
450----	358	6,579	-17.8		267	23.7
400----	358	7,451	-24.0		266	26.8
350----	358	8,411	-31.3		266	30.1
300----	357	9,484	-39.4		266	34.6
250----	354	10,707	-48.2		266	39.2
200----	351	12,148	-56.5		266	42.4
175----	344	12,989	-59.7		265	41.4
150----	340	13,947	-62.0		264	39.2
125----	327	15,067	-64.9		264	33.4
100----	304	16,420	-67.0		265	24.7
80-----	287	17,768	-66.0		264	13.4
60-----	275	19,527	-62.7		255	3.1
50-----	262	20,655	-60.5		124	1.7
40-----	241	22,054	-57.4			
30-----	314	23,883	-54.0			
25-----						
20-----	129	26,512	-49.0			

GLASGOW, MONT.
(934 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	365	696	2.1	76	71	2.1
1,000--	365	139				
950----	365	556				
900----	365	996	4.6	64	308	1.0
850----	365	1,462	3.9	57	292	6.4
800----	365	1,953	1.7	56	292	9.7
750----	365	2,471	- 1.2	55	291	11.9
700----	365	3,018	- 4.6	55	289	14.4
650----	365	3,596	- 8.2	54	287	16.9
600----	365	4,214	-12.0	52	285	20.0
550----	365	4,873	-16.2	48	283	21.6
500----	365	5,586	-21.0	46	283	22.7
450----	365	6,354	-26.4	43	278	24.5
400----	365	7,197	-32.6		278	26.2
350----	364	8,125	-39.5		276	25.8
300----	362	9,164	-46.9		273	28.6
250----	361	10,353	-53.5			
200----	351	11,778	-55.6			
175----	345	12,629	-55.0			
150----	340	13,616	-54.7			
125----	333	14,781	-55.3			
100----	318	16,200	-56.1			
80-----	307	17,619	-56.4			
60-----	290	19,448	-56.1			
50-----	274	20,617	-55.8			
40-----	250	22,035	-55.2			
30-----	186	23,881	-54.1			
25-----						
20-----						

GRAND JUNCTION, COLO.
(853 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	363	1,474	6.6	66	105	3.9
1,000--	363	144				
950----	363	575				
900----	363	1,025				
850----	363	1,500	7.0	61	106	5.1
800----	363	2,001	7.4	54	155	4.1
750----	363	2,531	4.8	53	215	5.1
700----	363	3,089	1.1	54	250	8.7
650----	363	3,680	- 2.9	54	260	11.3
600----	363	4,310	- 7.2	53	267	14.0
550----	363	4,979	-11.7		267	16.7
500----	363	5,707	-16.5		270	19.6
450----	363	6,490	-21.9		270	21.0
400----	362	7,348	-28.1		270	22.0
350----	362	8,292	-35.1		270	22.3
300----	362	9,349	-42.9		270	22.5
250----	362	10,556	-50.7			
200----	362	11,989	-55.9			
175----	361	12,837	-56.9			
150----	356	13,811	-58.1			
125----	352	14,953	-60.1			
100----	343	16,338	-61.6			
80-----	331	17,721	-61.3			
60-----	318	19,514	-59.5			
50-----	305	20,661	-58.2			
40-----	274	22,072	-56.4			
30-----	211	23,910	-53.8			
25-----						
20-----						

GREAT FALLS, MONT.
(887 MB.)

Standard pressure surface (mb)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	365	1,123	3.8	66	239	6.8
1,000--	365	134				
950----	365	559				
900----	365	1,003				
850----	365	1,469	4.6	55	254	9.5
800----	365	1,961	2.3	54	267	9.5
750----	365	2,482	- .8	56	273	11.5
700----	365	3,028	- 3.9	57	277	14.0
650----	365	3,610	- 7.3	54	278	17.3
600----	365	4,228	-11.4	52	278	19.2
550----	365	4,889	-15.7	47	276	22.0
500----	364	5,603	-20.5	44	277	24.1
450----	364	6,373	-25.9	42	277	26.0
400----	364	7,218	-32.1		277	28.2
350----	364	8,147	-39.2		277	30.3
300----	364	9,186	-46.8		275	34.2
250----	362	10,376	-53.5		275	37.3
200----	353	11,800	-55.7		275	37.3
175----	341	12,650	-55.0		275	35.9
150----	334	13,636	-54.7		276	33.2
125----	323	14,806	-55.1		281	29.1
100----	310	16,231	-55.9		282	24.3
80-----	299	17,649	-56.1		284	18.5
60-----	291	19,482	-55.8		294	14.2
50-----	280	20,645	-55.5		297	11.5
40-----	259	22,074	-54.7		315	7.8
30-----	227	23,930	-53.2			
25-----						
20-----						

See reference note at end of table

RAWINSONDE DATA

Average annual values #

YEAR 1957

GREEN BAY, WIS. (991 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	365	210	4.1	83	283	2.1
1,000	365	137				
950	365	558	4.6	70	271	5.1
900	365	995	3.1	66	278	7.2
850	365	1,458	1.8	59	280	9.3
800	365	1,946	.1	55	282	12.0
750	365	2,463	- 2.1	51	282	15.0
700	365	3,007	- 4.6	48	280	17.5
650	365	3,587	- 7.6	45	281	19.8
600	365	4,207	-11.1	43	280	22.7
550	365	4,866	-15.1		279	24.3
500	364	5,585	-19.6		278	25.5
450	364	6,360	-24.9		277	27.0
400	364	7,206	-30.9		274	29.0
350	362	8,142	-37.4		272	31.3
300	362	9,190	-44.4		278	33.4
250	362	10,392	-51.2			
200	362	11,827	-54.8			
175	358	12,681	-55.2			
150	356	13,665	-55.5			
125	353	14,825	-56.6			
100	351	16,236	-57.3			
80	345	17,647	-57.4			
60	333	19,470	-56.5			
50	317	20,628	-55.7			
40	281	22,059	-54.5			
30						

GREENSBORO, N. C. (988 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	365	273	12.4	81	327	0.8
1,000	365	168				
950	365	601	12.8	68	274	2.7
900	365	1,054	11.2	65	271	5.1
850	365	1,530	9.2	63	269	8.2
800	365	2,031	7.0	58	272	10.7
750	365	2,562	4.5	54	272	13.2
700	364	3,120	1.7	50	273	15.9
650	364	3,714	- 1.4		272	18.1
600	363	4,349	- 4.9		270	19.0
550	363	5,026	- 8.8		270	21.4
500	363	5,761	-13.3		271	23.1
450	363	6,556	-18.4		271	23.3
400	363	7,425	-24.5		271	24.5
350	363	8,383	-31.4		270	25.8
300	363	9,456	-39.3			
250	363	10,681	-48.0			
200	361	12,125	-55.8			
175	360	12,970	-58.3			
150	358	13,934	-60.2			
125	356	15,066	-62.0			
100	348	16,439	-63.4			
80	339	17,811	-62.6			
60	326	19,595	-60.0			
50	314	20,737	-58.2			
40	287	22,149	-55.6			
30	210	23,994	-52.8			

HILO, T. H. (1015 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	365	11	20.1	87		0.0
1,000	365	139	21.4	79	68	1.0
950	365	584	18.9	80	81	5.2
900	365	1,046	15.8	83	82	5.8
850	365	1,530	12.9	84	84	5.1
800	365	2,039	10.9	73	88	5.1
750	365	2,582	9.5	51	85	4.5
700	365	3,147	7.2		93	3.3
650	365	3,755	4.2		96	1.7
600	364	4,400	.7		259	.8
550	363	5,092	- 3.3		273	3.5
500	363	5,841	- 7.9		275	6.4
450	363	6,654	-13.2		276	9.1
400	363	7,540	-19.6		275	13.6
350	363	8,517	-26.6		275	18.7
300	363	9,612	-34.7		272	25.3
250	362	10,860	-43.9		274	31.5
200	360	12,323	-54.1		275	35.0
175	359	13,169	-59.7		276	32.1
150	356	14,120	-65.5		276	25.6
125	348	15,213	-70.9		274	17.5
100	335	16,522	-74.4		299	4.9
80	323	17,820	-73.3			
60	312	19,531	-66.5			
50	310	20,643	-63.0			
40	301	22,028	-59.6			
30	283	23,844	-55.4			

INTERNAT. FALLS, MINN. (972 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	365	360	0.3	70	247	1.7
1,000	365	133				
950	365	547	1.0	68	257	3.5
900	365	980	.3	66	280	7.4
850	365	1,438	- .9	62	289	9.7
800	365	1,920	- 2.4	58	293	12.6
750	365	2,433	- 4.5	53	293	15.2
700	365	2,972	- 7.0	50	293	17.9
650	364	3,547	-10.0	48	291	20.2
600	364	4,161	-13.4	45	290	23.1
550	363	4,815	-17.3	42	289	26.0
500	362	5,527	-21.9		289	28.6
450	361	6,294	-27.2		287	31.5
400	361	7,134	-33.1		286	35.0
350	361	8,060	-39.7		285	38.9
300	360	9,097	-46.7		284	43.5
250	357	10,289	-52.5		283	48.0
200	350	11,721	-54.6		281	48.4
175	341	12,577	-54.3		280	45.7
150	333	13,565	-54.2		281	41.8
125	326	14,731	-55.0		281	35.9
100	312	16,156	-55.6		282	29.5
80	298	17,577	-55.8			
60	277	19,412	-55.5			
50	260	20,572	-55.1			
40	229	22,000	-54.2			
30						

JACKSON, MISS. (1007 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	360	101	15.7	84	135	0.8
1,000	360	156	15.6	79	129	1.4
950	360	595	14.9	72	188	4.5
900	360	1,049	13.3	66	217	5.6
850	360	1,529	11.4	62	239	7.2
800	360	2,034	9.2	56	249	8.7
750	360	2,569	6.7	52	257	10.5
700	360	3,131	2.8		262	12.4
650	360	3,731	.5		264	14.2
600	359	4,368	- 3.3		266	16.9
550	359	5,050	- 7.2		268	19.0
500	359	5,789	-11.8		267	21.2
450	359	6,588	-17.1		267	23.9
400	359	7,462	-23.1		266	26.2
350	358	8,426	-30.1		264	29.0
300	357	9,505	-38.1		264	32.4
250	356	10,736	-47.0		262	36.5
200	355	12,184	-55.7		266	41.0
175	354	13,027	-59.2		267	40.6
150	352	13,986	-62.2		269	37.3
125	349	15,103	-65.2		268	30.9
100	341	16,454	-67.0		267	20.2
80	332	17,805	-66.0		266	10.3
60	319	19,567	-62.0		247	1.2
50	312	20,703	-59.0		105	2.1
40	292	22,116	-55.8		103	4.9
30	255	23,962	-51.7		98	6.4

JACKSONVILLE, FLA. (1019 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	365	6	18.7	86		0.0
1,000	365	164	19.0	80	180	.8
950	365	602	17.3	75	200	3.7
900	365	1,065	15.0	72	222	4.5
850	365	1,548	12.6	66	242	5.8
800	365	2,055	10.3	57	252	7.6
750	365	2,588	7.8	51	258	9.3
700	365	3,157	5.0		262	11.5
650	363	3,756	1.7		264	14.0
600	363	4,400	- 1.9		265	16.7
550	363	5,082	- 5.9		264	18.8
500	362	5,828	-10.5		264	21.2
450	359	6,627	-15.9		267	23.3
400	359	7,509	-22.1		267	25.6
350	359	8,477	-29.3		269	28.6
300	357	9,559	-37.6		270	31.1
250	354	10,792	-47.0		270	36.1
200	353	12,238	-56.4		273	40.2
175	351	13,078	-60.2		275	41.2
150	349	14,032	-63.7		275	38.9
125	347	15,140	-67.0		276	34.0
100	336	16,480	-69.1		275	25.1
80	325	17,815	-68.4		275	15.5
60	302	19,558	-63.9		295	2.1
50	293	20,684	-60.9		96	4.5
40	279	22,084	-57.6		102	7.6
30	221	23,916	-53.9		94	9.1

KING SALMON, ALASKA (1007 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	364	15	0.1	86	108	1.9
1,000	364	73	1.4		190	1.0
950	364	488	2.0	73	128	3.3
900	364	923	.4	70	143	3.5
850	364	1,381	- 1.5	69	160	3.7
800	364	1,862	- 3.7	66	176	4.7
750	364	2,370	- 6.3	62	188	5.2
700	364	2,907	- 9.3	58	199	5.6
650	364	3,475	-12.8	54	198	6.2
600	364	4,083	-16.5	50	201	7.0
550	363	4,729	-20.7	49	210	7.6
500	363	5,431	-25.4		211	8.7
450	362	6,185	-30.7		212	9.9
400	360	7,017	-36.4		213	11.3
350	359	7,931	-42.8		214	12.8
300	358	8,957	-48.9		220	15.2
250	358	10,141	-53.1		222	16.7
200	355	11,579	-52.2		233	17.1
175	351	12,445	-50.9		238	17.1
150	346	13,447	-50.5		243	17.1
125	340	14,633	-50.7		248	16.1
100	328	16,085	-51.0		251	15.0
80	320	17,535	-51.3		256	14.4
60	305	19,406	-51.4		263	13.0
50	294	20,591	-51.6		267	11.9
40	280	22,040	-51.8		278	11.7
30	253	23,911	-51.5		284	8.9

KOTZEBUE, ALASKA (1012 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	363	5	- 5.4	83	72	1.6
1,000	363	99	- 3.8	75	82	1.6
950	363	507	- 3.0	67	123	2.3
900	363	933	- 4.2	65	168	2.1
850	363	1,383	- 5.7	63	203	2.3
800	363	1,857	- 7.5	59	206	3.1
750	363	2,359	- 9.8	55	217	4.3
700	363	2,887	-12.6	53	223	5.6
650	363	3,451	-15.7	51	225	6.8
600	363	4,050	-19.3	48	230	8.2
550	363	4,690	-23.3	46	233	9.3
500	362	5,384	-27.8		237	10.7
450	361	6,133	-32.9		236	12.6
400	361	6,954	-38.6		241	13.8
350	358	7,855	-45.0		241	15.0
300	357	8,869	-51.1		239	15.0
250	353	10,041	-54.7		244	13.8
200	346	11,470	-52.8		245	13.0
175	341	12,335	-51.5		243	13.8
150	333	13,336	-50.9			
125	324	14,521	-50.9			
100	313	15,978	-51.0			
80	301	17,430	-51.1			
60	290	19,297	-51.6			
50	278	20,477	-52.1			
40	260	21,919	-52.4			
30						

LAKE CHARLES, LA. (1017 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	362	5	18.0	87	99	1.4
1,000	362	145	18.5	81	114	2.7
950	362	587	17.2	75	161	4.1
900	362	1,046	15.2	70	188	4.1
850	362	1,530	13.2	63	227	3.9
800	362	2,038	10.9	56	245	5.2
750	362	2,575	8.2	50	260	7.0
700	362	3,141	5.3	45	267	9.1
650	362	3,742	1.9		271	10.9
600	361	4,385	- 1.8		273	13.0
550	361	5,067	- 6.1		277	13.8
500	360	5,812	-10.8		278	15.5
450	358	6,613	-16.3		279	17.1
400	356	7,491	-22.4		279	19.4
350	356	8,457	-29.4		278	17.5
300	356	9,539	-37.3		278	18.3
250	353	10,772	-46.6			
200	352	12,221	-55.5			
175	350	13,064	-59.3			
150	345	14,021	-62.5			
125	335	15,136	-66.0			
100	323	16,481	-68.1			
80	308	17,822	-67.1			
60	290	19,576	-62.6			
50	281	20,709	-59.6			
40	266	22,113	-56.1			
30	220	23,957	-52.4			

LANDER, WYO. (828 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	364	1,696	2.5	67	246	2.7
1,000	364	145				
950	364	569				
900	364	1,016				
850	364	1,485				
800	364	1,979	5.0	53	279	1.9
750	364	2,504	3.1	48	283	4.3
700	364	3,060	- .3	48	279	8.7
650	364	3,645	- 4.3	48	282	13.0
600	364	4,275	- 8.5	46	281	16.7
550	363	4,938	-13.2	44	278	18.5
500	363	5,663	-18.4		276	20.2
450	363	6,437	-24.0		272	21.2
400	362	7,291	-30.2		271	23.9
350	361	8,227	-37.3		268	24.7
300	360	9,274	-45.0		263	27.0
250	359	10,471	-52.5			
200	350	11,899	-56.2			
175	342	12,746	-56.5			
150	338	13,722	-57.0			
125	331	14,873	-58.3			
100	324	16,272	-59.3			
80	316	17,668	-59.3			
60	300	19,472	-58.6			
50	285	20,621	-57.9			
40	257	22,036	-56.4			
30						

LAS VEGAS, NEV. (938 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	363	660	14.1	42	234	4.9
1,000	363	111				
950	363	548				
900	363	1,009	16.3	33	237	3.9
850	363	1,492	13.6	34	251	4.3
800	363	2,000	10.3	36	241	5.6
750	363	2,534	6.7	38	237	6.0
700	363	3,096	3.0		240	6.8
650	363	3,691	- 1.0		249	8.0
600	363	4,326	- 5.1		259	10.5
550	362	5,001	- 9.7		264	13.6
500	362	5,734	-14.7		266	16.5
450	362	6,523	-20.3		267	20.0
400	362	7,386	-26.6		264	23.3
350	362	8,336	-33.7		265	27.4
300	361	9,400	-41.6		264	32.3
250	360	10,614	-49.7		264	37.3
200	356	12,053	-55.8		262	41.4
175	354	12,900	-57.6		262	41.2
150	347	13,869	-59.4		263	36.9
125	337	15,006	-61.6		265	30.7
100	317	16,380	-63.2		265	22.9
80	303	17,754	-62.6		270	14.4
60	278	19,537	-60.3		291	5.8
50	266	20,677	-59.0		312	2.5
40	246	22,083	-56.9		353	2.5
30	201	23,924	-53.8		41	2.7

LITTLE ROCK, ARK. (1008 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	365	79	13.8	83	97	0.6
1,000	365	148	13.6	77	118	.8
950	365	586	13.4	69	202	4.1
900	365	1,036	12.0	66	230	5.8
850	365	1,514	10.3	62	250	7.6
800	365	2,017	8.2	57	262	8.9
750	365	2,552	5.6	53	266	10.5
700	365	3,110	2.7	50	268	12.2
650	364	3,709	- .7		269	13.8
600	364	4,342	- 4.3		271	15.0
550	363	5,022	- 8.4		272	17.1
500	362	5,757	-13.0		274	18.1
450	361	6,553	-18.4		275	19.6
400	359	7,423	-24.5		280	19.4
350	358	8,382	-31.5		276	20.4
300	357	9,455	-39.4			
250	356	10,679	-48.2			
200	351	12,122	-56.1			
175	349	12,965	-58.9			
150	344	13,928	-61.0			
125	331	15,057	-63.7			
100	321	16,420	-65.1			
80	310	17,782	-64.3			
60	301	19,554	-61.2			
50	291	20,691	-59.0			
40	275	22,100	-56.5			
30	229	23,939	-53.0			

McGRATH, ALASKA (999 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	365	103	- 4.2	80	336	0.6
1,000	365	94				
950	365	503	- .6	69	81	1.7
900	365	935	- 1.0	67	137	2.7
850	364	1,390	- 2.3	65	164	3.3
800	364	1,870	- 4.3	63	184	3.9
750	364	2,375	- 7.0	61	197	5.2
700	364	2,911	-10.1	58	204	6.2
650	364	3,477	-13.4	54	209	7.0
600	364	4,084	-17.1	51	208	7.4
550	364	4,728	-21.2	48	211	8.5
500	364	5,429	-25.9		218	8.7
450	364	6,180	-31.1		222	9.1
400	363	7,008	-37.1		219	10.1
350	363	7,918	-43.5		213	9.9
300	362	8,940	-49.9		220	9.9
250	358	10,119	-54.2		239	9.9
200	352	11,547	-53.6		248	11.5
175	347	12,406	-51.8		254	12.4
150	345	13,408	-51.1		259	12.6
125	342	14,592	-51.1		253	11.3
100	337	16,042	-51.3		258	11.3
80	327	17,492	-51.5			
60	302	19,360	-51.8			
50	291	20,539	-52.1			
40	263	21,985	-52.5			
30						

MAZATLAN, MEXICO ‡ (1009 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	359	14	26.3	73		
1,000	359	90	25.6	71		
950	359	542	24.2	56		
900	359	1,013	22.7	49		
850	359	1,509	19.9			
800	359	2,029	16.7			
750	359	2,581	13.4			
700	358	3,153	9.7			
650	353	3,768	5.7			
600	351	4,415	1.4			
550	348	5,108	- 3.2			
500	344	5,857	- 8.0			
450	343	6,670	-13.4			
400	332	7,555	-19.5			
350	325	8,533	-26.6			
300	295	9,629	-34.7			
250	264	10,876	-44.3			
200						
175						
150						
125						
100						
80						
60						
50						
40						
30						

MEDFORD, OREG. (970 MB.)

Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind Direction	Wind Speed
SURFACE	365	401	6.8	85	285	1.0
1,000	365	151				
950	365	578	8.0	75	283	1.7
900	365	1,021	7.8	69	229	1.9
850	365	1,492	6.1	64	211	3.3
800	365	1,988	4.0	57	227	5.4
750	364	2,513	1.5	52	239	8.2
700	364	3,064	- 1.6	46	249	10.3
650	364	3,650	- 5.0	41	259	11.9
600	361	4,276	- 8.8		266	13.6
550	361	4,942	-13.2		266	15.3
500	361	5,664	-18.0		270	16.9
450	361	6,444	-23.5		268	18.1
400	361	7,295	-29.8		264	19.6
350	361	8,233	-36.8		258	20.6
300	360	9,282	-44.6		254	20.6
250	359	10,481	-52.2			
200	349	11,909	-56.0			
175	341	12,758	-56.1			
150	335	13,736	-56.4			
125	326	14,892	-57.7			
100	313	16,297	-58.8			
80	302	17,699	-58.6			
60	289	19,517	-57.6			
50						
40						
30						

See reference note at end of table

RAWINSONDE DATA

Average annual values #

YEAR [illegible]

Standard pressure surface (mb)	MERIDA, MEXICO (1014 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	345	11	23.5		67	3.5
1,000	345	131	23.4		80	7.2
950	345	575	21.2		108	13.4
900	345	1,046	19.0		116	11.5
850	345	1,536	16.5		123	8.4
800	345	2,051	13.9		131	6.2
750	345	2,591	11.2		136	4.7
700	345	3,166	8.3		143	3.3
650	345	3,773	4.8		152	2.3
600	345	4,424	1.2		203	1.0
550	345	5,113	- 2.9		262	2.5
500	345	5,867	- 7.7		273	5.1
450	345	6,677	-12.9		273	7.2
400	345	7,568	-19.4		279	10.5
350	344	8,546	-26.5		278	14.2
300	344	9,641	-34.9		275	17.5
250	344	10,887	-44.5		277	20.8
200	341	12,346	-55.0		275	23.5
175	340	13,188	-60.6		274	23.3
150	337	14,134	-66.0		278	19.8
125	333	15,226	-70.7		279	14.6
100	313	16,538	-73.6		283	5.8
80	298	17,841	-73.1		84	4.3
60	283	19,553	-65.8		89	14.4
50	270	20,672	-61.7		90	17.1
40	255	22,066	-57.8		92	18.3
30	222	23,896	-53.3		89	18.8

Standard pressure surface (mb)	MIAMI, FLA. (1018 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	362	4	23.2	81	90	1.9
1,000	362	154	22.8	75	97	4.1
950	362	600	20.0	76	115	5.8
900	362	1,065	17.0	75	129	5.2
850	362	1,552	14.4	69	155	3.5
800	362	2,063	12.0	59	193	3.3
750	362	2,601	9.6		219	4.1
700	362	3,172	6.7		231	5.2
650	362	3,777	3.3		242	6.2
600	362	4,423	- .4		253	7.6
550	359	5,107	- 4.6		259	9.3
500	359	5,858	- 9.4		263	11.1
450	359	6,663	-14.8		265	12.8
400	358	7,547	-21.1		271	14.8
350	358	8,519	-28.1		275	16.7
300	357	9,606	-36.5		276	18.1
250	354	10,845	-46.0		282	21.6
200	349	12,295	-55.8		288	23.7
175	345	13,136	-60.5		290	23.1
150	342	14,085	-64.9		295	20.8
125	332	15,185	-68.6		302	15.5
100	322	16,513	-71.1		321	7.4
80	310	17,830	-70.6		44	5.1
60	304	19,557	-64.7		80	14.2
50	295	20,679	-61.0		88	19.0
40	283	22,076	-57.5		92	21.6
30	249	23,913	-53.2			

Standard pressure surface (mb)	MIDLAND, TEX. (917 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	364	871	12.6	72	130	2.1
1,000	364	134				
950	364	569				
900	364	1,026	13.8	62	159	3.9
850	364	1,509	13.7	52	202	8.0
800	364	2,018	11.7	46	235	8.0
750	364	2,555	8.6	44	254	8.9
700	364	3,123	5.1		264	11.3
650	364	3,722	1.1		268	13.6
600	364	4,363	- 3.0		268	15.7
550	364	5,043	- 7.4		266	17.1
500	364	5,783	-12.3		267	18.5
450	364	6,579	-17.7		266	19.8
400	363	7,451	-23.9		266	21.4
350	361	8,412	-31.1		271	20.4
300	361	9,487	-39.0		274	20.6
250	359	10,714	-47.7			
200	355	12,160	-55.8			
175	351	13,005	-58.7			
150	343	13,966	-61.6			
125	339	15,087	-64.7			
100	312	16,442	-66.7			
80	293	17,793	-66.0			
60	280	19,554	-62.2			
50						
40						
30						

Standard pressure surface (mb)	MONTGOMERY, ALA (1012 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	364	61	15.8	86	124	0.6
1,000	364	158	15.9	79	127	1.2
950	364	596	15.4	71	184	2.7
900	364	1,053	13.8	67	221	4.3
850	364	1,534	11.5	63	239	6.2
800	364	2,039	9.3	56	251	8.5
750	364	2,574	6.8	51	257	10.7
700	364	3,137	4.0		261	12.8
650	364	3,737	.8		264	15.0
600	363	4,376	- 2.8		263	18.1
550	363	5,059	- 6.8		265	20.4
500	362	5,799	-11.4		265	23.1
450	361	6,600	-16.7		265	26.0
400	361	7,475	-22.8		264	29.0
350	359	8,440	-29.7		264	32.8
300	359	9,521	-37.8		265	37.1
250	359	10,753	-46.9		265	41.4
200	356	12,200	-55.9		268	45.5
175	354	13,042	-59.3		270	45.1
150	350	14,000	-62.2		270	41.4
125	345	15,119	-65.4		270	35.6
100	331	16,469	-67.1		270	25.3
80	323	17,818	-66.2		271	14.8
60	311	19,578	-62.1		268	2.7
50	302	20,712	-59.1		95	2.3
40	279	22,121	-55.8		103	4.1
30	234	23,968	-52.1		96	6.0

Standard pressure surface (mb)	NANTUCKET, MASS. (1016 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	365	14	10.3	77	292	2.5
1,000	365	144	9.8	73	283	4.5
950	365	569	8.3	66	284	8.5
900	365	1,015	6.4	60	285	10.1
850	365	1,483	4.3	58	281	12.2
800	365	1,975	2.4	54	277	15.7
750	365	2,496	.1	50	277	18.8
700	365	3,045	- 2.5	46	278	20.4
650	365	3,631	- 5.6	43	279	22.2
600	365	4,254	- 9.0		276	[illegible]
550	365	4,921	-12.8		[illegible]	25.1
500	365	5,645	-17.4		276	25.5
450	364	6,424	-22.5			
400	364	7,282	-28.4			
350	[illegible]	8,225	-35.2			
300	364	9,282	-42.7			
250	[illegible]	10,492	-50.3			
200	363	11,927	-56.0			
175	362	12,773	-57.4			
150	359	13,744	-58.3			
125	353	14,886	-59.3			
100	[illegible]	16,280	-60.0			
80	348	17,673	-59.7			
60	341	19,476	-58.4			
50	338	20,626	-57.4			
40	322	22,040	-56.0			
30	261	23,881	-54.0			

Standard pressure surface (mb)	NASHVILLE, TENN. (998 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	365	177	12.7	84	237	0.6
1,000	365	159				
950	365	592	12.6	69	216	4.3
900	365	1,044	10.9	65	237	7.2
850	365	1,520	8.9	61	252	7.8
800	365	2,020	6.6	57	263	9.9
750	365	2,548	4.1	52	267	11.7
700	365	3,107	1.3	49	271	13.8
650	365	3,698	- 1.8	46	274	15.2
600	365	4,333	- 5.4	43	275	16.1
550	363	5,007	- 9.4		274	17.9
500	363	5,742	-13.9		272	19.2
450	361	6,533	-19.3		274	20.6
400	361	7,401	-25.3		277	21.6
350	361	8,357	-32.1			
300	361	9,427	-40.0			
250	359	10,649	-48.4			
200	358	12,091	-56.1			
175	351	12,933	-58.6			
150	346	13,898	-60.5			
125	336	15,025	-62.6			
100	324	16,397	-63.8			
80	308	17,767	-63.3			
60	289	19,548	-60.7			
50	277	20,691	-58.7			
40	265	22,104	-56.0			
30						

Standard pressure surface (mb)	N. Y. INT. AP, IDLEWILD (1018 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	363	5	11.1	71	293	3.5
1,000	363	150	10.1	67	296	5.2
950	363	578	8.2	64	298	7.8
900	363	1,022	6.4	61	290	9.7
850	363	1,490	4.6	58	283	12.6
800	363	1,982	2.6	55	280	15.7
750	363	2,506	.3	51	278	19.2
700	363	3,053	- 2.2		276	22.2
650	363	3,640	- 5.2	44	276	25.6
600	361	4,263	- 8.7	42	276	28.8
550	361	4,933	-12.6		275	31.1
500	360	5,656	-17.0		275	34.4
450	357	6,438	-22.2		274	37.7
400	356	7,294	-28.1		274	41.8
350	355	8,240	-34.8		274	46.2
300	354	9,299	-42.2		274	50.3
250	351	10,512	-49.9		275	54.2
200	346	11,950	-55.8		277	55.2
175	343	12,798	-57.3		277	53.0
150	337	13,771	-58.2		277	48.2
125	328	14,914	-59.2		277	40.6
100	316	16,309	-60.0		277	34.2
80	307	17,705	-59.4		278	24.7
60	299	19,516	-57.5		276	11.7
50	278	20,670	-56.2		271	7.6
40	254	22,098	-54.6		268	2.9
30	194	23,949	-52.1			

Standard pressure surface (mb)	NOME, ALASKA (1011 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	365	7	- 3.0	83	60	2.3
1,000	365	90	- 2.0		61	1.0
950	365	498	- 1.7	70	104	2.5
900	365	929	- 3.0	68	139	2.1
850	365	1,381	- 4.3	65	172	2.1
800	365	1,857	- 6.3	61	199	2.3
750	365	2,359	- 8.6	57	207	2.9
700	365	2,892	-11.3	53	217	3.3
650	365	3,455	-14.5	51	223	4.5
600	364	4,060	-18.1	48	220	5.6
550	363	4,702	-22.2		224	7.2
500	361	5,400	-26.7		230	7.6
450	360	6,150	-32.0		238	8.7
400	360	6,975	-37.9		234	9.5
350	360	7,882	-44.0		236	9.7
300	360	8,902	-50.2		237	12.0
250	359	10,080	-53.9		239	12.2
200	358	11,515	-52.5		246	13.0
175	354	12,380	-50.8		249	12.6
150	352	13,384	-50.3		250	12.8
125	348	14,573	-50.3		259	11.9
100	336	16,033	-50.3		257	11.1
80	328	17,489	-50.4			
60	310	19,367	-50.5			
50	299	20,556	-50.7			
40	278	22,016	-51.0			
30						

Standard pressure surface (mb)	NORFOLK, VA. (1018 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	364	9	14.5	77	339	0.6
1,000	364	158	14.2	73	269	1.2
950	364	591	12.4	68	278	4.9
900	364	1,043	10.4	65	280	7.6
850	364	1,518	8.5	62	277	10.3
800	364	2,018	6.2	59	274	13.0
750	364	2,548	3.7	53	272	15.9
700	364	3,103	1.0		271	18.7
650	364	3,696	- 2.1		269	22.0
600	362	4,328	- 5.7		268	25.1
550	361	5,003	- 9.6		269	27.8
500	360	5,736	-14.2		268	31.3
450	359	6,529	-19.5		268	35.6
400	358	7,393	-25.5		267	39.8
350	357	8,348	-32.6		267	43.9
300	357	9,417	-40.5		267	48.8
250	357	10,636	-49.0		269	53.2
200	352	12,073	-56.5		270	55.4
175	347	12,915	-59.2		273	53.2
150	341	13,876	-61.0		273	47.4
125	326	15,003	-62.6		273	40.0
100	317	16,375	-63.6		272	30.9
80	293	17,748	-63.0		271	19.2
60	272	19,527	-60.5			
50	254	20,671	-58.4			
40	238	22,082	-56.1			
30	193	23,927	-52.8			

Standard pressure surface (mb)	NORTH PLATTE, NEBR (918 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	365	848	4.7	84	59	1.0
1,000	365	140				
950	365	564				
900	365	1,006	6.4	74	118	.8
850	365	1,477	7.5	59	254	3.9
800	365	1,976	6.0	55	274	7.6
750	365	2,503	3.3	52	284	10.1
700	365	3,060	.1	50	290	13.0
650	365	3,648	- 3.7	49	287	16.3
600	365	4,278	- 7.7	47	283	18.5
550	365	4,947	-12.0	45	282	20.6
500	365	5,673	-16.8		277	22.0
450	365	6,455	-22.4		274	23.1
400	364	7,312	-28.6		273	26.0
350	363	8,255	-35.4		272	25.6
300	363	9,311	-43.0		273	28.4
250	363	10,517	-50.9			
200	359	11,951	-55.9			
175	358	12,798	-56.9			
150	353	13,772	-57.6			
125	347	14,917	-59.2			
100	335	16,313	-60.1			
80	317	17,705	-59.8			
60	298	19,514	-58.3			
50	285	20,662	-57.3			
40	251	22,082	-55.4			
30						

Standard pressure surface (mb)	OAKLAND, CALIF. (1016 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	365	6	11.2	84	273	2.5
1,000	365	136	11.8	78	267	2.9
950	365	567	12.0	68	273	3.9
900	365	1,020	11.9	53	285	4.9
850	365	1,497	10.2	47	275	4.9
800	365	1,999	7.6		265	5.6
750	365	2,528	4.7		261	7.2
700	365	3,087	1.5		263	8.5
650	363	3,680	- 2.0		270	10.5
600	363	4,313	- 6.0		272	12.2
550	363	4,985	-10.4		274	14.8
500	362	5,717	-15.5		275	17.9
450	362	6,501	-21.2		276	21.2
400	362	7,363	-27.7		277	24.7
350	359	8,310	-34.9		277	27.8
300	359	9,367	-43.0		277	31.9
250	356	10,575	-51.1		277	35.4
200	346	12,008	-56.8		272	37.1
175	339	12,852	-57.7		270	36.3
150	329	13,823	-59.0		269	34.0
125	304	14,959	-60.7		271	28.2
100	259	16,344	-62.3		274	21.0
80	240	17,727	-61.9		279	12.6
60	233	19,513	-60.1		317	4.3
50	217				8	4.1
40	197				33	5.1
30	151				48	5.8
25						
20						

Standard pressure surface (mb)	OKLAHOMA CITY, OKLA. (971 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	363	392	11.1	87	148	2.1
1,000	363	140				
950	363	572	12.6	72	169	4.1
900	363	1,025	12.6	62	209	6.0
850	363	1,504	11.4	55	240	7.0
800	363	2,009	9.3	53	258	8.5
750	363	2,543	6.4		268	9.9
700	363	3,105	3.1		270	11.9
650	363	3,700	- .6		270	13.8
600	363	4,336	- 4.5		271	16.3
550	363	5,014	- 8.8		270	18.1
500	363	5,748	-13.4		267	19.8
450	363	6,542	-18.9		269	20.8
400	363	7,408	-25.1		271	21.4
350	361	8,364	-32.0		272	22.0
300	360	9,434	-39.9		276	21.8
250	360	10,655	-48.3			
200	357	12,099	-55.7			
175	354	12,943	-58.0			
150	347	13,911	-59.8			
125	334	15,045	-62.0			
100	324	16,416	-63.7			
80	305	17,784	-62.9			
60	286	19,569	-59.8			
50	271	20,712	-58.0			
40	259	22,127	-55.6			
30	227	23,976	-52.4			
25						
20						

Standard pressure surface (mb)	OMAHA, NEBR. (969 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	363	403	6.5	81	103	0.8
1,000	363	140				
950	363	565	7.4	70	203	.8
900	363	1,010	7.5	62	259	4.7
850	363	1,480	6.3	57	276	7.4
800	363	1,976	4.5	53	277	9.9
750	363	2,501	2.0	50	279	12.4
700	363	3,054	- 1.0	48	279	15.2
650	363	3,642	- 4.3	45	278	17.5
600	363	4,269	- 8.1	43	277	20.6
550	363	4,938	-12.2	40	278	23.9
500	362	5,663	-16.9		277	26.2
450	361	6,447	-22.3		274	29.7
400	359	7,302	-28.4		274	33.4
350	359	8,246	-35.3		273	38.3
300	359	9,303	-42.9		271	42.7
250	358	10,510	-50.8		268	48.0
200	355	11,941	-56.3		267	50.3
175	350	12,787	-57.3		270	48.0
150	348	13,759	-58.0		271	42.2
125	344	14,904	-59.4		273	36.1
100	335	16,296	-60.2		273	27.2
80	331	17,689	-60.0		275	18.5
60	319	19,490	-58.5		280	11.7
50	310	20,639	-57.3		289	7.4
40	300	22,056	-55.6		297	4.1
30	260	23,906	-53.4			
25						
20						

Standard pressure surface (mb)	PEORIA, ILL. (994 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	364	201	7.9	81		0.0
1,000	364	147				
950	364	575	8.2	69	236	3.9
900	364	1,018	7.2	63	257	7.6
850	364	1,488	5.6	58	265	10.3
800	364	1,983	3.7	53	271	12.4
750	364	2,508	1.3	51	274	15.5
700	363	3,058	- 1.5	48	275	18.5
650	363	3,646	- 4.6	46	273	21.4
600	363	4,272	- 8.1		273	25.1
550	363	4,941	-12.1		274	28.0
500	363	5,666	-16.6		275	30.3
450	363	6,449	-21.9		275	33.0
400	362	7,306	-27.9		274	36.7
350	362	8,252	-34.7		273	38.7
300	362	9,311	-42.5		272	41.8
250	361	10,520	-50.5		271	45.5
200	359	11,954	-56.4		270	48.6
175	358	12,799	-57.6		271	46.0
150	356	13,770	-58.5		272	41.6
125	350	14,912	-59.9		273	35.6
100	348	16,302	-60.9		273	26.6
80	339	17,689	-60.6			
60	326	19,485	-59.1			
50	319	20,635	-57.7			
40	309	22,050	-55.9			
30	278	23,895	-53.5			
25						
20	160	26,529	-49.7			

Standard pressure surface (mb)	PHOENIX, ARIZ. ‡ (972 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	365	341	26.3	34		0.0
1,000	365	87				
950	365	539	25.3	30	241	.8
900	365	1,011	21.4		254	3.7
850	365	1,502	17.3	34	248	5.2
800	365	2,016	13.2	37	243	6.0
750	365	2,555	9.1	39		
700	365	3,122	5.0			
650	365	3,722	.9			
600	365	4,361	- 3.3			
550	364	5,042	- 7.8			
500	364	5,779	-12.8			
450	364	6,574	-18.3			
400	363	7,444	-24.6			
350	363	8,402	-31.4			
300	363	9,476	-39.5			
250	362	10,701	-48.1			
200	357	12,145	-55.7			
175	353	12,992	-58.1			
150	352	13,957	-60.8			
125	350	15,082	-63.8			
100	334	16,441	-65.6			
80	318	17,799	-64.7			
60	302	19,567	-61.9			
50	292	20,700	-60.0			
40	249	22,105	-57.6			
30						
25						
20						

See reference note at end of table

RAWINSONDE DATA

Average annual values #

YEAR 1957

Standard pressure surface (mb.)	PITTSBURGH, PA. (977 MB.)						PORTLAND, ME. (1015 MB.)						RAPID CITY, S. DAK. (904 MB.)						ST. CLOUD, MINN. (978 MB.)						ST. PAUL IS., ALASKA (1007 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind		Number of observations	Dynamic height	Temperature	Relative humidity	Wind		Number of observations	Dynamic height	Temperature	Relative humidity	Wind		Number of observations	Dynamic height	Temperature	Relative humidity	Wind		Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed					Direction	Speed					Direction	Speed					Direction	Speed					Direction	Speed
SURFACE	365	353	8.6	76	247	1.7	365	20	7.2	75	285	3.1	365	966	4.2	73	359	1.9	365	316	3.1	80	304	1.2	363	10	1.7	90	14	2.5
1,000	365	159					365	137	7.4	66	284	4.9	365	139					365	136					363	63	1.3		17	2.1
950	365	585	8.6	71	246	4.5	365	560	6.4	61	285	8.4	365	562					365	557	4.0	73	282	2.1	363	477	.3	84	48	1.4
900	365	1,030	6.7	69	261	10.1	365	1,002	4.5	59	285	10.7	365	1,004	4.3		347	2.1	365	993	3.7	66	283	5.6	363	908	-1.2	79	117	.6
850	365	1,498	4.8	66	265	14.2	365	1,466	2.4	57	283	12.8	365	1,473	5.7	60	290	5.4	365	1,457	2.6	52	287	8.0	363	1,363	-2.8	71	132	1.0
800	365	1,991	2.8	60	268	17.1	365	1,954	.3	54	280	15.5	365	1,967	3.8	58	288	8.4	365	1,946	.9	55	284	10.5	363	1,842	-4.7	64	161	1.0
750	365	2,514	.6	55	268	19.4	364	2,471	-1.9	51	276	19.0	365	2,490	1.2	56	291	11.3	365	2,465	-1.3	51	284	12.8	363	2,348	-7.0	58	177	1.2
700	365	3,064	-2.1	51	269	22.3	364	3,016	-4.4	48	274	22.3	365	3,042	-2.0	55	289	14.8	365	3,011	-4.0	47	284	15.0	363	2,883	-9.9	53	211	1.4
650	365	3,650	-5.2	48	269	25.6	362	3,596	-7.4	45	272	25.6	365	3,625	-5.7	54	287	16.9	365	3,593	-7.2	45	284	17.3	363	3,450	-13.1	49	224	1.7
600	365	4,274	-8.7	46	271	28.6	361	4,216	-10.8	43	271	29.1	364	4,251	-9.8	52	286	20.0	365	4,213	-10.9	42	284	19.8	363	4,057	-16.7	46	220	2.1
550	365	4,942	-12.6		271	30.7	361	4,878	-14.7		270	32.6	363	4,913	-14.2	48	285	22.2	365	4,874	-14.9		281	21.4	363	4,702	-20.7		229	2.7
500	365	5,665	-17.2		271	34.4	361	5,596	-19.2		269	35.9	363	5,633	-19.1	45	282	25.1	365	5,591	-19.5		280	22.2	362	5,404	-25.5		229	3.7
450	365	6,447	-22.5		271	38.5	360	6,370	-24.3		269	40.2	363	6,408	-24.6	42	281	27.8	364	6,367	-24.9		279	23.5	361	6,158	-30.6		241	4.9
400	365	7,302	-28.6		271	42.2	359	7,221	-30.1		269	44.3	362	7,256	-30.8		280	31.3	364	7,213	-31.0		274	25.5	361	6,988	-36.5		245	4.5
350	365	8,245	-35.4		270	44.9	357	8,159	-36.7		268	49.5	362	8,190	-37.9		278	34.2	364	8,148	-37.7		272	27.0	359	7,901	-42.6		244	5.1
300	364	9,300	-43.0		269	49.5	356	9,211	-43.6		267	53.8	360	9,235	-45.7		276	39.6	364	9,194	-45.0				357	8,928	-48.8		232	5.1
250	362	10,507	-50.8		269	51.1	354	10,417	-50.3		269	55.8	357	10,428	-53.0		274	42.9	364	10,393	-51.6				356	10,113	-52.6		246	6.8
200	350	11,935	-56.7		270	53.2	353	11,859	-54.3		270	54.8	355	11,851	-56.4		270	45.3	360	11,825	-55.0				355	11,556	-50.7		237	11.3
175	333	12,775	-58.1		272	49.9	350	12,712	-55.0		269	52.3	347	12,696	-56.7		271	44.7	358	12,678	-55.3				355	12,428	-49.5		235	11.7
150	312	13,739	-59.1				350	13,695	-55.7		268	46.6	336	13,671	-57.4		272	41.2	358	13,660	-55.8				349	13,438	-49.3		235	11.7
125	290	14,876	-60.3				347	14,852	-56.7		268	41.4	320	14,822	-58.3				344	14,819	-56.5				347	14,632	-49.5		238	11.9
100	267	16,265	-61.1				343	16,264	-57.4		267	34.8	290	16,222	-59.0				329	16,235	-57.3				345	16,091	-49.9		239	10.1
80	250	17,648	-60.6				338	17,675	-57.2		267	27.4							325	17,646	-57.3				338	17,548	-50.1			
60	239	19,444	-59.1				319	19,498	-56.2		265	17.9							315	19,469	-56.8				324	19,424	-50.6			
50							295	20,661	-55.1		262	13.2							307	20,628	-56.1				312	20,613	-50.8			
40							265	22,093	-53.6		255	7.6							285	22,051	-54.8				284	22,068	-51.0			
30																			257	23,913	-52.7				212	23,949	-51.2			

Standard pressure surface (mb.)	SALEM, OREG. (1010 MB.)						SALT LAKE CITY, UTAH (872 MB.)						SAN ANTONIO, TEX. (988 MB.)						SAN DIEGO, CALIF. (1000 MB.)						SAN JUAN, P. R. (1016 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind		Number of observations	Dynamic height	Temperature	Relative humidity	Wind		Number of observations	Dynamic height	Temperature	Relative humidity	Wind		Number of observations	Dynamic height	Temperature	Relative humidity	Wind		Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed					Direction	Speed					Direction	Speed					Direction	Speed					Direction	Speed
SURFACE	365	61	7.2	90	203	1.7	363	1,288	7.0	69	161	4.1	365	243	17.0	82	83	1.7	365	124	13.0	88	313	1.4	363	6	25.7	77	119	3.9
1,000	365	142	8.1	83	214	1.2	363	143					365	139					365	122					363	148	24.6	75	102	9.7
950	365	566	8.1	75	226	2.5	363	571					365	582	16.6	77	136	6.0	365	557	14.4	65	291	1.6	363	597	21.5	77	92	14.8
900	365	1,012	6.8	70	233	5.1	363	1,022					365	1,038	15.5	69	170	8.0	365	1,014	14.3	49	287	2.1	363	1,064	18.4	77	93	14.4
850	365	1,480	4.6	66	237	8.0	363	1,497	9.1	53	168	6.0	365	1,523	14.1	61	189	7.6	365	1,495	12.9	41	278	4.3	363	1,553	15.6	73	91	13.6
800	365	1,972	2.3	60	243	9.5	363	1,998	7.2	47	192	7.4	365	2,033	12.1	53	219	7.0	365	2,002	10.6		267	5.6	363	2,066	13.1	64	90	12.2
750	365	2,491	-.3	54	249	11.1	363	2,527	3.7	48	226	7.4	365	2,574	9.4	47	246	7.6	365	2,536	7.8		266	7.0	363	2,605	10.8	49	90	11.1
700	365	3,040	-3.2	49	251	12.4	363	3,083	-.1	50	255	9.1	365	3,140	6.2	44	259	9.5	365	3,103	4.4		266	8.5	363	3,180	8.3		91	9.1
650	364	3,622	-6.5	45	254	14.4	363	3,672	-4.2	50	262	12.2	363	3,744	2.5		266	11.7	365	3,699	.8		266	10.7	363	3,789	5.0		88	7.4
600	364	4,245	-10.1		261	16.5	363	4,299	-8.5	50	266	14.8	362	4,386	-1.6		268	13.6	365	4,341	-3.2		268	13.6	363	4,438	1.4		87	6.0
550	363	4,906	-14.4		265	18.1	363	4,966	-13.0	48	267	17.1	360	5,071	-5.9		268	15.7	365	5,019	-7.8		271	16.3	363	5,128	-2.6		82	3.5
500	363	5,626	-19.2		266	20.4	363	5,689	-17.8		268	20.0	359	5,813	-10.7		268	18.5	365	5,759	-12.9		268	19.2	363	5,882	-7.3		73	1.2
450	362	6,397	-24.8		268	22.9	363	6,469	-23.1		269	23.7	358	6,616	-16.2		266	19.4	365	6,551	-18.6		267	22.5	363	6,692	-13.0		293	1.7
400	362	7,248	-31.0		269	26.2	363	7,323	-29.1		269	26.8	358	7,491	-22.5		268	21.6	365	7,422	-25.0		266	25.6	363	7,583	-19.4		283	4.9
350	359	8,182	-38.0		271	28.8	363	8,264	-36.0		269	29.9	358	8,457	-29.6		273	22.3	364	8,379	-32.1		266	30.1	363	8,561	-26.6		279	9.1
300	358	9,225	-45.6		271	31.3	363	9,316	-43.8		267	32.8	357	9,538	-37.7		274	22.5	363	9,449	-40.0		264	34.6	363	9,655	-35.0		277	16.3
250	356	10,419	-52.7		272	33.8	363	10,519	-51.5		264	36.5	356	10,770	-46.7		272	24.1	359	10,672	-48.4		265	38.9	363	10,901	-44.6		273	22.9
200	351	11,846	-55.7		272	34.6	358	11,949	-55.8		265	38.1	352	12,218	-55.8				358	12,115	-55.9		264	42.9	363	12,357	-55.8		272	27.6
175	349	12,695	-55.5		271	32.6	355	12,797	-56.3		265	36.1	347	13,061	-59.4				354	12,958	-58.6		261	43.1	362	13,195	-61.5		274	28.4
150	347	13,678	-55.8		272	30.7	350	13,773	-57.4		266	32.8	345	14,017	-62.8				347	13,921	-61.0		263	39.6	357	14,138	-66.9		275	25.6
125	344	14,835	-56.8		274	26.0	337	14,921	-59.3		269	27.0	338	15,130	-66.5				340	15,046	-63.8		264	33.8	341	15,228	-71.2		280	17.7
100	337	16,244	-57.8		276	21.0	324	16,314	-60.4		271	21.0	322	16,471	-68.9				334	16,407	-65.7		268	22.9	323	16,536	-74.5		313	7.6
80	330	17,649	-57.9		281	14.6	311	17,705	-59.9		275	13.4	311	17,807	-68.0				319	17,763	-65.0		271	12.6	308	17,835	-73.5		49	7.2
60	318	19,462	-57.7		297	7.4	297	19,505	-58.8		294	6.0	291	19,552	-63.6				304	19,528	-61.7		301	2.1	297	19,544	-66.0		81	15.7
50	311	20,613	-57.6		314	5.6	285	20,651	-57.9		314	4.5	281	20,679	-60.6				293	20,662	-59.9		65	2.1	282	20,663	-61.8		86	17.9
40	289	22,027	-56.7		334	4.3	266	22,063	-56.3		341	3.3	263	22,077	-57.5				277	22,065	-57.4		69	4.3	251	22,056	-58.2		86	20.0
30	245	23,852	-55.5				224	23,897	-54.2				205	23,907	-53.6				242	23,894	-54.0		79	5.8	205				87	21.8
25																														
20																			125				84	2.5						

Standard pressure surface (mb.)	SANTA MARIA, CALIF. (1007 MB.)						SANTA MONICA, CALIF. (1011 MB.)						S. STE. MARIE, MICH. (990 MB.)						SEATTLE, WASH. (1002 MB.)						SHREVEPORT, LA. (1008 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind		Number of observations	Dynamic height	Temperature	Relative humidity	Wind		Number of observations	Dynamic height	Temperature	Relative humidity	Wind		Number of observations	Dynamic height	Temperature	Relative humidity	Wind		Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed					Direction	Speed					Direction	Speed					Direction	Speed					Direction	Speed
SURFACE	365	74	10.4	85	295	2.1	365	38	14.3	76	300	1.2	365	221	2.5	84	299	1.0	364	125	7.6	88	151	2.1	365	76	15.5	84	120	1.4
1,000	365	135	11.5	81	312	2.5	365	132	14.9	73	288	1.2	365	139					364	142	7.7		140	1.7	365	144	15.5	79	118	1.7
950	365	570	13.7	63	6	4.5	365	571	14.5	62	282	.6	365	556	3.0	72	269	4.5	364	566	7.7	75	199	5.1	365	582	14.8	71	188	5.4
900	365	1,022	13.7	50	10	4.3	365	1,023	14.0	49	10	.8	365	992	1.6	69	278	8.5	364	1,010	5.8	73	215	6.6	365	1,038	13.3	67	214	6.6
850	365	1,502	11.7	43	350	3.9	365	1,504	12.3	43	278	1.7	365	1,451	-.2	64	279	11.1	364	1,476	3.5	71	228	7.6	365	1,518	11.6	61	234	7.6
800	365	2,007	9.2	38	318	4.1	365	2,010	9.9	37	267	4.1	365	1,935	-2.1	59	279	13.4	364	1,966	1.0	68	240	8.7	365	2,023	9.3	56	250	9.1
750	365	2,540	6.4	33	298	6.2	365	2,546	7.2	34	268	6.2	365	2,448	-4.0	54	280	16.3	364	2,485	-1.7	60	248	10.3	365	2,557	6.7	50	255	10.5
700	365	3,102	3.3		286	8.5	365	3,108	3.8		267	8.2	365	2,989	-6.3	51	282	19.2	364	3,030	-4.6	54	255	12.0	364	3,121	3.6	47	261	12.4
650	365	3,698	-.2		278	10.3	365	3,707	.1		267	10.3	365	3,565	-9.2	48	282	22.5	364	3,610	-8.0	50	258	13.8	364	3,718	.3		266	14.2
600	365	4,336	-4.2		278	12.6	364	4,344	-4.0		269	13.0	365	4,181	-12.7	46	281	24.7	364	4,227	-11.8	45	262	15.9	364	4,357	-3.4		266	17.5
550	365	5,012	-8.7		275	15.2	363	5,022	-8.5		270	16.1	363	4,837	-16.7	44	280	27.6	364	4,887	-16.0	43	264	17.5	363	5,037	-7.6		267	19.6
500	365	5,749	-13.7		276	17.1	362	5,758	-13.7		273	18.7	362	5,550	-21.3	43	280	30.9	364	5,600	-20.8		265	20.2	361	5,776	-12.3		269	22.0
450	365	6,539	-19.6		271	17.7	362	6,551	-19.5		272	21.8	362	6,320	-26.6		279	34.4	364	6,369	-26.3		268	22.9	361	6,574	-17.7		270	24.7
400	365	7,405	-26.1		272	20.2	362	7,416	-26.0		271	24.5	362	7,161	-32.4		279	38.5	362	7,212	-32.5		269	25.8	361	7,445	-23.8		269	27.4
350	365	8,357	-33.5		269	22.2	360	8,368	-33.3		272	27.2	361	8,089	-38.9		278	42.6	361	8,139	-39.5		270	29.1	361	8,407	-30.8		270	31.1
300	365	9,421	-41.5		267	24.5	359	9,432	-41.3		270	30.5	359	9,130	-45.7		275	48.0	359	9,178	-46.8		272	31.3	359	9,482	-38.8		268	35.6
250	365	10,636	-49.6		264	27.6	358	10,647	-49.5		271	34.0	356	10,326	-51.6		275	53.2	356	10,368	-53.4		273	34.2	358	10,709	-47.7		267	39.4
200	365	12,073	-56.2		266	28.8	356	12,084	-56.3		268	38.1	349	11,763	-54.2		276	54.6	353	11,794	-55.3		275	33.4	357	12,152	-56.6		267	44.9
175	362	12,918	-57.9		259	26.8	351	12,926	-58.4		265	37.3	344	12,618	-54.4		276	50.9	346	12,648	-54.8		275	31.3	355	12,804	-59.1		268	45.5
150	355	13,884	-59.6		259	27.2	349	13,891	-60.6		264	35.2	341	13,604	-54.6		274	44.5	341	13,634	-54.8		276	29.1	354	13,947	-62.8		268	42.2
125	339	15,018	-62.0		261	22.5	346	15,019	-63.2		266	29.9	333	14,769	-55.6		275	39.1	327	14,799	-55.6		278	26.0	349	15,061	-65.7		266	35.0
100	314	16,393	-63.7				340	16,383	-64.9		271	21.2	328	16,186	-56.5		275	31.9	305	16,227	-56.2		281	21.4	340	16,409	-67.8		267	24.7
80	303	17,763	-63.3				336	17,743	-64.4		277	11.7	324	17,600	-56.7		275	22.3	289	17,644	-56.0		286	16.3	334	17,753	-66.7		266	14.2
60	293	19,543	-60.7				326	19,511	-61.7		327	2.7	317	19,429	-56.1				268				295	11.7	327	19,508	-62.7		258	2.9
50	280	20,684	-59.1				321	20,644	-60.0		42	2.9	304	20,588	-55.7				258				304	9.7	322	20,639	-60.0		121	1.2
40	252	22,093	-57.0				314	22,044	-57.8		61	5.2	286	22,017	-54.4				239				313	9.1	312	22,041	-56.7		95	3.7
30							298	23,873	-54.4		73	6.2	227	23,879	-52.5				219				328	9.1	283	23,881	-53.0		88	5.8
25																														
20							233	26,495	-49.9		73	3.5							142				341	7.4						

See reference note at end of table

RAWINSONDE DATA

Average annual values #

YEAR 1957

Standard pressure surface (mb.)	SPOKANE, WASH. (932 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	365	722	4.8	77	183	3.1
1,000--	365	138				
950----	365	563				
900----	365	1,004	6.2	67	200	5.1
850----	365	1,473	4.8	62	230	7.2
800----	365	1,965	2.0	61	243	8.9
750----	365	2,484	- 1.2	61	250	9.9
700----	365	3,030	- 4.5	60	255	11.3
650----	365	3,610	- 8.0	56	261	13.6
600----	365	4,227	-11.9	53	264	16.9
550----	364	4,885	-16.1	51	266	18.8
500----	363	5,599	-21.0	48	268	20.4
450----	362	6,365	-26.5	46	271	23.1
400----	362	7,209	-32.7		273	25.1
350----	362	8,135	-39.5		275	26.8
300----	361	9,174	-46.7		275	29.7
250----	361	10,365	-53.1		280	33.2
200----	358	11,792	-55.4		280	33.0
175----	354	12,646	-54.6		279	31.5
150----	349	13,635	-54.4		281	29.5
125----	343	14,803	-55.2		280	26.6
100----	338	16,224	-56.2		283	23.3
80-----	322	17,641	-56.6		288	18.1
60-----	304	19,468	-56.5		294	12.8
50-----	295	20,624	-56.4		305	10.1
40-----	276	22,047	-56.0		319	8.0
30-----	250	23,883	-54.9		330	5.6
25-----						
20-----	180	26,494	-52.9			

Standard pressure surface (mb.)	SWAN ISLAND, W. I. (1013 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	360	10	26.8	81	83	8.7
1,000--	360	124	25.6	81	81	10.3
950----	360	573	22.0	84	91	13.0
900----	360	1,043	19.0	80	98	13.6
850----	360	1,534	16.4	72	102	13.0
800----	360	2,048	13.8	64	102	11.9
750----	360	2,591	11.3	55	102	10.7
700----	359	3,164	8.5	45	103	9.5
650----	358	3,775	5.4		102	8.2
600----	358	4,424	1.7		100	6.6
550----	358	5,117	- 2.3		100	4.9
500----	357	5,871	- 6.9		93	2.1
450----	356	6,685	-12.3		315	.6
400----	356	7,576	-18.7		290	3.7
350----	353	8,556	-25.8		289	7.6
300----	351	9,654	-34.2		278	11.9
250----	350	10,903	-44.0		273	16.3
200----	335	12,364	-55.1		272	20.0
175----	316	13,205	-61.0		274	20.6
150----	293	14,150	-67.0		279	17.3
125----	273	15,237	-71.9		285	12.0
100----	245	16,540	-75.2		360	3.3
80-----	218				81	11.5
60-----	192				84	19.0
50-----	175				87	21.2
40-----	159				91	23.3
30-----						
25-----						
20-----						

Standard pressure surface (mb.)	TACUBAYA, MEXICO ‡ (773 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	314	2,306	18.0			
1,000--	314	39				
950----	314	498				
900----	314	976				
850----	314	1,479				
800----	314	2,008				
750----	314	2,564	16.4			
700----	314	3,145	11.8			
650----	313	3,768	6.8			
600----	313	4,414	1.8			
550----	310	5,111	- 2.8			
500----	304	5,860	- 7.3			
450----	295	6,680	-12.4			
400----	287	7,566	-18.3			
350----						
300----						
250----						
200----						
175----						
150----						
125----						
100----						
80-----						
60-----						
50-----						
40-----						
30-----						
25-----						
20-----						

Standard pressure surface (mb.)	TAMPA, FLA. (1018 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	365	8	20.6	83	76	2.5
1,000--	365	158	20.3	79	94	3.5
950----	365	602	18.4	75	149	4.1
900----	365	1,063	15.9	69	189	4.3
850----	365	1,548	13.5	63	213	4.9
800----	365	2,056	11.0	55	233	5.8
750----	364	2,595	8.6		244	7.0
700----	364	3,161	5.7		253	8.2
650----	363	3,765	2.4		258	9.9
600----	363	4,407	- 1.3		261	11.3
550----	362	5,091	- 5.3		263	12.8
500----	362	5,837	-10.2		267	14.2
450----	362	6,642	-15.7		267	15.7
400----	362	7,520	-21.8		271	18.3
350----	362	8,490	-29.0		272	20.0
300----	362	9,574	-37.2		273	21.2
250----	361	10,809	-46.5		278	22.9
200----	359	12,259	-55.8		284	24.3
175----	358	13,101	-60.0		288	24.7
150----	356	14,054	-64.0		293	19.4
125----	344	15,161	-67.5		298	15.3
100----	337	16,497	-69.5		308	6.8
80-----	331	17,829	-68.9		30	3.9
60-----	315	19,569	-63.9		81	12.6
50-----	310	20,695	-60.5		88	15.7
40-----	298	22,096	-57.2		92	18.5
30-----	281	23,933	-53.0			
25-----						
20-----						

Standard pressure surface (mb.)	TATOOSH IS., WASH. (1012 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	363	31	9.1	86	136	4.7
1,000--	363	129	8.8	80	147	3.7
950----	363	551	7.2	74	192	5.4
900----	363	996	5.1	72	214	7.0
850----	363	1,462	2.7	69	227	7.6
800----	363	1,950	.4	65	236	8.2
750----	363	2,465	- 2.2	59	247	10.1
700----	363	3,012	- 5.1	53	251	11.7
650----	361	3,588	- 8.4	49	257	13.6
600----	360	4,208	-12.0		259	15.5
550----	360	4,864	-16.2		263	18.1
500----	360	5,580	-21.0		264	20.2
450----	360	6,345	-26.5		263	23.9
400----	360	7,192	-32.7		265	25.8
350----	359	8,119	-39.5		262	29.0
300----	359	9,156	-46.9		267	32.1
250----	359	10,347	-53.0		265	33.0
200----	350	11,776	-55.0		270	30.7
175----	345	12,629	-54.2		269	29.1
150----	338	13,620	-53.9		270	26.4
125----	329	14,792	-54.5		270	23.1
100----	306	16,221	-55.4		275	18.3
80-----	290	17,641	-55.8		280	14.2
60-----	269				292	9.1
50-----	259				308	7.6
40-----	237				331	6.4
30-----	188				325	5.6
25-----						
20-----						

Standard pressure surface (mb.)	TOPEKA, KANS. (986 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	365	269	8.8	82	115	0.8
1,000--	365	146				
950----	365	574	9.7	69	191	2.7
900----	365	1,023	9.3	63	237	5.4
850----	365	1,496	8.1	57	259	8.0
800----	365	1,995	6.2	53	271	10.7
750----	365	2,523	3.7	49	275	12.2
700----	365	3,080	.6	48	276	14.8
650----	365	3,669	- 2.9		278	16.7
600----	365	4,300	- 6.7		277	19.6
550----	365	4,971	-10.9		278	22.0
500----	365	5,701	-15.5		276	25.5
450----	365	6,487	-20.8		275	29.5
400----	364	7,349	-27.0		275	33.4
350----	363	8,298	-34.0		273	37.3
300----	363	9,360	-41.8		271	42.7
250----	362	10,572	-50.1		270	48.0
200----	360	12,006	-56.6		269	52.1
175----	357	12,848	-58.2		270	49.0
150----	348	13,816	-59.2		272	43.7
125----	337	14,954	-60.9		273	36.5
100----	318	16,338	-62.0		274	29.0
80-----	303	17,721	-61.7		276	20.2
60-----	283	19,511	-59.4		280	9.7
50-----	268	20,656	-57.7		273	5.2
40-----	240	22,070	-55.6		306	1.6
30-----	176	23,924	-52.7			
25-----						
20-----						

Standard pressure surface (mb.)	TUCSON, ARIZ. (925 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	365	781	15.3	54	168	2.1
1,000--	365	115				
950----	365	554				
900----	365	1,017	17.4	42	186	2.1
850----	365	1,504	15.1	40	227	3.3
800----	365	2,014	11.8	42	234	5.2
750----	365	2,551	8.3		236	6.4
700----	365	3,118	4.7		238	8.0
650----	365	3,718	1.0		246	9.7
600----	365	4,357	- 3.0		254	12.4
550----	365	5,037	- 7.5		259	15.3
500----	364	5,777	-12.2		263	19.0
450----	363	6,574	-17.7		263	22.7
400----	363	7,446	-23.9		263	26.8
350----	363	8,407	-30.9		265	30.9
300----	362	9,483	-38.9		264	35.2
250----	361	10,710	-47.7		263	40.0
200----	357	12,155	-55.7		263	45.5
175----	353	12,999	-58.6		265	44.1
150----	350	13,961	-61.2		264	40.0
125----	340	15,084	-64.3		266	33.0
100----	330	16,439	-66.5		266	23.9
80-----	321	17,789	-65.5		269	12.8
60-----	312	19,552	-62.1		286	2.9
50-----	301	20,685	-59.7		77	1.4
40-----	276	22,086	-57.1		79	2.7
30-----	227	23,922	-53.7		81	5.1
25-----						
20-----						

Standard pressure surface (mb.)	VERACRUZ, MEXICO ‡ (1011 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	355	13	26.4	79		
1,000--	355	109	25.6	78		
950----	355	555	23.1	73		
900----	355	1,031	20.6	68		
850----	355	1,523	17.8	66		
800----	355	2,040	15.0	62		
750----	355	2,589	12.0	56		
700----	355	3,160	9.1	48		
650----	352	3,773	5.6			
600----	345	4,421	1.6			
550----	338	5,115	- 2.6			
500----	327	5,867	- 7.1			
450----	320	6,686	-12.3			
400----	314	7,571	-18.4			
350----	307	8,554	-25.3			
300----	293	9,653	-33.7			
250----	284	10,904	-43.4			
200----	269	12,369	-54.6			
175----	252	13,212	-60.5			
150----	211	14,159	-66.6			
125----	164	15,250	-72.0			
100----	117	16,548	-76.0			
80-----						
60-----						
50-----						
40-----						
30-----						
25-----						
20-----						

Standard pressure surface (mb.)	WASHINGTON, D. C. (1009 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	365	88	11.5	75	286	0.6
1,000--	365	161	11.2	70	266	1.0
950----	365	588	10.1	66	274	6.0
900----	365	1,038	8.3	64	274	9.7
850----	365	1,509	6.4	61	276	12.8
800----	365	2,005	4.3	58	276	14.8
750----	365	2,530	1.8	54	276	17.7
700----	365	3,082	- .9		274	20.0
650----	365	3,671	- 3.9	48	274	23.1
600----	365	4,299	- 7.3		272	25.6
550----	365	4,969	-11.2		272	28.8
500----	365	5,697	-15.7		272	31.5
450----	365	6,484	-20.9		270	33.6
400----	365	7,345	-26.8		271	36.3
350----	363	8,294	-33.7		271	39.2
300----	363	9,357	-41.4		271	42.6
250----	363	10,572	-49.5		274	43.9
200----	359	12,008	-56.0		279	46.0
175----	358	12,852	-57.9		281	42.4
150----	355	13,820	-59.3		280	38.9
125----	349	14,956	-60.7		281	32.1
100----	334	16,340	-61.6			
80-----	312	17,724	-60.8		285	14.8
60-----	301	19,523	-58.3		293	5.1
50-----	294	20,674	-56.6			
40-----	288	22,098	-54.4		90	1.7
30-----	276	23,943	-51.6		92	2.7
25-----						
20-----	184	26,605	-47.3			

Standard pressure surface (mb.)	WINNEMUCCA, NEV. (870 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	362	1,310	2.8	68		0.0
1,000--	362	160				
950----	362	584				
900----	362	1,028				
850----	362	1,496	7.7	52	160	.6
800----	362	1,995	6.1	47	261	4.1
750----	362	2,522	2.9	48	266	7.0
700----	362	3,077	- .5	47	264	9.5
650----	362	3,666	- 4.3	46	261	12.2
600----	362	4,292	- 8.3		260	14.2
550----	361	4,961	-12.7		262	16.3
500----	358	5,682	-17.6		267	18.5
450----	358	6,463	-23.0		270	20.6
400----	356	7,316	-29.2		270	23.1
350----	355	8,256	-36.3		271	25.8
300----	354	9,308	-44.1		270	28.6
250----	350	10,510	-51.6		270	30.3
200----	337	11,939	-56.0		267	31.9
175----	331	12,788	-56.4		268	31.9
150----	325	13,765	-57.2		268	29.1
125----	312	14,913	-58.7		270	26.2
100----	288	16,312	-59.7		275	19.0
80-----	260	17,710	-59.5		281	13.8
60-----	250	19,519	-58.5		295	7.6
50-----	236	20,670	-57.5		312	5.8
40-----	220				333	5.1
30-----						
25-----						
20-----						

Standard pressure surface (mb.)	YAKUTAT, ALASKA (1011 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	362	12	3.1	90	99	3.5
1,000--	362	99	5.5		105	3.3
950----	362	520	4.5	74	128	4.9
900----	362	957	2.2	72	144	5.2
850----	362	1,417	- .3	70	154	5.2
800----	362	1,901	- 2.9	67	168	4.9
750----	362	2,414	- 5.7	64	179	4.5
700----	362	2,948	- 8.9	61	191	4.1
650----	362	3,520	-12.4	57	213	4.5
600----	362	4,126	-16.1	52	223	5.1
550----	361	4,775	-20.2	49	233	5.2
500----	361	5,476	-25.0	48	244	6.0
450----	361	6,233	-30.3		246	7.2
400----	361	7,063	-36.2		233	5.2
350----	360	7,977	-42.6		274	5.8
300----	359	9,002	-49.1		281	6.6
250----	357	10,184	-53.8		288	6.8
200----	355	11,616	-53.3		290	9.3
175----	352	12,479	-52.4		283	10.7
150----	346	13,475	-51.9			
125----	340	14,655	-52.1			
100----	328	16,096	-52.4			
80-----	314	17,535	-52.8			
60-----	301	19,391	-53.3			
50-----	291	20,572	-53.5			
40-----	264	22,008	-53.6			
30-----	207	23,856	-53.7			

Standard pressure surface (mb.)	YUMA, ARIZ. (1000 MB.)					
	Number of observations	Dynamic height	Temperature	Relative humidity	Wind	
					Direction	Speed
SURFACE	349	105	18.4	49	272	1.6
1,000--	349	103				
950----	349	547	20.3	38	296	3.1
900----	349	1,010	17.9	37	280	2.9
850----	349	1,496	14.9	38	260	3.3
800----	349	2,006	11.6	38	250	4.3
750----	349	2,545	8.2	37	252	5.4
700----	349	3,108	4.7		258	7.0
650----	349	3,709	.9		260	8.4
600----	349	4,346	- 3.3		267	11.5
550----	349	5,027	- 7.9		271	14.2
500----	347	5,762	-13.0		269	17.5
450----	345	6,560	-18.7		269	20.0
400----	342	7,423	-25.1		267	24.5
350----	339	8,378	-32.5		265	28.8
300----	338	9,445	-40.5		266	30.9
250----	333	10,664	-48.9		264	36.1
200----	309	12,103	-56.3		264	39.1
175----	289	12,945	-59.0		263	38.9
150----	260	13,905	-61.2		266	34.6
125----	225	15,027	-63.9			
100----	189	16,389	-65.8			
80-----						
60-----						
50-----						
40-----						
30-----						

# The above average annual values for standard pressure surfaces of height, temperature and relative humidity are the combined values of the 1500 G.M.T. observation from January through May, and the 1200 G.M.T. observation from June through December. Wind data are for the combined observations 0300 G.M.T. from January through May, and 1200 G.M.T. June through December.

‡ Combined observations for 0300 G.M.T. January through May and 0000 G.M.T. June through December.

Relative humidity data beginning with October 1, 1948, were computed and expressed in these tables on the basis of vapor-pressure over water. Upper air values of relative humidity at levels with temperatures less than 0°C, have formerly been computed and expressed on the basis of the vapor-pressure over ice. All relative humidity observations are obtained by electric hygrometer and have been adjusted to compensate for the value occurring below the operating range of the humidity element.

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature in degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessen. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

SOLAR RADIATION DATA

Average daily values (direct and diffuse) received
on a horizontal surface, tabulated in langleys.

YEAR 1957

Station	January	February	March	April	May	June	July	August	September	October	November	December	Annual
Aklavik, Mackenzie	3	46	184	418	537	507	407	307	145	69	8	---	---
Alburquerque, N. M.	263	368	486	629	683	743	658	615	591	377	306	283	500
Annette, Alaska	88	135	234	365	437	442	410	392	292	210	76	66	262
Apalachicola	305	374	443	563	664	587	512	491	422	417	293	306	448
Astoria, Ore.	128	[illegible]	265	386	446	557	545	458	392	224	139	67	314
Atlanta, Ga.	227	295	366	522	528	525	602	569	333	329	232	219	396
Barrow, Alaska	*3	40	205	385	486	457	402	242	106	41	**9	---	---
Bethel, Alaska	37	118	253	369	490	529	438	240	241	82	32	25	238
Bismark, N. Dak.	176	263	356	450	557	555	623	470	358	191	137	129	355
Blue Hill, Mass.	176	241	353	451	543	581	544	452	372	258	163	135	356
Boise, Idaho	176	---	---	---	544	672	666	590	468	254	199	101	---
Boston, Mass.	159	225	318	439	561	569	528	448	359	249	140	115	342
Brownsville, Tex.	---	---	446	437	528	570	649	555	451	388	262	295	---
Cape Hatteras, N. C.	205	271	†	583	621	689	666	514	487	353	262	242	---
Canton Island, Pacific Area	657	628	676	620	540	532	535	571	608	626	482	463	578
Caribou, Me	160	239	383	425	538	469	435	480	317	203	96	87	319
Charleston, S. C	219	299	386	540	487	524	518	503	389	329	255	253	392
Cleveland, Ohio	154	201	350	392	544	577	585	484	404	245	140	96	348
Columbia, Mo	147	224	315	353	510	550	550	549	417	296	191	149	354
Columbus, Ohio	---	---	---	---	---	---	---	---	95	---	---	---	---
Corvallis, Oreg.	---	---	---	---	---	---	657	548	437	223	157	74	---
Davis, Calif.	205	168	374	554	582	750	700	631	503	292	252	138	429
Dodge City, Kans.	217	298	363	423	524	660	633	583	453	275	223	232	407
East Lansing, Mich.	160	217	356	331	448	561	588	490	391	256	131	123	338
Edmonton, Alberta	88	198	311	430	543	547	535	381	316	194	96	70	309
El Paso, Tex.	312	429	565	685	728	768	699	662	625	407	369	308	546
Ely, Nev.	253	318	392	513	544	722	686	631	543	328	249	223	450
Fairbanks, Alaska	15	73	211	385	487	576	446	339	174	80	22	5	234
Ft. Worth, Tex.	190	255	334	347	462	608	616	576	416	310	212	265	383
Fresno, Calif.	208	191	416	539	559	669	641	597	493	342	244	142	420
Gainesville, Fla.	---	313	425	491	492	435	429	382	315	287	230	229	---
Glasgow, Mont.	168	264	396	451	574	600	606	533	399	234	137	108	373
Grand Junction, Colo.	222	283	409	460	555	669	607	521	542	292	215	193	414
Grand Lake, Colo.	224	317	453	512	373	460	437	386	350	200	114	91	326
Great Falls, Mont.	167	275	364	469	521	583	678	517	389	196	133	88	365
Greensboro, N. C.	165	240	335	500	536	512	573	480	313	290	198	182	360
Griffin, Ga.	218	254	344	527	569	455	545	556	361	306	235	220	383
Indianapolis, Ind.	142	188	313	357	515	548	587	506	368	272	159	133	341
Inyokern, Calif.	293	397	591	760	782	851	836	776	669	458	372	302	591
Ithaca, N. Y.	149	194	282	390	497	557	577	507	379	249	132	105	335
Lake Charles, La.	208	288	401	455	582	533	556	559	362	376	236	262	402
Lander, Wyo.	236	324	410	554	457	601	596	613	---	---	---	---	---
Las Vegas, Nev.	267	372	495	619	670	772	681	616	566	393	324	276	504
Lemont, Ill.	---	236	333	353	476	584	557	490	397	265	---	---	---
Lexington, Ky.	---	---	---	---	---	---	---	605	427	313	---	186	---
Lincoln, Nebr.	---	---	---	---	---	---	---	---	---	---	168	175	---
Little Rock, Ark.	137	237	307	380	527	523	547	504	383	327	197	194	355
Los Angeles, Calif. (U)	213	265	440	490	553	606	683	624	521	330	286	240	438
Los Angeles, Calif.	215	255	445	518	597	592	660	605	504	344	277	243	438
Madison, Wis.	161	198	323	408	409	577	553	455	384	245	127	119	330
Matanuska, Alaska	37	99	---	394	546	523	455	377	167	109	27	15	---
Medford, Ore.	127	209	250	472	585	714	635	585	424	225	157	77	372
Miami, Fla.	369	431	491	494	496	562	517	460	445	394	351	283	441
Midland, Tex.	262	310	477	490	606	636	---	621	503	373	---	---	---
Moosonee, Ontario	---	---	---	---	---	---	501	362	280	191	---	73	---
Nashville, Tenn.	126	194	276	431	475	490	582	562	358	293	206	175	347
Newport, R. I.	176	246	374	449	565	614	535	455	373	273	175	137	364
New York, N. Y.	145	191	313	386	534	553	572	461	368	267	161	119	339
Normandin, Quebec	---	---	---	---	---	---	---	---	---	---	---	87	---
North Omaha, Nebr.	---	---	---	---	---	541	578	479	403	247	161	171	---
Oak Ridge, Tenn.	145	227	314	496	569	515	597	535	328	270	209	156	363
Oklahoma City, Okla.	178	231	351	381	446	562	748	600	433	292	216	309	396
Ottawa, Ontario	165	230	391	403	488	520	549	481	346	211	115	102	333
Phoenix, Ariz.	242	350	515	631	701	743	627	574	570	418	344	266	498
Portland, Me.	194	278	376	487	553	550	523	498	371	248	142	114	361
Prosser 4 NE, Wash.	111	232	325	520	---	---	---	---	---	---	---	---	---
Raleigh, N. C.	---	---	---	---	---	---	592	465	342	298	209	209	---
Rapid City, S. Dak.	217	312	440	509	454	619	641	519	467	246	191	171	399
Resolute Bay, N. W. T.	---	---	---	---	---	---	399	246	121	32	#	#	---
Riverside, Calif.	253	321	479	546	573	675	700	641	541	363	318	260	473
St. Cloud, Minn.	185	241	389	476	488	580	508	513	371	211	118	124	350
San Antonio, Tex.	190	297	430	392	426	567	667	602	494	360	230	255	409
Santa Maria, Calif.	258	259	482	582	622	671	710	659	553	396	322	262	481
Sault Ste. Marie, Mich.	145	245	383	410	578	490	573	524	308	215	92	77	337
Sayville, N. Y.	178	256	367	451	571	659	627	520	426	329	196	148	394
Schenectady, N. Y.	142	192	283	345	422	459	465	416	309	224	22	19	275
Seabrook, N. J.	157	186	294	408	524	---	---	438	‡356	---	---	---	---
Seattle, Wash. (U of W.)	---	---	246	329	475	623	488	451	---	178	111	61	---
Seattle-Tacoma, Wash.	105	153	258	392	500	530	526	476	373	198	122	65	308
Shreveport, La.	---	---	---	---	---	567	607	564	415	379	212	242	---
Spokane, Wash.	113	220	260	474	545	636	659	555	418	181	132	71	355
State College, Pa.	165	194	318	381	521	542	582	520	377	281	152	132	347
Stillwater, Okla.	176	223	411	401	533	630	708	627	471	331	218	---	---
Swan Island, W. I.	---	---	---	---	---	---	617	631	590	481	534	426	---
Tampa, Fla.	324	389	461	476	599	577	499	461	430	407	343	323	441
Toronto, Ontario	149	195	318	395	457	524	579	447	354	250	123	94	324
Tucson, Ariz. (U)	262	376	524	675	---	735	592	545	595	394	363	298	---
Upton, N. Y.	173	250	384	470	605	668	---	---	---	---	---	---	---
Wake Island, Pacific Area	411	485	579	636	641	674	650	619	642	603	483	439	572
Washington, D. C.	168	205	324	448	543	565	557	474	359	294	185	153	356
Winnipeg, Manitoba	151	227	352	427	584	494	617	454	325	207	97	88	335

Note: Langley is the unit used to denote one gram calorie per square centimeter.

* Sun below horizon Jan. 1 - 23, inclusive.
† Station moved on March 1.
‡ Discontinued Sept. 23, 1957
** Sun below horizon after Nov. 18.
# Sun below horizon.

USCOMM-WB-Asheville - 6/18/58 - 2500

Chart I. Departure from Normal of Annual Average Temperature (°F) at Surface, 1957

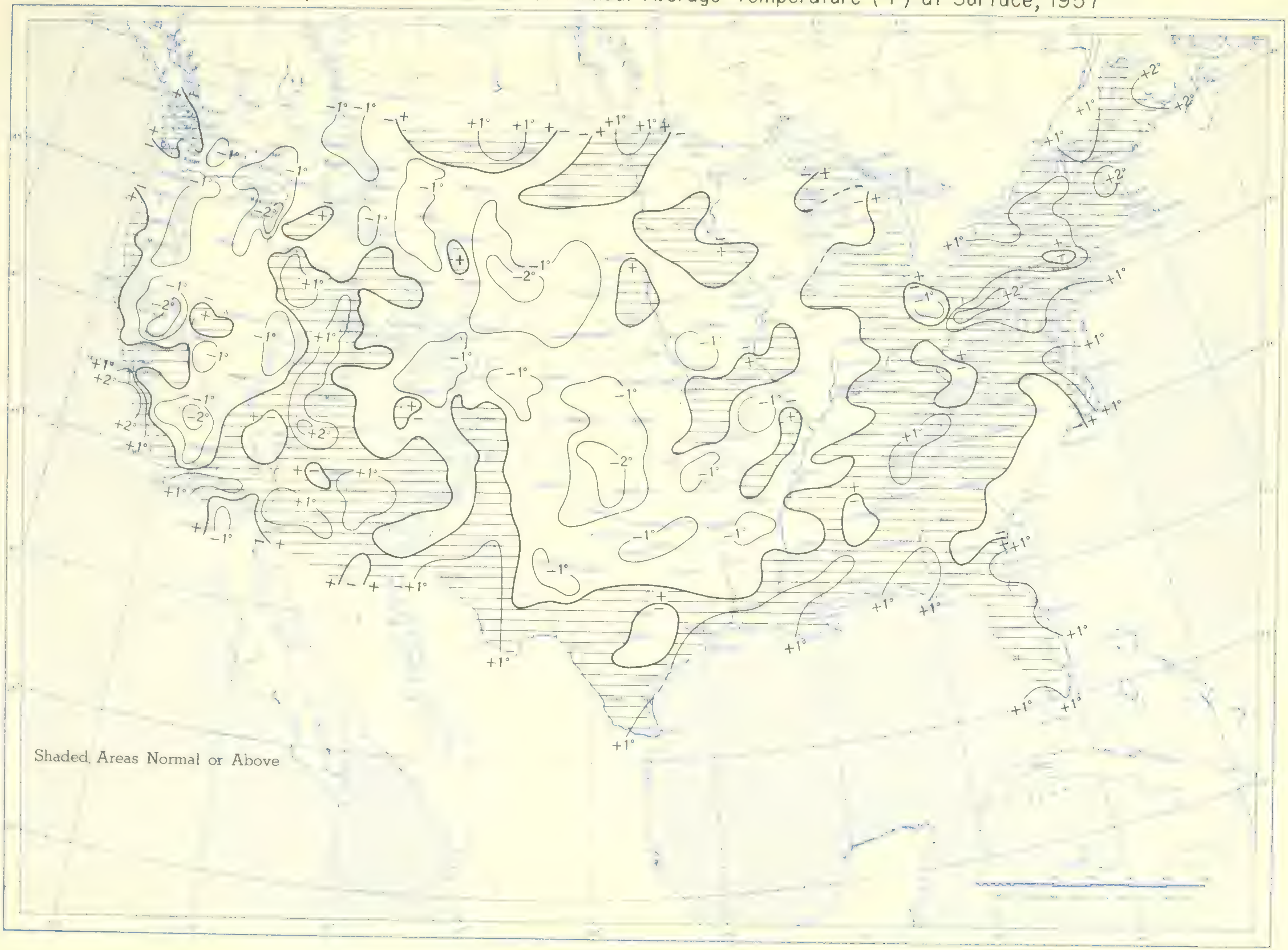


Chart II. Total Precipitation, 1957

(Inches)

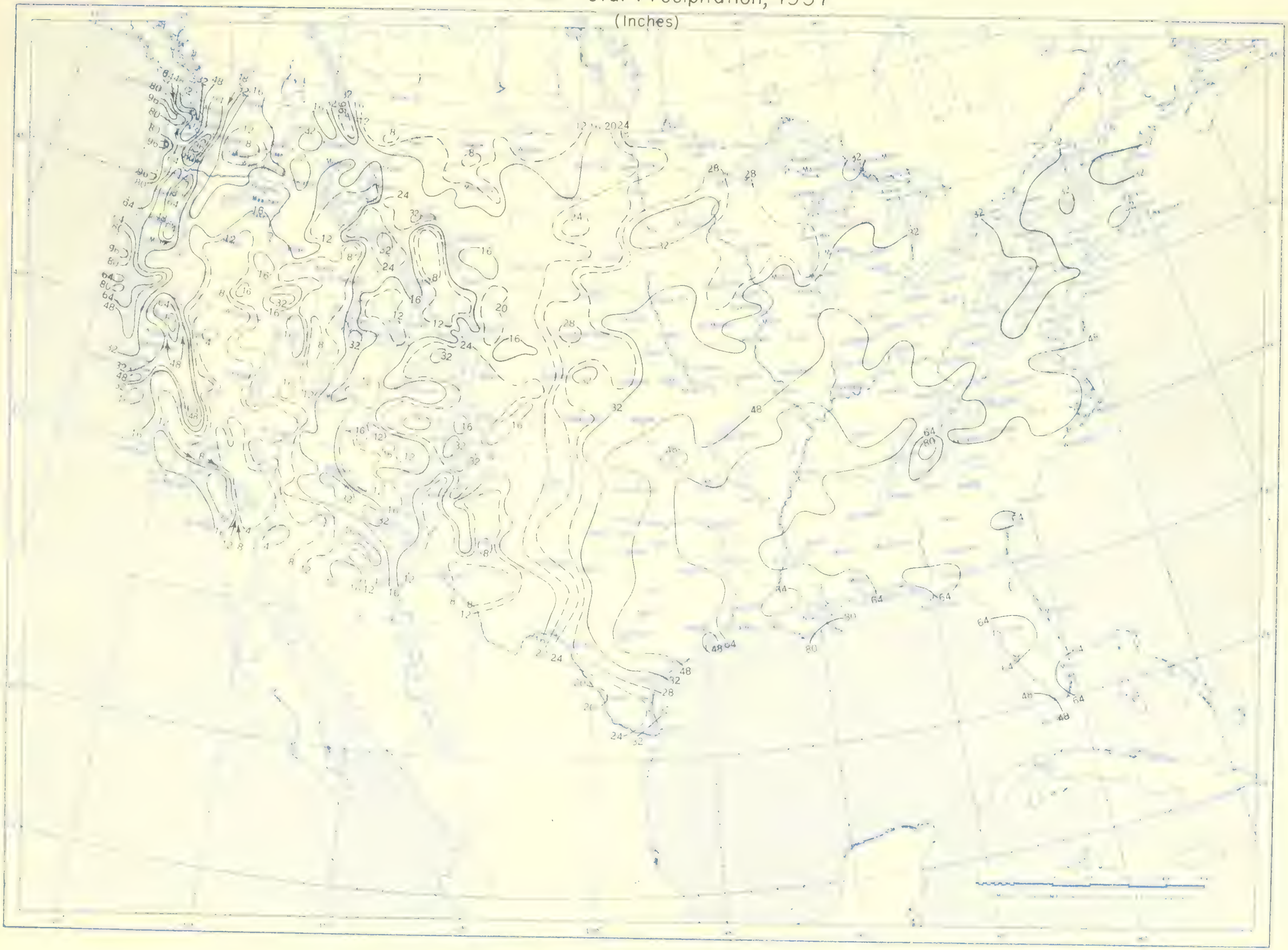
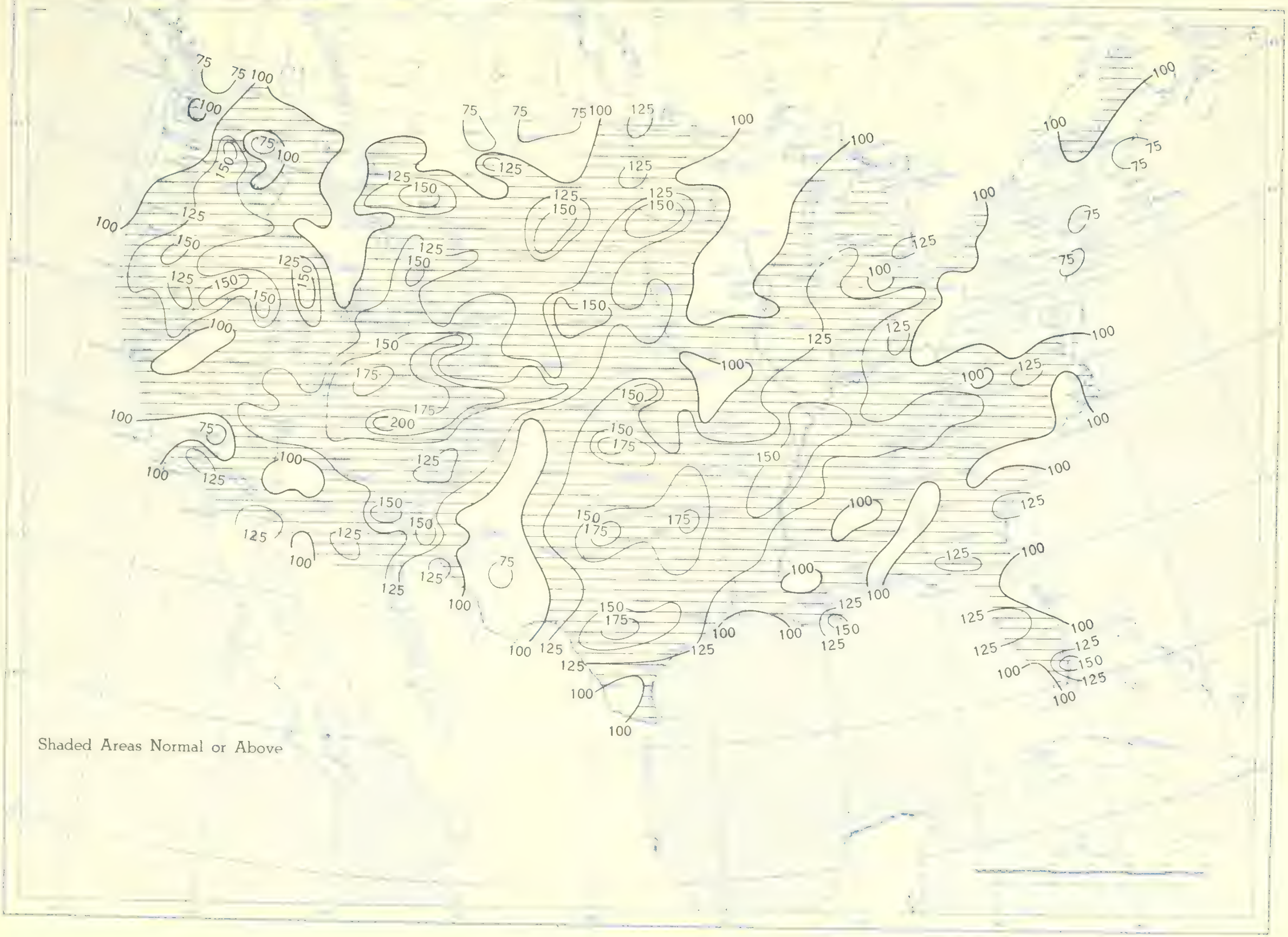


Chart III Percentage of Normal Annual Precipitation, 1957



Shaded Areas Normal or Above

Chart IV. Tracks of Tornadoes, 1957